OFFICE OF ENERGY INFRASTRUCTURE SAFETY'S

EVALUATION OF 2021 WILDFIRE MITIGATION PLAN UPDATE

BEAR VALLEY ELECTRIC SERVICE, INC.

Introduction and Background

This Action Statement represents the assessment of the Office of Energy Infrastructure Safety's (Energy Safety)[1] on the 2021 Wildfire Mitigation Plan (WMP or Plan) of Bear Valley Electric Service, Inc. (BVES or the utility). This Plan is an update for the comprehensive 2020-2022 plan submitted by BVES in 2020. BVES submitted its 2021 WMP Update on March 5, 2021, in response to guidelines provided by the Wildfire Safety Division (WSD) of the California Public Utilizes Commission (CPUC).[2] Assembly Bill (AB) 1054[3] mandates that Energy Safety complete its evaluation of WMPs within three months of submission, unless Energy Safety issues an extension.[4]

BVES's 2021 WMP Update is approved.

1. Legal Authority

In 2018, following the devastating wildfires in 2016 and 2017, the California Legislature passed several bills increasing oversight of the electrical corporations' efforts to reduce utility-related wildfires.[5] AB 1054 created the Wildfire Safety Division (WSD) at the California Public Utilities Commission (CPUC) and tasked it with reviewing annual WMPs submitted by electrical corporations under the CPUC's jurisdiction.

As of July 1, 2021, the WSD transitioned into the Office of Energy Infrastructure Safety (Energy Safety) under the California Natural Resources Agency (CNRA) vested with all the powers, duties, and responsibilities of the WSD established pursuant to Section 15475 of the Government Code.[6] "WSD" is used to describe the work of the WSD prior to July 1, 2021 and "Energy Safety" is used to describe the work of Energy Safety beginning on July 1, 2021. Any references to WSD action post July 1, 2021 or to Energy Safety action prior to July 1, 2021 are inadvertent and should be interpreted as the actions of WSD or Energy Safety as appropriate.

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[1] Pursuant to Public Utilities Code Section 326(b), on July 1, 2021, the Wildfire Safety Division (WSD) transitioned from the Commission into the Office of Energy Infrastructure Safety (Energy Safety) under the California Natural Resources Agency. Energy Safety "is the successor to" and "is vested with all of the duties, powers, and responsibilities of the Wildfire Safety Division," (Government Code Section 15475) including, but not limited to, jurisdiction for evaluating and approving or denying electrical corporations' WMPs and evaluating compliance with regulations related to the WMPs. The Commission and the newly formed Energy Safety will adhere to all statutory requirements pertaining to the WMP process. WSD is used to describe the work of the WSD prior to July 1, 2021. Energy Safety is used to describe the work of Energy Safety beginning on July 1, 2021. Any references to WSD action post July 1, 2021 or to Energy Safety action prior to July 1, 2021 are inadvertent and should be interpreted as the actions of WSD or Energy Safety as appropriate.

[2] The Commission approved 2021 WMP guidelines in Resolution WSD-011.

[3] Stats. of 2019, Ch. 79.

[4] Public Utilities Code § 8386.3(a).

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

[6] See AB 111, Stats. of 2019, Ch. 81.

Any references herein to WSD actions that post-date this transition should be interpreted as actions taken by Energy Safety.

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[7] and further defined in SB 901,[8] AB 1054, and AB 111. Investor-owned electrical corporations (hereafter referred to as "utilities") 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 framework in 2019.[9]

AB 1054 and AB 111 transferred responsibility for evaluation and approval or denial of WMPs to Energy Safety; AB 1054 provides, "After approval by the division, the commission shall ratify the action of the division." Energy Safety must ensure utility wildfire mitigation efforts sufficiently address increasing utility wildfire risk. To support its efforts, Energy Safety developed a long-term strategic roadmap, Reducing Utility-Related Wildfire Risk (2020).[10] This strategic roadmap informs Energy Safety's work in updating the WMP process and guidelines and Energy Safety's evaluation of the WMPs.

2. Multi-Year Plan Process

In February of 2020, the utilities[11] submitted their three-year 2020-2022 WMPs. The WSD conducted its evaluation and either approved, conditionally approved, or denied the Plans. In the case of conditional approval, the WSD identified items missing or incomplete in the Plans on a scale of severity, with Class A Deficiencies representing issues that required resolution through a Remedial Compliance Plan (RCP).[12] The 2020 Class B Deficiencies required resolution through Quarterly Reports,[13] and Class C Deficiencies were to be resolved in the 2021 WMP Update.

[7] Stats. of 2016, Ch. 598.

[8] Stats. of 2018, Ch. 626.

[9] See Rulemaking (R.) 18-10-007.

[10] The Office of Energy Infrastructure's strategic roadmap Reducing Utility-Related Wildfire Risk (2020) (accessed March 4, 2021): https://energysafety.ca.gov/who-we-are/strategic-roadmap/.

[11] Pacific Gas and Electric Company, Southern California Edison Company, San Diego Gas and Electric, Liberty Utilities, PacifiCorp, Bear Valley Electric Service, TransBay Cable, and Horizon West Transmission.

[12] An RCP "must present all missing information and/or articulate the electrical corporation's plan, including proposed timeline, to bring the electrical corporation's WMP into compliance." See Resolution WSD-002 at 17.

[13] "Class B issues are of moderate concern and require reporting on a quarterly basis by the electrical corporation to provide missing data or update its progress in a quarterly report." See Resolution WSD-002 at 18.

In 2020, the WSD issued a denial of BVES's initial WMP filing.[14] After errors were discovered in the initial filing, BVES submitted an amended WMP on March 6, 2020. Then, following the issuance of Draft Resolution WSD-006, BVES again submitted an amended WMP on May 22, 2020, providing what it characterized as errata. The changes included in the errata submitted by BVES on May 22, 2020, were substantive and rendered much of the WSD's analysis in Draft Resolution WSD-006 moot. Accordingly, on August 26, 2020, the WSD issued a Final Action Statement denying BVES's WMP filing. The August 26, 2020 Final Action Statement ordered BVES to submit a new WMP no later than 60 days from the date of issuance of the Final Action Statement addressing the matters in the errata submitted by BVES on May 22, 2020.

Additionally, in the August 26, 2020 Final Action Statement, which denied BVES's initial 2020 WMP submission, BVES was "strongly urged to also address Class A and Class B deficiencies the WSD found in Draft Action Statement and Draft Resolutions WSD-006 and [Final Resolution] WSD-002… as set forth in Appendices B and C." BVES timely submitted its 2020 WMP Refile on September 18, 2020, as well as a Remedial Compliance Plan addressing Class A and B deficiencies set forth in Resolution WSD-002. On January 14, 2021, the WSD issued Final Resolution WSD-013 conditionally approving BVES's 2020 WMP Refile.

If the WSD found a response to Class A and B deficiencies "Insufficient," the WSD created a new, related Deficiency and provided direction to address these Deficiencies in BVES's 2021 WMP Update.

The WSD had identified numerous Class C deficiencies in BVES's initial 2020 WMP submission. In Final Resolution WSD-013, Class C deficiencies and associated conditions were either (1) revised and renumbered, (2) deleted, or (3) newly created in response to BVES's Refile. Energy Safety provided direction to address these Class C Deficiencies in BVES's 2021 WMP Update. BVES was not required to respond to Class C Deficiencies from Draft Resolution WSD-006.

3. 2021 Evaluation Process

On November 16, 2020, the CPUC adopted updated WMP requirements (Guidelines) and procedures for the 2021 WMP Plan Year pursuant to Public Utilities Code Section 8389(d).[15] The updates to the 2021 WMP Guidelines are intended to streamline the reporting and evaluation process. Pursuant to the adopted Guidelines, large utilities submitted 2021 WMP Updates on February 5, 2021; small and multi-jurisdictional utilities (SMJUs) and independent transmission operators (ITOs) submitted 2021 WMP Updates on March 5, 2021.

[14] BVES's 2020 WMP filings can be found here: https://energysafety.ca.gov/what-we-do/wildfire-mitigation-and-safety/wildfire-mitigation-plans/2020-wmp/

[15] See https://energysafety.ca.gov/wp-content/uploads/docs/wmp-2021/attachment-2.2-to-wsd-011-2021-wmp-guidelines-template.pdf for adopted 2021 WMP Guidelines.

The 2021 WMP submissions are updates of the 2020-2022 WMPs and are intended to show progress since 2020 and report changes from the 2020 WMP. Importantly for 2021, Energy Safety amended its review process and will no longer issue conditional approvals. Instead, where Energy Safety found critical issues with 2021 submissions, Energy Safety issued a Revision Notice requiring the utility to remedy such issues prior to completion of the 2021 WMP Update evaluation. Upon receipt of the utility's response to the Revision Notice, Energy Safety could determine that the response was sufficient to warrant approval, although additional ongoing reporting or other conditions may be required, or the response was insufficient such that denial of the WMP is warranted due to the utility inadequately reducing wildfire risk and its potential impact to public safety.

Energy Safety evaluated 2021 WMP Updates according to the following factors:

- Completeness: The WMP is complete and comprehensively responds to the WMP statutory requirements and WMP Guidelines.
- Technical feasibility and effectiveness: Initiatives proposed in the WMP are technically feasible and are effective in addressing the risks that exist in the utility's service territory.
- Resource use efficiency: 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 has demonstrated sufficient progress on objectives and program targets reported in the prior annual WMP.
- Forward-looking growth: The utility demonstrates a clear action plan to continue reducing utility-related wildfires and the scale, scope, and frequency of Public Safety Power Shutoff (PSPS) events. [16] In addition, the utility is sufficiently focused 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 vegetation management.

To conduct its assessment, Energy Safety relied upon BVES's WMP submission and subsequent updates, responses to Revision Notices, if any, input from California Department of Forestry and Fire Protection (CAL FIRE), input from the Wildfire Safety Advisory Board (WSAB), public comments, responses to Energy Safety's data requests, utility-reported data, and utility responses to the Utility Maturity Survey.

Upon completion of its review, Energy Safety determined whether each utility's 2021 WMP Update should either be:

[16] 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.

- Approved (approval may include the requirement to address certain issues in the utility's subsequent WMP and/or through existing ongoing reporting processes), or,
- Denied (the utility does not have an approved WMP for 2021 and must reapply for approval in 2022).

4. Cost Recovery

This document does not approve costs attributable to WMPs, as 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 (GRC) or an appropriate application. Nothing in this Action Statement nor CPUC's Resolution should be construed as approval of any WMP-related costs.[17]

1. Summary of Key Findings

Pursuant to Public Utilities Code (Pub. Util. Code) Section 8386.3(a), this Action Statement is the totality of Energy Safety's review of BVES's 2021 WMP Update. BVES's 2021 WMP Update is approved.

1.1 Areas of Significant Progress

Energy Safety finds that 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 has appointed a contractor to develop a series of risk maps that will show the overall ignition probability and estimated wildfire consequence along its electric lines.[18] BVES plans to complete 50% of its risk map project milestones by the end of 2021.
- BVES has improved its weather station network with installation of eight weather stations in 2020, bringing its total to 18.
- BVES completed its first and second Covered Conductor Replacement Pilot Program by replacing 2.16 circuit miles by July 31, 2020. BVES considered the pilot successful. From 2020 to 2026, BVES plans to install 4.3 miles per year for 34.5 kV lines, and 8.2 miles per year for 4 kV lines.
- BVES has contracted with a full-time utility forester to improve various aspects of its vegetation management (VM) program.
- BVES made progress in providing some of the spatial data required.
- BVES started the development of an ignition risk model, with a consultant, to assist with mitigation initiative selection and deployment at a circuit level.[19]

[17] Energy Safety's approval and the Commission's ratification do not relieve the electrical corporation from any and all otherwise applicable permitting, ratemaking, or other legal and regulatory obligations.

[18] BVES 2021 WMP Update Revision – Clean, p. 38

[19] BVES 2021 WMP Update, p. 19

- BVES revised its PSPS plan on February 24, 2021, an important step forward, and attached it to the BVES 2021 WMP Update.[20] BVES indicates this plan is in response to lessons learned, and satisfies deficiencies raised by Energy Safety (including, most recently, BVES-R10).[21] The plan describes BVES's protocols for PSPS execution and addresses operational issues and coordination.

1.2 Revision Notices

The WSD issued a Revision Notice to BVES on May 4, 2021. BVES responded to the Revision Notice on June 3, 2021. Table 1 below lists the critical issues contained in the Revision Notice, a brief overview of the utility's response, and whether Energy Safety deems the response to be sufficient to support approval of the 2021 WMP Update.

Table 1: Critical issues.

Critical issue	Description	Utility response	Energy Safety evaluation
RN-BVES-01: Incomplete Section 7.3	BVES's 2021 WMP Update did not comply with the 2021 WMP Guidelines. BVES defined and labeled initiatives in each of the 10 categories under Section 7.3 using its own system. BVES's departure from the 2021 WMP Guidelines constituted a failure of the "completeness" requirement.[22]	BVES states that "the [revised] 2021 WMP Update reflects inclusion of all the established WMP initiative activities in accordance with the compliance guidelines."[23]	BVES provided a revised WMP which conforms to the 2021 WMP Guidelines.
RN-BVES-02: Inappropriate Aggregation of	Resolution WSD-002 Condition Guidance-5 (Class B) requires utilities to report expenditure on each	BVES "worked across internal departments to reclassify 2020 WMP expenditures	BVES provided a revised Table 12 disaggregating its WMP expenditure. BVES now reports spend for 70 of 86 WMP defined initiatives.

[20] BVES 2021 WMP Update Revision – Clean, Appendix A, "Bear Valley Electric Service, Inc. Public Safety Power Shutoff Plan" pp. 219-266

[21] https://energysafety.ca.gov/wp-content/uploads/docs/misc/docket/336608441.pdf

[22] Resolution WSD-011 Attachment 3, p. 5.

[23] Letter to WSD from BVES "Re: 2021 Wildfire Mitigation Plan Revision Notice…", June 3, 2021, p. 1.

Critical issue	Description	Utility response	Energy Safety evaluation
Expenditure Data	individual initiative. BVES detailed 51 initiatives in the text of its 2021 WMP Update. However, in Table 12, BVES aggregated its expenditure, reporting expenditure for just 25 initiatives.	and projected budgets to reflect the descriptions of applicable initiative activities more accurately."[24]	However, BVES's disaggregation of expenditure is inadequate. See Section 4.2 for a related key issue and remedies.

1.3 Key Areas for Improvement and Remedies

Energy Safety evaluated 2021 WMP Updates with a particular focus on how the utility's chosen mitigations and strategies will drive down the risk of utility-related wildfires as well as the scale, scope, and frequency of PSPS events. Energy Safety approves BVES's 2021 WMP Update; however, Energy Safety finds that BVES must focus over the next year on the following areas set forth in Table 2 below. While continued progress toward maturity is important in all areas of a utility's WMP, Energy Safety finds these areas to be key for BVES to continue to drive down utility-related wildfire risk. Energy Safety expects BVES to take action to address these key areas and report on progress made over the year in a Progress Report due by 5:00 p.m. on November 1, 2021, and in its 2022 WMP Update.[25] Energy Safety will closely monitor progress in each of these areas over the coming year.

In addition to the table below summarizing key areas for improvement, each key focus area and any required follow-up are denoted by a table in the respective detailed evaluation section.

Table 2: Key areas for improvement and remedies.

Utility-#	Issue title	Issue description	Remedies required and alternative timeline if applicable
BVES-21-01	Inadequate disaggregation of expenditure	As discussed in Section 1.2 of this Action Statement, BVES was	For its 2022 WMP Update, BVES must identify where common costs are allocated across

[24] Letter to Energy Safety from BVES "Re: 2021 Wildfire Mitigation Plan Revision Notice…", June 3, 2021, p. 1.

[25] If key area remedies specifically cite an alternative timeline (e.g., the 2022 WMP Update), the utility is not required to submit in it November 1, 2021 Progress Report updates regarding that particular key area for improvement.

Utility-#	Issue title	Issue description	Remedies required and alternative timeline if applicable
		required to disaggregate its WMP expenditure for its Revision Notice Response. However, Cal Advocates discovered that 17 of BVES's initiatives have the same expense amount in 2020, 11 in 2021, and 13 in 2022. In response to a Cal Advocates' data request, BVES states that it spreads certain expenses equally across multiple initiatives, but BVES offers no quantitative analysis to support such allocation.[26]	multiple initiatives. In addition, BVES must justify its allocation methodology by describing these common costs in detail, explaining how they relate to each initiative and demonstrating that the allocated values reasonably reflect the initiatives' true costs.
BVES-21-02	Program targets are unmeasurable and difficult to track	The 2021 WMP guidelines defines program targets as "quantifiable measurements of activity."[27] In Table 5.3-1: List and Description of Program Targets, Last 5 Years, BVES lists 86 program targets; 32 of these targets have no numerical target and 42 targets are quantified by the unmeasurable unit "Percent Project	In its 2022 WMP Update, BVES must: 1. Only include quantifiable measurements of activity in its list of program targets in Table 5.3-1 (or similar). 2. To the extent possible, modify existing targets to use measurable units. For example, the unit for intrusive pole inspections should be "# of Pole Inspections" rather than

[26] Comments of the Public Advocates Office on Bear Valley Electric Service's (BVES) June 3, 2021 Revision of its 2021 Wildfire Mitigation Plan Update, June 23, 2021, p. 4

[27] WSD-011 Attachment 2.2, 2021 Wildfire Mitigation Plan Guidelines Template, p. 12.

Utility-#	Issue title	Issue description	Remedies required and alternative timeline if applicable
		Milestones Completed" (or similar).	"Percent of Scheduled Circuits Completed."[28] 3. If using milestones as a sign of progress, describe milestones in Section 7.3 under appropriate initiatives.
BVES-21-03	Vegetation inspection roles lack minimum forestry and arboriculture qualifications	None of the roles described in Supporting Table 5.4.1-1 include minimum qualifications in forestry and arboriculture. In contrast, Liberty and PacifiCorp require their vegetation inspection personnel to either have ISA[29] Arborist Certification, be a Register Professional Forester, or have some arboriculture experience.[30] Energy Safety is concerned that BVES does not hire qualified workers to conduct vegetation inspections.	BVES must: 1. Provide evidence that its vegetation inspection personnel are adequately qualified and trained to perform vegetation inspections. 2. Include forestry and/or arboriculture certifications and/or experience as minimum qualifications for appropriate vegetation inspections roles.
BVES-21-04	No climate driven risk mapping	BVES does not have a program that addresses climate-driven risk mapping.	In its 2022 WMP Update, BVES shall describe how it applies risk analysis models to consider future climate projections.

[28] BVES 2021 WMP Update Revised – Clean, pg. 61.

[29] International Society of Arboriculture

[30] Liberty 2021 WMP Update pp. 57-58 & PacifiCorp 2021 WMP Update pp. 99-100

Utility-#	Issue title	Issue description	Remedies required and alternative timeline if applicable
BVES-21-05	Lack of consistency in approach to wildfire risk modeling across utilities	The utilities do not have a consistent approach to wildfire risk modeling. For example, in their wildfire risk models, utilities use different types of data, use their individual data sets in different ways, and use different third-party vendors. The WSD recognizes that the utilities have differing service territory characteristics, differing data availability, and are at different stages in developing their wildfire risk models. However, the utilities face similar enough circumstances that there should be some level of consistency in their approaches to wildfire risk modeling statewide.	The utilities[31] must collaborate through a working group facilitated by Energy Safety to develop a more consistent statewide approach to wildfire risk modeling. After Energy Safety completes its evaluation of all the utilities' 2021 WMP Updates, it will provide additional detail on the specifics of this working group. A working group to address wildfire risk modeling will allow for: 1. Collaboration among the utilities. 2. Stakeholder and academic expert input; and 3. Increased transparency.
BVES-21-06	Disparities between BVES's situational awareness and forecasting capabilities and maturity model reporting	BVES had a significant increase in its maturity assessment ratings for situational awareness and forecasting in its WMP update. The ratings are much higher in comparison to peer	BVES must describe: 1. How it intends to collect and measure physical impacts of weather on its grid, such as sway in lines and sway in vegetation. 2. How it plans to include wind estimations at various

[31] Here "utilities" refers to SDG&E and Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), PacifiCorp, Bear Valley Electric Service, Inc. (BVES), and Liberty Utilities; although this may not be the case every time "utilities" is used through the document

Utility-#	Issue title	Issue description	Remedies required and alternative timeline if applicable
		utilities and prior reporting in 2020. It remains unclear if the ratings selected are accurate representations of BVES's maturity, as the explanations in the initiatives do not explain these improvements.	atmospheric altitudes relevant to ignition risk. 3. What initiative it has or how it is using ignition detection software. 4. How it plans to accurately forecast weather at least three weeks in advance.
BVES-21-07	Lack of detail on prioritization of initiatives based on determined risk	BVES does not provide any details on the actual prioritization of its grid hardening efforts, despite having determined the highest risk circuits along its system. Instead, BVES relies on the Tier 2 and Tier 3 HFTD designations to justify prioritization. BVES fails to provide the details on how the timing of deployment of its grid hardening efforts mitigate its highest risk areas, and fails to provide a plan that demonstrates it is addressing and mitigating its highest risk areas.	BVES must: 1. Explain how the timing of deployment of its grid hardening efforts are based on its risk calculations and prioritize mitigating its highest risk areas; and 2. Provide a plan that demonstrates that BVES is addressing and mitigating its self-identified highest risk areas through system hardening initiatives.
BVES-21-08	Limited evidence to support the	The rationale to support the selection of covered	The utilities[33] must coordinate to develop a consistent approach to

[33] Here "utilities" refers to SDG&E and Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), PacifiCorp, Bear Valley Electric Service, Inc. (BVES), and Liberty Utilities; although this may not be the case every time "utilities" is used through the document.

Utility-#	Issue title	Issue description	Remedies required and alternative timeline if applicable
	effectiveness of covered conductor	conductor as a preferred initiative to mitigate wildfire risk lacks consistency among the utilities, leading some utilities to potentially expedite covered conductor deployment without first demonstrating a full understanding of its long-term risk reduction and cost-effectiveness. The utilities' current covered conductor pilot efforts are limited in scope[32] and therefore fail to provide a full basis for understanding how covered conductor will perform in the field. Additionally, utilities justify covered conductor installation by alluding to reduced PSPS risk but fail to provide adequate comparison to other initiatives' ability to reduce PSPS risk.	evaluating the long- term risk reduction and cost- effectiveness of covered conductor deployment, including: 1. The effectiveness of covered conductor in the field in comparison to alternative initiatives. 2. How covered conductor installation compares to other initiatives in its potential to reduce PSPS risk.
BVES-21-09	Lack of asset inspection quality assurance and quality control (QA/QC) program.	BVES is in the process of adopting a formal QA/QC program in 2021 but did not provide dates on when it intends to implement such, did not provide details on its	BVES must: 1. Provide a timeline for its implementation of a formal QA/QC process. 2. Explain how it conducts quality checks of its asset inspections prior to the

[32] Limited in terms of mileage installed, time elapsed since initial installation, or both.

Utility-#	Issue title	Issue description	Remedies required and alternative timeline if applicable
		current informal QA/QC process, nor provide details on the scope of the QA/QC program currently in development.	adoption of the formal program. 3. Develop an interim QA/QC procedure for asset inspections between now and the establishment of its new QA/QC program, if such has yet to be adopted, in order to ensure that work is being completed accurately and effectively. 4. Provide updates on the development of its QA/QC program in its Progress Report, including: (i) the scope of the QA/QC program, (ii) procedures of the QA/QC program that BVES has developed, and (iii) the status of the QA/QC program implementation.
BVES-21-10	Limited discussion of community outreach	BVES-R7 requires BVES to discuss its community engagement and outreach as it relates to VM in Section 7.3.5.1. BVES instead discusses fuels management activities performed by other entities including Big Bear Fire Department and Bear Valley Community Service District.[34] BVES mentions outreach efforts to "USFS, CAL FIRE and Big Bear Fire	BVES must: 1. Provide descriptions of notification and communication methods for customers and partner agencies regarding VM activities including, but not limited to, tree-trimming and tree removal. 2. Detail any efforts in community outreach and public education related to vegetation management.

[34] BVES 2021 WMP Update Revision – Clean, p. 149.

Utility-#	Issue title	Issue description	Remedies required and alternative timeline if applicable
		Department in an effort to develop collaborative measures in the area of fuels management," but fails to discuss how it mitigates the community impacts of major VM activities including tree-trimming and tree removal.	
BVES-21-11	Inadequate discussion of QA/QC of VM inspections	From the discussion in Section 7.3.5.13, it is difficult to know whether BVES has a QA/QC program for VM. A brief mention of third-party evaluations is the only unequivocal detail. It is unclear whom at BVES performs QA/QC, how often QA/QC is performed, and what goals and targets exist for QA/QC.	BVES must: 1. Describe the "lessons learned from third party evaluations and inspections."[35] 2. Provide the number of QA/QC evaluation and inspections completed each year. 3. Provide a QA/QC audit target as a percentage of total VM inspections per year. 4. Detail BVES's differentiation between its quality assurance program and quality control program. 5. Report on BVES's plan to add a QA program to the current QC program.[36]
BVES-21-12	Spatial data issues	Energy Safety has identified numerous areas for improvement for BVES's Quarterly Data Reports. These	See Table 3 for specific remedies related to each data issue. In the November 1, 2021 report, BVES must report on its progress in advancing its GIS capabilities.

[35] BVES 2021 WMP Update Revision – Clean, p. 159.

[36] BVES 2021 WMP Update Revision – Clean, p. 159.

Utility-#	Issue title	Issue description	Remedies required and alternative timeline if applicable
		issues negatively affect the usability of the data and do not meet Energy Safety GIS Standard. Energy Safety has specified these issues in Table 3 of this Action Statement.	
BVES-21-13	Unexplained changes to RSE estimates for wildfire and PSPS mitigation initiatives	In its 2021 Revised WMP Update, BVES reported six different RSE estimates for wildfire mitigation initiatives and four different RSE estimates for PSPS mitigation initiatives compared to its 2020 WMP without explanation. Refer to Table 4 and Table 5 for specific initiatives and RSE estimates.	BVES must provide all supporting documents and workpapers to justify the changes in RSE estimates outlined in Table 4 and Table 5 of this Action Statement.
BVES-21-14	Limited discussion on reduction of scale, scope, and frequency of PSPS	BVES has limited discussion on its near-term progress for reduction in scale, scope, and frequency of PSPS. BVES stated that due to its minimal use of PSPS in the past, it is unable to further reduce PSPS. Nevertheless, BVES must still report its plans to minimize PSPS scale, scope, and frequency, normalized	BVES must report on its plan to minimize the scale, scope, and frequency of PSPS events normalized for weather events and climatic conditions, and fully describe how its planned mitigation initiatives minimize PSPS impact.

Utility-#	Issue title	Issue description	Remedies required and alternative timeline if applicable
		for weather events and climatic conditions.	

In addition to the key areas for improvement listed in Table 1 above, Energy Safety lists additional issues for continued improvement to increase the maturity of BVES's wildfire mitigation capabilities in the evaluation sections below. These additional issues are denoted by bullet points. Energy Safety expects BVES to take action to address these issues and report on progress made over the year in its 2022 WMP Update.

1.4 Maturity Model Evaluation

The Wildfire Safety Division 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 2020, the utilities completed a survey setting a baseline for maturity as well as anticipated progress over the three-year plan period. In 2021, the utilities again completed the survey, enabling Energy Safety to monitor progress and ascertain potential improvements to maturity based on progress to date.

The ten maturity and mitigation initiative categories are listed below in Section 5, with further details in Section 10.2.

Energy Safety makes the following key findings regarding BVES's maturity progress in 2021:

- BVES plans to increase its maturity across all mitigation initiative categories for the 3-year WMP cycle, placing its maturity above or equal to that of Liberty Utilities and PacifiCorp in all categories except for Risk Assessment and Mapping.
- The largest maturity increase is planned to occur in Data Governance; BVES started 2020 with a maturity score of 0.5 and plans to end 2023 with a maturity of 3.25. BVES's end score of 3.25 is higher than all other electric corporations except San Diego Gas & Electric Company (SDG&E).
- Between 2020 and 2021, BVES had maturity growth in only 2 categories: Situational Awareness and Grid Operations & Protocols (other categories decreased maturity or remained flat).
- BVES reports significant decreases in 2020 planned vs actual expenditure for Situational Awareness and Forecasting (-81%) and Emergency Planning and Preparedness (-65%) despite planned increases to maturity in both categories.

2. Wildfire Safety Advisory Board Input

The Wildfire Safety Advisory Board (WSAB) provided recommendations on the 2021 WMP Updates of Bear Valley Electric Service, Inc. (BVES), PacifiCorp (PC), and Liberty Utilities, LLC. (Liberty) on May 13, 2021.[37] Energy Safety has considered the WSAB's recommendations and incorporates its input throughout this Action Statement. The WSAB's recommendations focused on the following areas:

- Risk Assessment, Mapping & Resource Allocation;
- Vegetation Management: Inspections, Strategies and Pilots;
- System Design and Management: Grid Hardening, Operations, Inspections, and Emerging Technology;
- Emergency Planning and Communication: Emergency Preparedness, Stakeholder Cooperation, and Community Engagement.

3. Public and Stakeholder Comment

The following organizations submitted comments by April 14, 2021, and reply comments by April 21, 2021, on BVES's 2021 WMP Update:

- Green Power Institute (GPI)
- Public Advocates Office at the California Public Utilities Commission (Cal Advocates)
- Rural County Representatives of California (RCRC)

On April 21, 2021, BVES submitted reply comments.

The following organization submitted comments by June 23, 2021 on BVES's 2021 WMP Update Revision:

- Public Advocates Office at the California Public Utilities Commission (Cal Advocates)

Energy Safety has evaluated comments and concurs with the following stakeholder input on BVES's 2021 WMP Update and BVES's 2021 WMP Revision, as reflected in this Action Statement:

- BVES's disaggregation of spend in response to Revision Notice critical issue BVES-02 is inadequate. (Cal Advocates)
- The Small and Multi-Jurisdictional Utilities (SMJUs) (Bear Valley, PacifiCorp, and Liberty) have substantial differences in PSPS thresholds, costs of covered conductors, and inspection practices. (Cal Advocates, GPI, and RCRC)
- Prioritization of hardening and inspections are not well explained. (GPI and RCRC)
- Overall limited oversight of programs and contractors. (Cal Advocates, GPI, and RCRC)

[37] The WSAB's "Recommendations on the 2021 Wildfire Mitigation Plan Updates of Small and Multi-Jurisdictional Utilities," approved May 12, 2021, and issued May 13, 2021, can be read here: https://energysafety.ca.gov/wp-content/uploads/docs/misc/wsd/wsab-2021-wmp-smju-recommendations-issued-5.13.21.pdf

4. Discussion

The following sections discuss in detail BVES's WMP Update, including progress over the past year, issues, and remedies to address by the next annual submission.

4.1 Introductory Sections of the WMP

The first two sections of the WMP Guidelines[38] 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, all experts consulted in preparation of the WMP must be cited by name and include their relevant background/credentials. Contact information and names may be submitted in a redacted file.

Section 2 requires the utility to specify where each of the 22 requirements from Section 8386(c) of the Public Utilities Code are satisfied. Each utility shall both affirm that the WMP addresses each requirement AND cite the section and page number where it is more fully described.

BVES minimally satisfied all 22 requirements from Section 8386(c) of the Public Utilities Code. However, two of the statutory WMP requirements pursuant to Public Utilities Code 8386(c) must be met more completely. As such, Energy Safety identified areas for improvement in the introductory sections of BVES's 2021 WMP Update.

[38] WSD-011 Attachment 2.2, 2021 Wildfire Mitigation Plan Guidelines Template, pp. 14-21 (accessed July 15, 2021): https://energysafety.ca.gov/wp-content/uploads/docs/wmp-2021/attachment-2.2-to-wsd-011-2021-wmp-guidelines-template.pdf.

Issues and Remedies

While Energy Safety did not identify key areas for improvement in this competency, Energy Safety finds the following issues and associated remedies. Energy Safety expects BVES to take action to address these issues and report on progress made over the year in its 2022 WMP Update.

- ISSUE: Section 8386(c)(4) of the Public Utilities Code requires "A description of the metrics the electrical corporation plans to use to evaluate the plan's performance and the assumptions that underlie the use of those metrics." BVES minimally meets this requirement by providing performance metrics and underlying data within WMP Tables 1-10. However, BVES does not provide descriptions of the metrics and does not include the "assumptions that underlie the use of those metrics." Without these discussions, it is difficult to evaluate BVES's progress in collecting and analyzing performance metrics.
    - REMEDY: BVES must provide the discussion required by Section 8386(c)(4) of the Public Utilities Code in Section 6, "Performance Metrics and Underlying Data."
- ISSUE: Section 8386(c)(5) of the Public Utilities Code requires "a discussion of how the application of previously identified metrics to previous plan performances has informed the plan." This requirement was addressed in Section 4.1 of BVES's 2021 WMP Update but could be more complete.
    - REMEDY: BVES must provide more details on lessons learned from the previous WMP submission, with particular focus on how performance against metrics used has informed the 2022 WMP Update.

4.2 Actuals and Planned Spending for the Mitigation Plan

The WMP Guidelines[39] require utilities to report a summary of WMP expenditures, planned and actual, for the current WMP cycle. This also includes an estimated annual increase in costs to the ratepayer due to utility-related wildfires and wildfire mitigation activities. The WMP Guidelines require that ratepayer impact calculations are clearly shown to demonstrate how each value was derived. Nothing in the request for such information should be construed as approval of any such expenditure, which is left to the CPUC pursuant to Pub. Util. Code Section 8386.4(b).

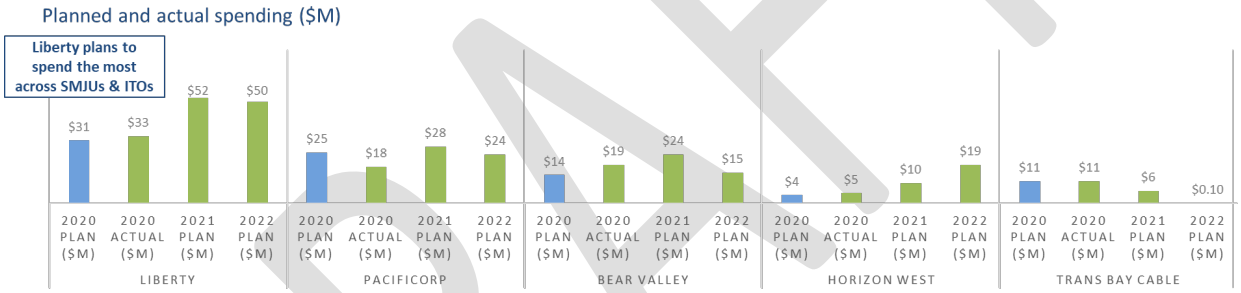
- BVES provides the three required tables, Table 3-1: Summary of WMP Expenditures - Total, Table 3-2: Summary of WMP Expenditures by Category, and Table 3-3: WMP Electricity Cost Increase to Ratepayers.[40]

[39] WSD-011 Attachment 2.2, 2021 Wildfire Mitigation Plan Guidelines Template, pp. 22-24 (accessed July 15, 2021): https://energysafety.ca.gov/wp-content/uploads/docs/wmp-2021/attachment-2.2-to-wsd-011-2021-wmp-guidelines-template.pdf.

[40] Note: BVES modified values in these Tables for its 2021 WMP Revision,

- BVES reports an increase in 2020 actual expenditure of 30.8% over its 2020 planned expenditure as reported in its 2020 WMP ($18,810,371 from $14,379,718).
- BVES reports notable expenditure increases from its 2020 planned expenditure in five categories:
    - Risk Assessment and Mapping (increase from $0 to $18,172)
    - Grid Design and System Hardening (44.6% increase, $10,764,151 to $15,565,438)
    - Data Governance ($0 to $114,466)
    - Resource Allocation ($0 to $27,258)
    - Stakeholder Cooperation & Community Engagement ($0 to $24,027)
- BVES reports notable expenditure decreases from its 2020 planned expenditure in two categories:
    - Situational Awareness and Forecasting (80.9% decrease, $337,000 to $64,217)
    - Emergency Planning (64.3% decrease, $200,000 to $71,363)

Figures



	2020 Plan ($M)	2020 Actual ($M)	2021 Plan ($M)	2022 Plan ($M)	Total WMP Cycle Planned Spend ($M)	Normalized WMP cycle spend per overhead circuit mile ($M)
Liberty	$31	$33	$52	$50	$136	$0.09
PacifiCorp	$25	$18	$28	$24	$70	$.02
Bear Valley	$14	$19	$24	$15	$57	$0.14
Horizon West	$4	$5	$10	$19	$33	$1,650
Trans Bay Cable	$11	$11	$6	$0.1	$17	$0[1]

Source: Tables 3-1 and 12 of 2021 utility WMPs and BVES Revision Notice
Note: In the 2021 WMP updates for Liberty and PacifiCorp Table 3-1 did not match the totals from Table 12 exactly. The totals from Table 12 are used here for those utilities, in the 2020 Actual, 2021 Plan, 2022 Plan and Total WMP Cycle Planned Spend columns. The 2020 Plan columns are taken from Tables 3-1 in 2021 utility WMPs.
1. TransBay Cable does not have any overhead circuit miles

Horizon West only reported .02 OH circuit miles in their WMP

Figure 4.2a: Overview of total WMP spend, SMJUs.

Key Areas for Improvement and Remedies

Utility-#	Issue title	Issue description	Remedies required and alternative timeline if applicable
BVES-21-01	Inadequate disaggregation of expenditure	As discussed in Section 1.2 of this Action Statement, BVES was required to disaggregate its WMP expenditure for its Revision Notice Response. However, Cal Advocates discovered that 17 of BVES's initiatives have the same expense amount in 2020, 11 in 2021, and 13 in 2022. In response to a Cal Advocates' data request, BVES states that it spreads certain expenses equally across multiple initiatives, but BVES offers no quantitative analysis to support such allocation.[41]	For its 2022 WMP Update, BVES must identify where common costs are allocated across multiple initiatives. In addition, BVES must justify its allocation methodology by describing these common costs in detail, explaining how they relate to each initiative and demonstrating that the allocated values reasonably reflect the initiatives' true costs.

4.3 Lessons Learned and Risk Trends

This section of the WMP Guidelines[42] requires utilities to report how their plans have evolved since 2020 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. Utilities must describe how the utility assesses wildfire risk in terms of ignition probability and estimated wildfire consequence using Commission adopted risk assessment requirements (for large electrical corporations) from the General Rate Case (GRC) Safety Model and Assessment Proceeding (S-MAP) and Risk Assessment Mitigation Phase (RAMP) Proceeding at a minimum. The utility may additionally include other assessments of wildfire risk. The utility must:

[41] Comments of the Public Advocates Office on Bear Valley Electric Service's (BVES) June 3, 2021 Revision of its 2021 Wildfire Mitigation Plan Update, June 23, 2021, p. 4

[42] WSD-011 Attachment 2.2, 2021 Wildfire Mitigation Plan Guidelines Template, pp. 24-29 (accessed July 15, 2021): https://energysafety.ca.gov/wp-content/uploads/docs/wmp-2021/attachment-2.2-to-wsd-011-2021-wmp-guidelines-template.pdf.

2. Describe how it monitors and accounts for the contribution of weather and fuel to ignition probability and wildfire consequence.
3. Identify any areas where the Commission's HFTD should be modified.
4. Explain any "high fire threat" areas the utility considers that differ from Commission-adopted HFTD, and why such areas are so classified.
5. Rank trends anticipated to have the greatest impact on ignition probability and wildfire consequence.

BVES provides the required discussion of Lessons Learned and Risk Trends.

- BVES states that is has followed initiatives and lessons learned from other utilities in California.
- BVES "is focused on enhancing its processes for managing and mapping its WMP-related data to produce more useful metric values."[43]
- BVES lists six "Significant lesson learned;"[44] these are repeated below. This list represents the issues that BVES faced during 2020. While BVES may have learned from these issues, it is unclear how the issues have influenced its 2021 WMP Update (See Issues and Remedies in Section 4.1).
    1) resource/personnel planning and sufficiency,
    2) external constraints related to materials available for procurement,
    3) siting and permitting constraints on private and federally managed lands,
    4) weather impacts shortening work execution windows,
    5) determining quantitatively driven baselines to measure effectiveness of new and enhanced initiatives, and
    6) ensuring adequate collaboration is made with community members and public safety partners ahead of each fire season.
- BVES describes its Risk Registry model which quantifies mitigation projects and programs by risk benefit and risk-spend efficiency (RSE). BVES's highest value output from its Risk Register model is "Weather Consulting Services."[45]
- BVES describes its Fire Safety Circuit Matrix which "aims to characterize all BVES distribution circuits in groups of High, Moderate, and Low wildfire risk and the prioritize the circuits within each wildfire risk group."[46] BVES plans to update this matrix annually.

[43] BVES 2021 WMP Update Revision – Clean, p. 18

[44] BVES 2021 WMP Update Revision – Clean, p. 18

[45] BVES 2021 WMP Update Revision – Clean, Figure 3: Risk Reduction and Efficiencies of Mitigation Initiatives, p. 21

[46] BVES 2021 WMP Update Revision – Clean, p. 23

4.4 Inputs to the Plan and Directional Vision for the WMP

This section of the WMP Guidelines[47] requires the utility to rank and discuss trends anticipated to exhibit 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 and more practically, utilities must report the current and planned qualifications of their workforce they expect in order to meet these objectives.

Goal, objectives, and program targets:

The goal of the WMP is shared across Energy Safety and all utilities: documented reductions in the number of ignitions caused by utility actions or equipment and minimization of the societal consequences (with specific consideration of the impact on Access and Functional Needs populations and marginalized communities) of both wildfires and the mitigations employed to reduce them, including PSPS.

The WMP Guidelines[48] require utilities to provide their objectives which are unique to each utility and reflect its 1, 3, and 10-year projections of progress toward the WMP goal. The WMP Guidelines also require utilities to report their unique program targets, which are quantifiable measurements of activity identified in WMPs and subsequent updates used to show progress toward reaching the objectives, such as number of trees trimmed, or miles of power lines hardened.

BVES provides all required information on its overall objectives and WMP program targets in Tables 5.-1. However, BVES must improve its definition and reporting of program targets (See Key Areas for Improvements and Remedies, below).

[47] WSD-011 Attachment 2.2, 2021 Wildfire Mitigation Plan Guidelines Template, pp. 29-31(accessed July 15, 2021): https://energysafety.ca.gov/wp-content/uploads/docs/wmp-2021/attachment-2.2-to-wsd-011-2021-wmp-guidelines-template.pdf.

[48] WSD-011 Attachment 2.2, 2021 Wildfire Mitigation Plan Guidelines Template, pp. 29-30 (accessed July 15, 2021): https://energysafety.ca.gov/wp-content/uploads/docs/wmp-2021/attachment-2.2-to-wsd-011-2021-wmp-guidelines-template.pdf.

Key Areas for Improvement and Remedies

Utility-#	Issue title	Issue description	Remedies required and alternative timeline if applicable
BVES-21-02	Program targets are unmeasurable and difficult to track	The 2021 WMP guidelines defines program targets as "quantifiable measurements of activity."[49] In Table 5.3-1: List and Description of Program Targets, Last 5 Years, BVES lists 86 program targets; 32 of these targets have no numerical target and 42 targets are quantified by the unmeasurable unit "Percent Project Milestones Completed" (or similar).	In its 2022 WMP Update, BVES must: 1. Only include quantifiable measurements of activity in its list of program targets in Table 5.3-1 (or similar). 2. To the extent possible, modify existing targets to use measurable units. For example, the unit for intrusive pole inspections should be "# of Pole Inspections" rather than "Percent of Scheduled Circuits Completed."[50] 3. If using milestones as a sign of progress, describe milestones in Section 7.3 under appropriate initiatives.

Workforce planning:

This subsection of the WMP Guidelines[51] requires utilities to report their worker qualifications and training practices regarding utility-related wildfire and PSPS mitigation for workers in mitigation-related roles including:

1. Vegetation inspections
2. Vegetation management projects
3. Asset inspections
4. Grid hardening
5. Risk event inspection

[49] WSD-011 Attachment 2.2, 2021 Wildfire Mitigation Plan Guidelines Template, p. 12.

[50] BVES 2021 WMP Update Revised – Clean, pg. 61.

[51] WSD-011 Attachment 2.2, 2021 Wildfire Mitigation Plan Guidelines Template, pp. 30-31 (accessed July 15, 2021): https://energysafety.ca.gov/wp-content/uploads/docs/wmp-2021/attachment-2.2-to-wsd-011-2021-wmp-guidelines-template.pdf.

BVES provides most of the required information regarding worker qualifications within each listed role. However, BVES fails to "Provide a summarized report detailing the overall percentage of [Full Time Employees (FTEs)] with qualifications listed in (2) for each of the target roles"[52] (See Additional Issues and Remedies, below).

Key Areas for Improvement and Remedies

Utility-#	Issue title	Issue description	Remedies required and alternative timeline if applicable
BVES-21-03	Vegetation inspection roles lack minimum forestry and arboriculture qualifications	None of the roles described in Supporting Table 5.4.1-1 include minimum qualifications in forestry and arboriculture. In contrast, Liberty and PacifiCorp require their vegetation inspection personnel to either have ISA[53] Arborist Certification, be a Register Professional Forester, or have some arboriculture experience.[54] Energy Safety is concerned that BVES does not hire qualified workers to conduct vegetation inspections.	BVES must: 1. Provide evidence that its vegetation inspection personnel are adequately qualified and trained to perform vegetation inspections. 2. Include forestry and/or arboriculture certifications and/or experience as minimum qualifications for appropriate vegetation inspections roles.

Additional Issues and Remedies

In addition to the key areas listed above, Energy Safety finds the following additional issue/issues and associated remedy/remedies. Energy Safety expects BVES to take action to address these issues and report on progress made over the year in its 2022 WMP Update.

- ISSUE: BVES fails to "Provide a summarized report detailing the overall percentage of FTEs with qualifications listed in (2) for each of the target roles."[55] These qualifications include: "Going beyond a basic knowledge of General Order 95 requirements… Being a 'Qualified Electrical Worker' (QEW)… [and] being an

[52] WSD-011 Attachment 2.2, 2021 Wildfire Mitigation Plan Guidelines Template, p. 30.

[53] International Society of Arboriculture

[54] Liberty 2021 WMP Update pp. 57-58 & PacifiCorp 2021 WMP Update pp. 99-100

[55] WSD-011 Attachment 2.2, 2021 Wildfire Mitigation Plan Guidelines Template, p. 30.

International Society of Arboriculture (ISA) Certified Arborist with specialty certification as a Utility Specialist."[56]

- REMEDY: BVES must adhere to the WMP Guidelines and include "a summarized report detailing the overall percentage of FTEs with qualifications listed in (2) for each of the target roles"[57] in Section 5.4 (or similar).

4.5 Metrics and Underlying Data

The WMP Guidelines[58] require utilities to report metrics and program targets as follows:

- *Progress metrics* that track how much utility wildfire mitigation activity has managed to change 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* measure tracking of proposed wildfire mitigation activities used to show progress toward a utility's specific objectives.[59] Program targets track the utility's pace of completing activities as laid out in the WMPs but do not track the efficacy of those activities. The primary use of these program targets in 2021 will be to gauge utility follow-through on existing WMPs.

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

- See Data Governance (Section 5.7 of this document) for a detailed review of the utility's progress and shortcomings in its Quarterly Data Reports.

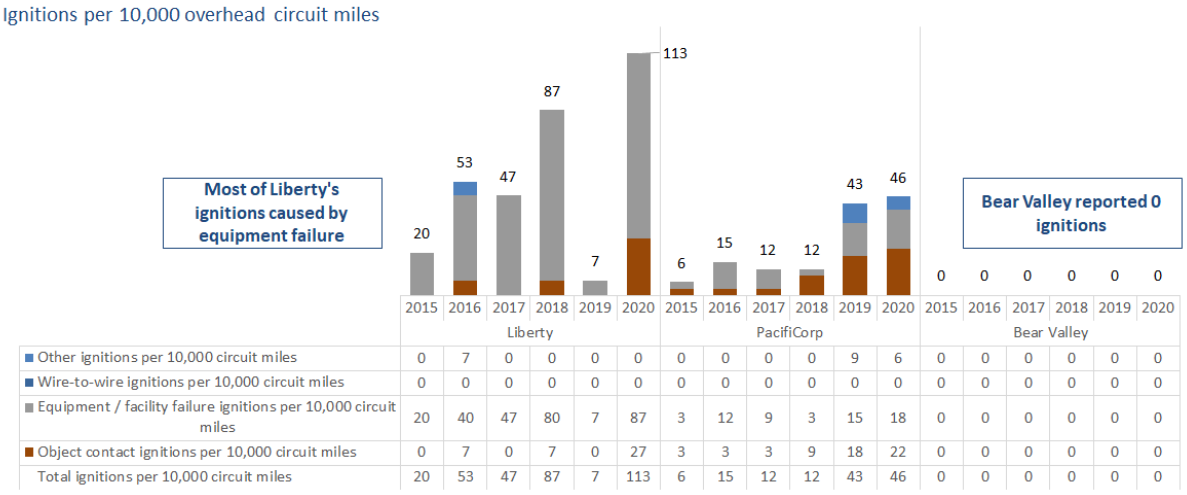
Figures

[56] WSD-011 Attachment 2.2, 2021 Wildfire Mitigation Plan Guidelines Template, p. 30.

[57] WSD-011 Attachment 2.2, 2021 Wildfire Mitigation Plan Guidelines Template, p. 30.

[58] WSD-011 Attachment 2.2, 2021 Wildfire Mitigation Plan Guidelines Template, pp. 32-41 (accessed July 15, 2021): https://energysafety.ca.gov/wp-content/uploads/docs/wmp-2021/attachment-2.2-to-wsd-011-2021-wmp-guidelines-template.pdf.

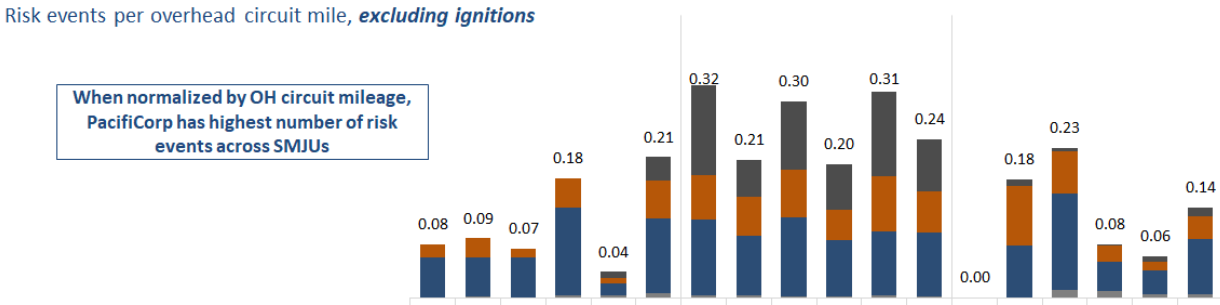
[59] Objectives are unique to each utility and reflect the 1, 3, and 10-year projections of progress toward the WMP goal. See section 5.4 for review of the utility's objectives.



	Liberty						PacifiCorp						Bear Valley					
	2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
Other ignitions per 10,000 circuit miles	0	7	0	0	0	0	0	0	0	0	9	6	0	0	0	0	0	0
Wire-to-wire ignitions per 10,000 circuit miles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Equipment / facility failure ignitions per 10,000 circuit miles	20	40	47	80	7	87	3	12	9	3	15	18	0	0	0	0	0	0
Object contact ignitions per 10,000 circuit miles	0	7	0	7	0	27	3	3	3	9	18	22	0	0	0	0	0	0
Total ignitions per 10,000 circuit miles	20	53	47	87	7	113	6	15	12	12	43	46	0	0	0	0	0	0

Source: Tables 8 and 7.1 from utility 2021 WMPs
Note: The total number of ignitions for each year was normalized using the 2020 reported overhead circuit miles for each utility, in their 2021 WMPs.

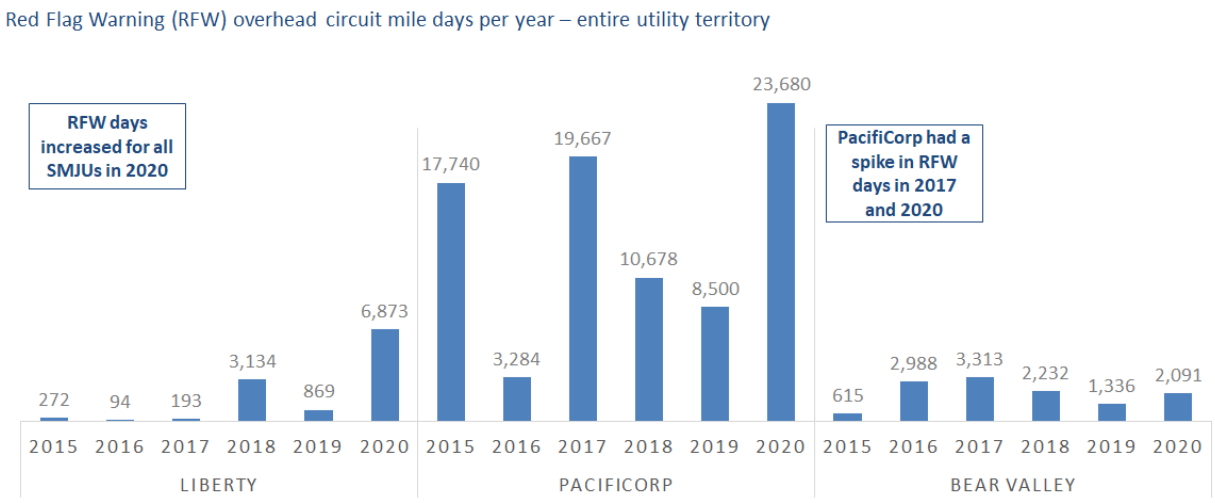
Figure 4.5.a: Number of ignitions per 10,000 overhead circuit miles, SMJUs.



	Liberty						PacifiCorp						Bear Valley					
	2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
Other events per overhead circuit mile	0.00	0.00	0.00	0.00	0.01	0.03	0.14	0.06	0.10	0.07	0.13	0.08	0.00	0.01	0.00	0.00	0.01	0.01
Contact from object risk events per overhead circuit mile	0.02	0.03	0.01	0.05	0.01	0.06	0.07	0.06	0.07	0.05	0.08	0.06	0.00	0.09	0.06	0.02	0.01	0.04
Equipment/facility failure risk events per overhead circuit mile	0.06	0.06	0.06	0.13	0.02	0.11	0.11	0.09	0.12	0.08	0.10	0.10	0.00	0.08	0.14	0.05	0.04	0.08
Wire to wire risk events per overhead circuit mile	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
Total risk events per overhead circuit mile	0.08	0.09	0.07	0.18	0.04	0.21	0.32	0.21	0.30	0.20	0.31	0.24	0.00	0.18	0.23	0.08	0.06	0.14

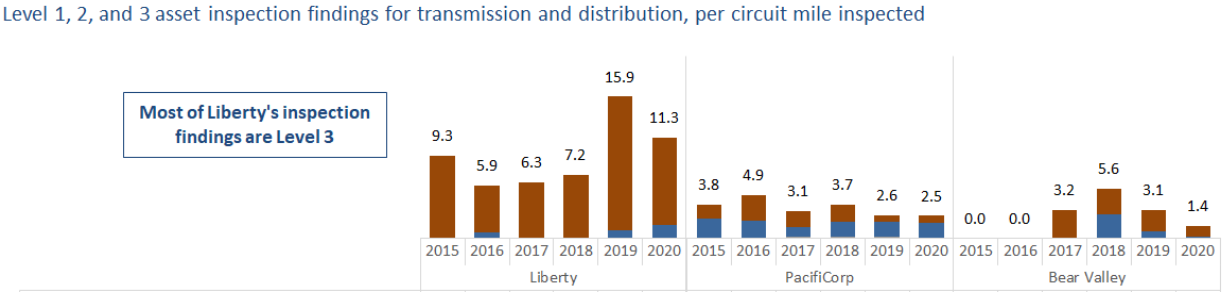
Source: Risk events from Table 7.1 of utility 2021 WMPs, overhead circuit miles from Table 8 of utility 2021 WMPs
Note: A risk event is defined as an event with probability of ignition, including wires down, contacts with objects, line slap, events with evidence of heat generation, and other events that cause sparking or have the potential to cause ignition.

Figure 4.5.b: Actual and projected risk events per overhead circuit mile, SMJUs.



Source: Table 6 of 2021 utility WMPs.
Sum of overhead circuit miles of utility grid subject to Red Flag Warning each day within a given time period, calculated as the number of overhead circuit miles that were under an RFW multiplied by the number of days those circuit miles were under said RFW.

Figure 4.5.c: Red Flag Warning (RFW) overhead circuit mile days per year, SMJUs.



	Liberty						PacifiCorp						Bear Valley					
	2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020	2015	2016	2017	2018	2019	2020
Level 3 asset inspection findings, transmission and distribution per circuit mile inspected	9.3	5.2	6.3	7.1	15.1	9.9	1.6	2.9	1.8	1.9	0.7	0.8	0.0	0.0	3.2	2.9	2.3	1.2
Level 2 asset inspection findings, transmission and distribution per circuit mile inspected	0.0	0.7	0.0	0.1	0.8	1.4	2.2	1.9	1.2	1.6	1.8	1.7	0.0	0.0	0.0	2.7	0.8	0.2
Level 1 asset inspection findings, transmission and distribution per circuit mile inspected	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total inspection findings, transmission and distribution per circuit mile inspected	9.3	5.9	6.3	7.2	15.9	11.3	3.8	4.9	3.1	3.7	2.6	2.5	0.0	0.0	3.2	5.6	3.1	1.4

Source: Inspection findings from Table 1 of utility 2021 WMPs
Note: A Level 1 finding is an immediate safety and/or reliability risk with high probability for significant impact. A Level 2 finding is a variable (non-immediate high to low safety and/or reliability risk. A Level 3 finding is an acceptable safety and/or reliability risk.

Figure 4.5.d: Asset inspection findings per circuit mile inspected, SMJUs.

5. Mitigation Initiatives and Maturity Evaluation

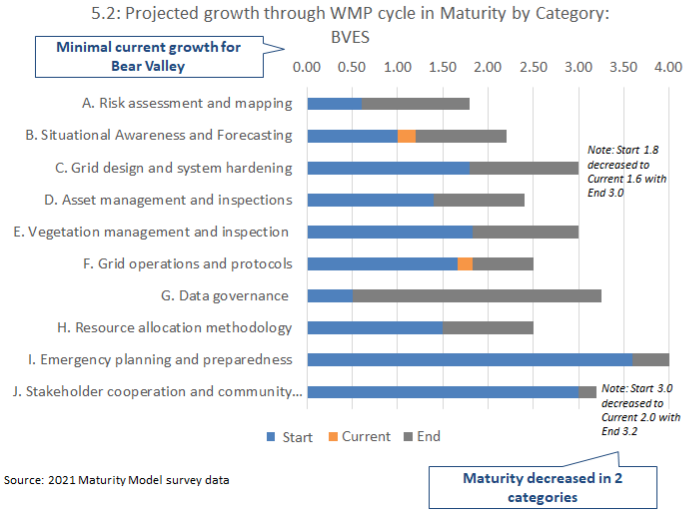
This section of the WMP Guidelines[60] is the heart of the plan and requires the utility to describe each mitigation initiative it will undertake to reduce the risk of catastrophic wildfire. The utility is also required to self-report its current and projected progress to mitigate wildfire risk

[60] WSD-011 Attachment 2.2, 2021 Wildfire Mitigation Plan Guidelines Template, pp. 42-46 (accessed July 15, 2021): https://energysafety.ca.gov/wp-content/uploads/docs/wmp-2021/attachment-2.2-to-wsd-011-2021-wmp-guidelines-template.pdf.

effectively,[61] a capability referred to in this document as "maturity" and measured by Energy Safety Utility Wildfire Mitigation Maturity Model ("Maturity Model"). Utility maturity is measured across the same categories used to report mitigation initiatives listed below, 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 ten maturity and mitigation initiative categories are listed below, with further details in Appendix 10.3:

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

Figures

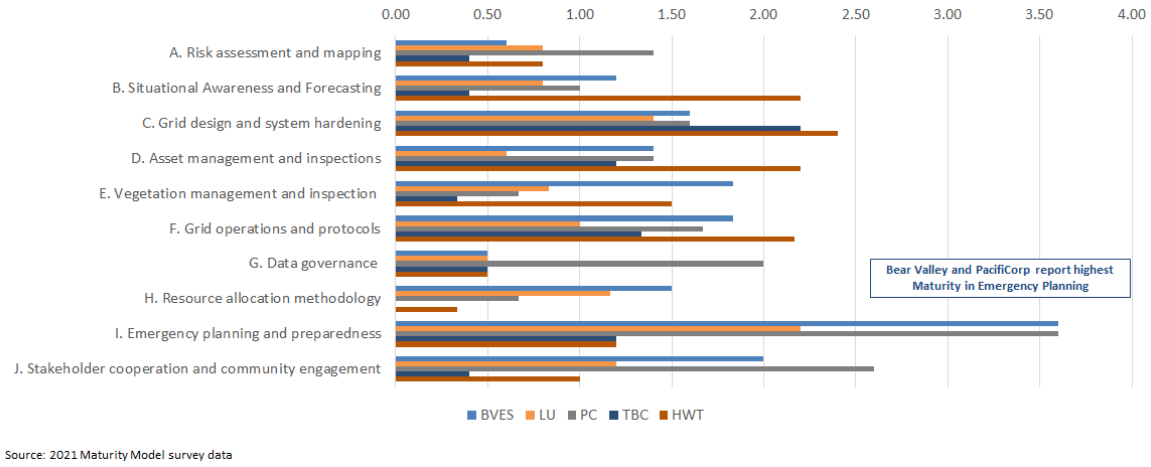


5.2: Projected growth through WMP cycle in Maturity by Category: Bear Valley

Category	Scores Start	Current	End
A. Risk assessment and mapping	0.60	0.60	1.80
B. Situational Awareness and Forecasting	1.00	1.20	2.20
C. Grid design and system hardening	1.80	1.60	3.00
D. Asset management and inspections	1.40	1.40	2.40
E. Vegetation management and inspection	1.83	1.83	3.00
F. Grid operations and protocols	1.67	1.83	2.50
G. Data governance	0.50	0.50	3.25
H. Resource allocation methodology	1.50	1.50	2.50
I. Emergency planning and preparedness	3.60	3.60	4.00
J. Stakeholder cooperation and community engagement	3.00	2.00	3.20

Figure 5.a: Self-reported projected growth in maturity by category, BVES.

[61] Utilities that filed a WMP were required to complete a survey in which they answered specific questions which assessed their existing and future wildfire mitigation practices across 52 capabilities at the time of filing and at the end of the three-year plan horizon. The 52 capabilities are mapped to the same ten categories identified for mitigation initiatives. The results of the survey can be found in Attachment 11.1. The most recent survey for each utility can be found on Energy Safety website here: https://energysafety.ca.gov/what-we-do/wildfire-mitigation-and-safety/wildfire-mitigation-plans/2021-wmp/.



Source: 2021 Maturity Model survey data

Figure 5.b: Self-reported Maturity by Category, SMJUs and ITOs.

Below, Energy Safety evaluates BVES's initiatives across the ten categories in the context of its maturity model survey scores.

5.1 Risk Assessment and Mapping

Introduction

This section of the WMP Guidelines[62] requires the utility to discuss the risk assessment and mapping initiatives implemented to minimize the risk of its causing wildfires. Utilities must describe initiatives related to equipment maps and modelling of overall wildfire risk, ignition probability, wildfire consequence, risk-reduction impact, match-drop simulations,[63] and climate/weather-driven risks. This section also requires the utility to provide data on spending, miles of infrastructure treated, spend per treated line mile, ignition probability drivers targeted, projected risk reduction achieved from implementing the initiative, and other (i.e., non-ignition) risk drivers addressed by the initiative.

The parameters of risk assessment (discussed here) and resource allocation (discussed later in the "Resource Allocation Methodology" section) to reduce wildfire risk derive from the S-MAP and RAMP proceedings for the utility GRC (D.18-12-014).

[62] WSD-011 Attachment 2.2, 2021 Wildfire Mitigation Plan Guidelines Template, pp. 43-44 (accessed July 15, 2021): https://energysafety.ca.gov/wp-content/uploads/docs/wmp-2021/attachment-2.2-to-wsd-011-2021-wmp-guidelines-template.pdf.

[63] 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.

The risk modelling conducted should ultimately inform the RSE analyses discussed in category 8, resource allocation methodology.

Overview

Since 2020, BVES has made minimal progress in its risk assessment and mapping Initiatives. BVES does not have a summarized risk map showing ignition probability and estimated wildfire consequence along electric lines and equipment. BVES is currently using the CPUC designated fire threat districts as its risk assessment and mapping.

Progress over the past year

Energy Safety finds that BVES has made the following progress:

- BVES has appointed a contractor to develop a series of risk maps that will show the overall ignition probability and estimated wildfire consequence along its electric lines.[64] BVES plans to complete 50% of its risk map project milestones by the end of 2021.

BVES has room for improvement in the following areas:

- BVES does not have a program or initiative that includes climate-driven risk mapping. BVES must describe how it considers future climate projections in its risk assessments (see Key Areas for Improvement, below).
- BVES does not detail how it plans to develop each initiative in this section; instead, BVES vaguely references its overall modeling efforts. This is addressed in BVES-21-07 below. Additionally, BVES does not provide timelines for developing its risk assessment and mapping initiatives and uses equivocating language in place of goals.

Key Areas for Improvement and Remedies

Energy Safety finds that BVES must focus on the following areas as significant to reducing utility-related wildfire risk:

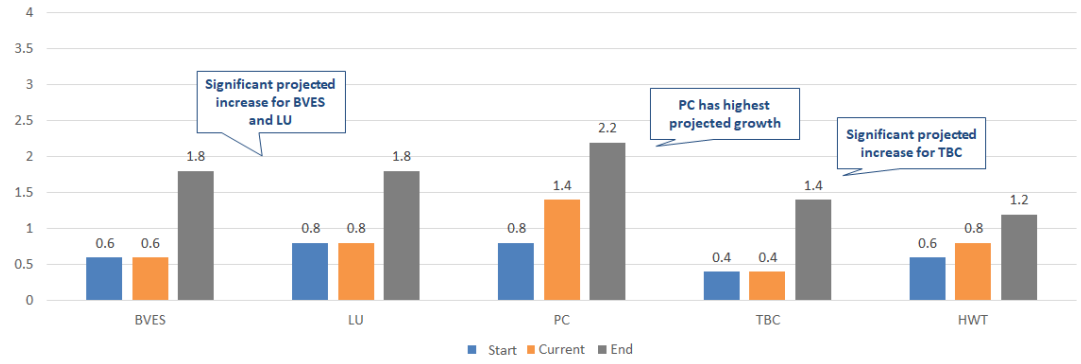
Utility-#	Issue title	Issue description	Remedies required
BVES-21-04	No climate driven risk mapping	BVES does not have a program that addresses climate-driven risk mapping.	In its 2022 WMP Update, BVES shall describe how it applies risk analysis models to consider future climate projections.

[64] BVES 2021 WMP Update Revision – Clean, p. 38

Utility-#	Issue title	Issue description	Remedies required
BVES-21-05	Lack of consistency in approach to wildfire risk modeling across utilities	The utilities do not have a consistent approach to wildfire risk modeling. For example, in their wildfire risk models, utilities use different types of data, use their individual data sets in different ways, and use different third-party vendors. The WSD recognizes that the utilities have differing service territory characteristics, differing data availability, and are at different stages in developing their wildfire risk models. However, the utilities face similar enough circumstances that there should be some level of consistency in their approaches to wildfire risk modeling statewide.	The utilities[65] must collaborate through a working group facilitated by Energy Safety to develop a more consistent statewide approach to wildfire risk modeling. After Energy Safety completes its evaluation of all the utilities' 2021 WMP Updates, it will provide additional detail on the specifics of this working group. A working group to address wildfire risk modeling will allow for: 1. Collaboration among the utilities; 2. Stakeholder and academic expert input; and 3. Increased transparency.

Figures

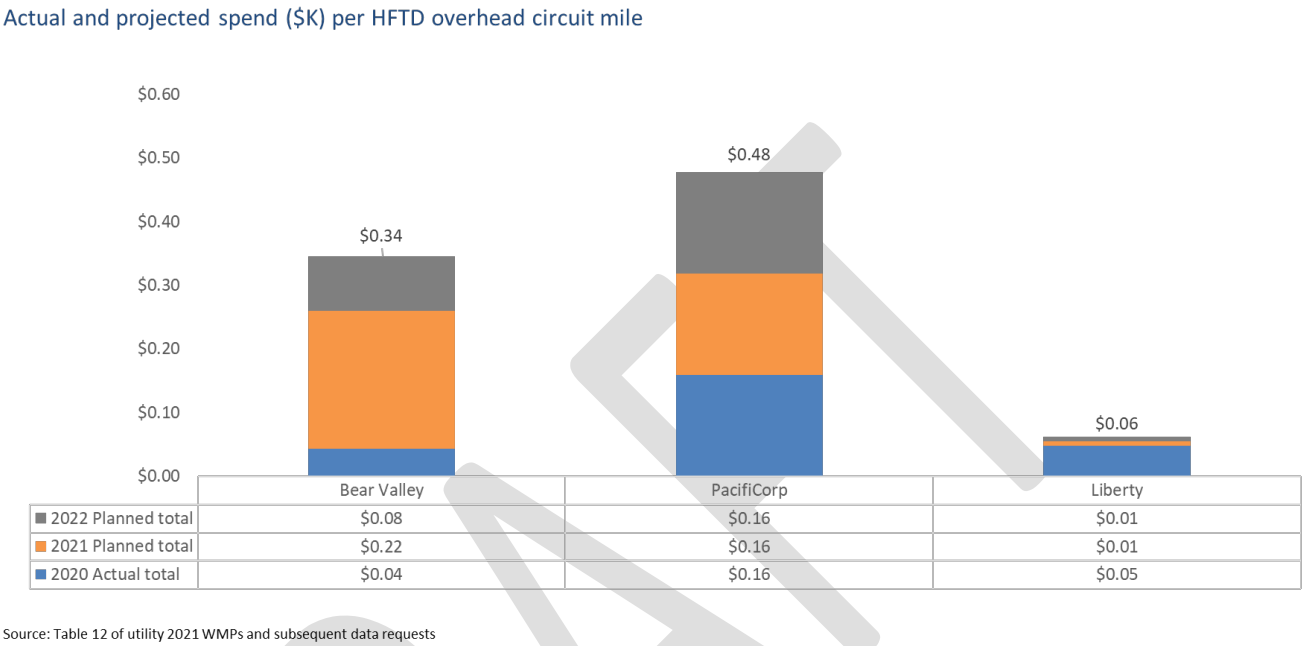
Below are charts used as part of Energy Safety's review of BVES's risk assessment and mapping section:



Source: 2021 Maturity Model survey data

[65] Here "utilities" refers to SDG&E and Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), PacifiCorp, Bear Valley Electric Service, Inc. (BVES), and Liberty Utilities; although this may not be the case every time "utilities" is used through the document

Figure 5.1.a: Risk assessment & mapping maturity score progress, SMJUs and ITOs.



Source: Table 12 of utility 2021 WMPs and subsequent data requests

Figure 5.1.b: Risk assessment & mapping spend per HFTD overhead circuit mile, SMJUs 2020-2022.

5.2 Situational Awareness and Forecasting

Introduction

A strong weather monitoring and situational awareness system is an essential fire prevention/mitigation risk reduction strategy because it effectively alerts a utility's preparation and response to potentially dangerous fire weather conditions that can inform its decisions on PSPS implementation, grid design, and system hardening. It is also one of the most inexpensive strategies.

The situational awareness and forecasting section of the WMP Guidelines[66] 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

[66] WSD-011 Attachment 2.2, 2021 Wildfire Mitigation Plan Guidelines Template, p. 44 (accessed July 15, 2021): https://energysafety.ca.gov/wp-content/uploads/docs/wmp-2021/attachment-2.2-to-wsd-011-2021-wmp-guidelines-template.pdf.

ignitions based on grid and asset conditions, wind, fuel conditions, temperature, and other factors.

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

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

Overview

BVES has made progress in its Situational Awareness and Forecasting and finds this portion of BVES's 2021 WMP Update to be sufficient.

Progress over the past year

Energy Safety finds that BVES has made the following progress:

- BVES has improved its weather station network with installation of eight weather stations in 2020, bringing its total to 18. BVES plans to have 20 weather stations total across its service territory by the end of 2021 to have sufficient coverage and adequate data. BVES seems to have adequate density and distribution of weather stations throughout its service territory compared to peer utilities.
- BVES is planning on expanding its use of High Definition (HD) Cameras in its service territory with the planned installation of two additional HD Cameras in 2021.
- BVES has installed 110 fault indicators throughout its system and intends on deploying an additional 117 by 2022. This effort should reduce the time it takes to locate faults and aid in the early detection of a possible ignition.

BVES has room for improvement in the following areas:

- BVES contracts with a weather consultant and uses the National Fire Danger Rating System (NFDRS) rather than using a Fire Potential Index (FPI). By developing an FPI using weather data, fuel conditions, and vegetation, BVES could provide a more granular estimate of potential risk of a fire ignition and spread at the circuit level.

Key Areas for Improvement and Remedies

Energy Safety finds that BVES must focus on the following areas as significant to reducing utility-related wildfire risk:

Utility-#	Issue title	Issue description	Remedies required
BVES-21-06	Disparities between BVES's situational awareness and forecasting capabilities and maturity model reporting	BVES had a significant increase in its maturity assessment ratings for situational awareness and forecasting in its WMP update. The ratings are much higher in comparison to peer utilities and prior reporting in 2020. It remains unclear if the ratings selected are accurate representations of BVES's maturity, as the explanations in the initiatives do not explain these improvements.	BVES must describe: 1. How it intends to collect and measure physical impacts of weather on its grid, such as sway in lines and sway in vegetation. 2. How it plans to include wind estimations at various atmospheric altitudes relevant to ignition risk. 3. What initiative it has or how it is using ignition detection software. 4. How it plans to accurately forecast weather at least three weeks in advance.

Additional Issues and Remedies

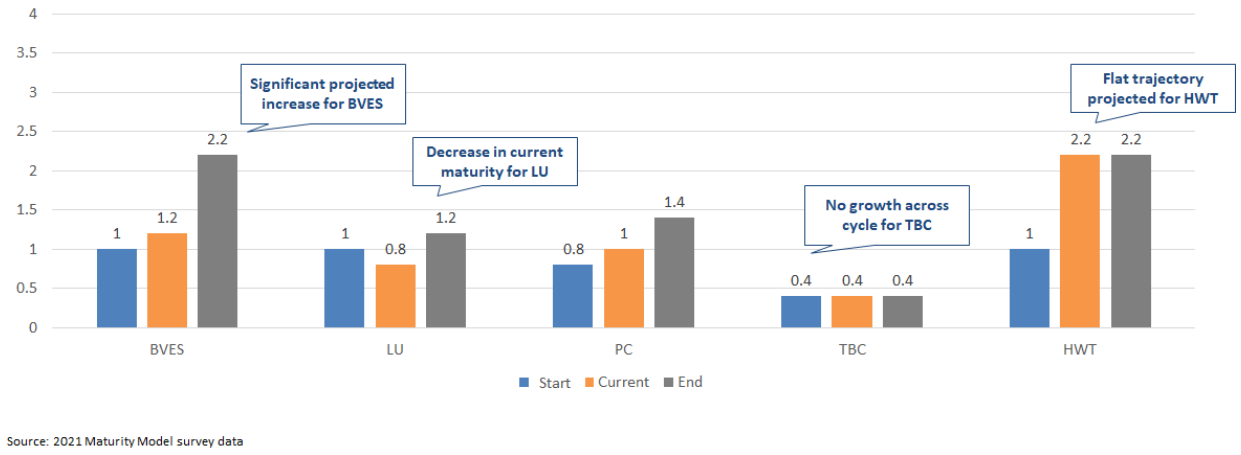
In addition to the key area listed above, Energy Safety finds the following additional issue and associated remedies. Energy Safety expects BVES to take action to address these issues and report on progress made over the year in its 2022 WMP Update.

- ISSUE: BVES continues to discuss the installation of fiber optic communications in its service territory as a foundational investment to enable advanced technologies such as, wire down detection, rapid earth fault current limiter, and diagnostic technologies. However, BVES does not adequately address the conditions outlined by BVES-R5 (Class C). It remains unclear whether BVES is implementing a Down Wire Detection program or is still monitoring commercial development of Down Wire Detection technology.
    - REMEDY: BVES must a) describe whether it currently has a Down Wire Detection Installment Program, b) provide a timeline for development and implementation of this program if it does, c) if it does not, clarify whether BVES intends to develop a Down Wire Detection Installment Program and provide a timeline, and

d) describe how it intends to measure the effectiveness of Down Wire Detection technology.

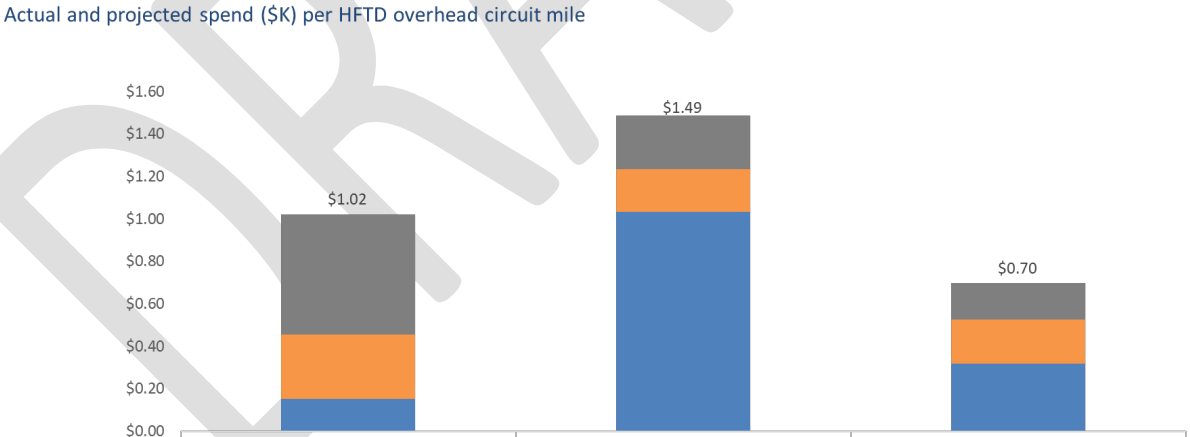
Figures

Below are charts used as part of Energy Safety's review of BVES's situational awareness and forecasting section:



Source: 2021 Maturity Model survey data

Figure 5.2.a: Situational awareness & forecasting maturity score progress, SMJUs and ITOs.



	Bear Valley	PacifiCorp	Liberty
2022 Planned total	$0.56	$0.25	$0.17
2021 Planned total	$0.30	$0.20	$0.21
2020 Actual total	$0.15	$1.03	$0.32

Source: Table 12 of utility 2021 WMPs and subsequent data requests

Figure 5.2.b: Situational awareness & forecasting spend per HFTD overhead circuit mile, SMJUs 2020-2022.

5.3 Grid Design and System Hardening

Introduction

The grid design and system hardening section of the WMP Guidelines[67] 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 causing 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 often cover the most expensive aspects of a WMP, include initiatives such as the installation of covered conductors to replace bare overhead wires, undergrounding of distribution or transmission lines, and pole replacement programs. The utility is required, at a minimum, to discuss grid design and system hardening in each of the following areas:

1. Capacitor maintenance and replacement,
2. Circuit breaker maintenance and installation to de-energize lines upon detecting a fault,
3. Covered conductor installation,
4. Covered conductor maintenance,
5. Crossarm maintenance, repair, and replacement,
6. Distribution pole replacement and reinforcement, including with composite poles,
7. Expulsion fuse replacement,
8. Grid topology improvements to mitigate or reduce PSPS events,
9. Installation of system automation equipment,
10. Maintenance, repair, and replacement of connectors, including hotline clamps,
11. Mitigation of impact on customers and other residents affected during PSPS event,
12. Other corrective action,
13. Pole loading infrastructure hardening and replacement program based on pole loading assessment program,
14. Transformer maintenance and replacement,
15. Transmission tower maintenance and replacement,
16. Undergrounding of electric lines and/or equipment,
17. Updates to grid topology to minimize risk of ignition in HFTDs, and,
18. Other/not listed items if an initiative cannot feasibly be classified within those listed above.

Overview

[67] WSD-011 Attachment 2.2, 2021 Wildfire Mitigation Plan Guidelines Template, p. 44 (accessed July 15, 2021): https://energysafety.ca.gov/wp-content/uploads/docs/wmp-2021/attachment-2.2-to-wsd-011-2021-wmp-guidelines-template.pdf.

BVES has made progress in its Grid Design and System Hardening initiatives. In 2020, BVES performed multiple pilots, such as covered conductor replacement, conductor "wire wrap", and fault detection, and is now in the process of expanding some of those pilots. However, much of BVES's initiatives lacked detail on the scope and prioritization for installation.

Progress over the past year

Energy Safety finds that BVES has made the following progress:

- BVES completed its first and second Covered Conductor Replacement Pilot Program by replacing 2.16 circuit miles by July 31, 2020. BVES considered the pilot successful. From 2020 to 2026, BVES plans to install 4.3 miles per year for 34.5 kV lines, and 8.2 miles per year for 4 kV lines.
- BVES completed a pilot to test "wire wrap"[68] for conductors, but did not find it to be successful at this time due to an ampacity issue. As a result, BVES has not deployed any "wire wrap" in the field, but plans to continue to research "wire wrap" as an alternative as the technology develops.
- BVES identified three specific evacuation routes to include as part of its hardening program, specifically by wire wrapping mesh 800 poles over two years, and intends to complete its pilot program for wire wrapping mesh on poles[69] by the end of 2021.
- BVES plans to replace all 3,114 of its conventional fuses with either an electronic fuse or an ELF current-limiting dropout fuse.[70] By the end of 2020, BVES had replaced 2,001 conventional fuses.
- BVES is piloting Fault Localization Isolation Service Restoration (FLISR) on its 34.5 kV system and is evaluating expansion to its 4 kV distribution system based on circuit configuration.
- In 2021, BVES is establishing siting for locations of batteries that will coincide with BVES's Solar Energy Project (BVSEP). Development is slated to begin July 2022.
- By the end of 2020, BVES removed 493 out of 1,207 tree attachments, and plans to remove the remaining 714 tree attachments by the end of 2026, although the number per year is not provided.
- From 2018 to 2020, BVES evaluated 2,703 poles, 1,155 of which failed inspection criteria, leading to 751 pole replacements and 113 pole remediations.

BVES has room for improvement in the following areas:

[68] BVES 2021 WMP Update Revision – Clean, p. 112.

[69] BVES has two separate pilot programs, one for wire wrapping conductors, and another for wire wrapping poles.

[70] ELF is the name of the fuse being utilized, manufactured by Eaton Cooper Power.

- BVES has no plans for major undergrounding projects at this time. BVES considered undergrounding as an alternative, but deemed it less feasible due to much higher costs and technical challenges.

Key Areas for Improvement and Remedies

Energy Safety finds that BVES must focus on the following areas as significant to reducing utility-related wildfire risk:

Utility-#	Issue title	Issue description	Remedies required
BVES-21-07	Lack of detail on prioritization of initiatives based on determined risk	BVES does not provide any details on the actual prioritization of its grid hardening efforts, despite having determined the highest risk circuits along its system. Instead, BVES relies on the Tier 2 and Tier 3 HFTD designations to justify prioritization. BVES fails to provide the details on how the timing of deployment of its grid hardening efforts mitigate its highest risk areas, and fails to provide a plan that demonstrates it is addressing and mitigating its highest risk areas.	BVES must: 1. Explain how the timing of deployment of its grid hardening efforts are based on its risk calculations and prioritize mitigating its highest risk areas; and 2. Provide a plan that demonstrates that BVES is addressing and mitigating its self-identified highest risk areas through system hardening initiatives.
BVES-21-08	Limited evidence to support the effectiveness of covered conductor	The rationale to support the selection of covered conductor as a preferred initiative to mitigate wildfire risk lacks consistency among the utilities, leading some utilities to potentially expedite covered conductor deployment without first demonstrating a full understanding of its long-term	The utilities[72] must coordinate to develop a consistent approach to evaluating the long- term risk reduction and cost- effectiveness of covered conductor deployment, including: 1. The effectiveness of covered conductor in the field in

[72] Here "utilities" refers to SDG&E and Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), PacifiCorp, Bear Valley Electric Service, Inc. (BVES), and Liberty Utilities; although this may not be the case every time "utilities" is used through the document.

Utility-#	Issue title	Issue description	Remedies required
		risk reduction and cost-effectiveness. The utilities' current covered conductor pilot efforts are limited in scope[71] and therefore fail to provide a full basis for understanding how covered conductor will perform in the field. Additionally, utilities justify covered conductor installation by alluding to reduced PSPS risk but fail to provide adequate comparison to other initiatives' ability to reduce PSPS risk.	comparison to alternative initiatives. 2. How covered conductor installation compares to other initiatives in its potential to reduce PSPS risk.

Additional Issues and Remedies

In addition to the key area listed above, Energy Safety finds the following additional issues and associated remedies. Energy Safety expects BVES to take action to address these issues and report on progress made over the year in its 2022 WMP Update.

- ISSUE: BVES does not currently have a plan to directly address capacitor maintenance, instead relying on current maintenance practices. BVES states that it plans to evaluate capacitors in 2022 as well as a Capital Expenditure (CAPEX) plan in 2023,[73] but fails to provide any details on how that will differ from its current maintenance efforts.
    - REMEDY: BVES must provide its 2022 and 2023 plans for capacitor replacement and maintenance, including details on how such differs from routine maintenance practice.
- ISSUE: BVES states that it "has an ongoing program to assess and remediate noncompliant distribution poles" but does not provide any actual details on what that program consists of, if it differs outside of routine GO 95 and 165 efforts, or how BVES actually plans on targeting "priority pole replacements and remediations."[74]

[71] Limited in terms of mileage installed, time elapsed since initial installation, or both.

[73] BVES 2021 WMP Update Revision – Redlined, p. 110.

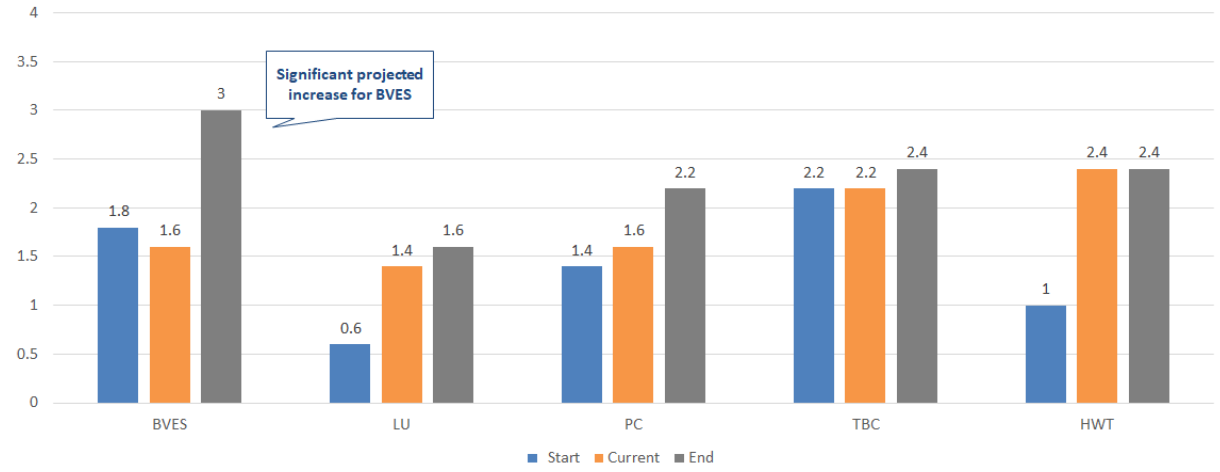
[74] BVES 2021 WMP Update Revision - Redlined, p. 118.

    - REMEDY: BVES must explain its distribution pole replacement and remediation program, including how BVES identifies, targets, and prioritizes the highest-risk poles; and how BVES defines a "priority pole replacement and remediation."[75]
- ISSUE: BVES plans on addressing its remaining conventional fuse replacements when performing other work in order to combine efforts and lower costs. While this could be more cost effective, it is not clear that this option will adequately cover the remaining conventional fuse replacements. Additionally, BVES has not shown that the completed replacements encompass the fuses identified as highest risk.
    - REMEDY: BVES must (a) demonstrate that its future fuse replacement efforts will adequately account for remaining fuses, (b) show that BVES is properly tracking fuse replacements, and (c) demonstrate that the highest risk fuses have either already been replaced or are scheduled to be replaced. If BVES finds that its current plan does not adequately account for remaining fuse replacements, it must develop a plan to properly track and replace fuse replacements moving forward, including enhancing current replacement efforts.
- ISSUE: BVES states that its "current SCADA system is inadequate," and that it has established a Grid Automation Project, but the actual details on what this project entails are rudimentary. Aspects such as Wire Down Detection Relay Installment, Rapid Earth Fault Current Limiter (REFCL), and On-line Diagnostic Technology are not directly being explored and utilized by BVES, but instead holding out to observe the success of the pilots completed by the larger IOUs to determine which technology to move forward with.
    - REMEDY: BVES must (a) provide the details and locations for SCADA implementation by BVES, and (b) explain and update how BVES is monitoring pilot programs being performed by IOUs, including BVES's plan on how and when to decide which technologies to move forward with.
- ISSUE: BVES's does not explain details on how its current operations covers maintenance of hotline clamps.
    - REMEDY: BVES must either (a) show that its current inspection program adequately tracks and maintains hotline clamps, particularly in highest risk areas, or (b) establish a plan to adequately account for hotline clamp maintenance, repairs, and replacements.
- ISSUE: BVES's does not provide details on its future tree attachment removals
    - REMEDY: BVES must (a) provide the estimated planned tree attachment removals by year from 2021 to 2026, and (b) explain how BVES is prioritizing the removals of highest risk tree attachments.

Figures

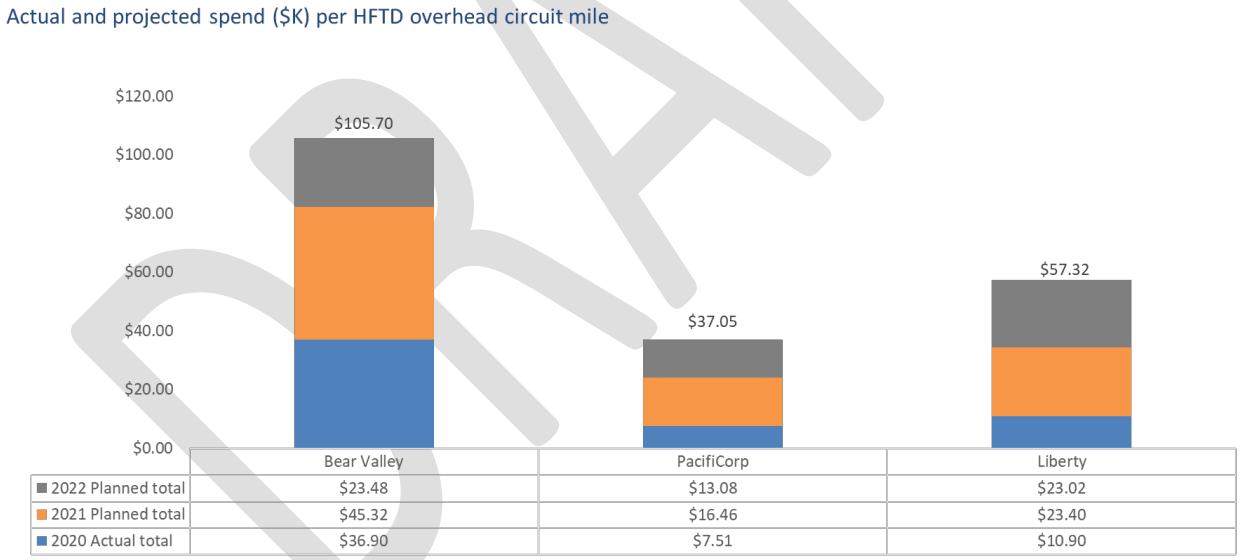
Below are charts used as part of Energy Safety's review of BVES's grid design and system hardening section:

[75] BVES' Redlined 2021 WMP Update, p. 118.



Source: 2021 Maturity Model survey data

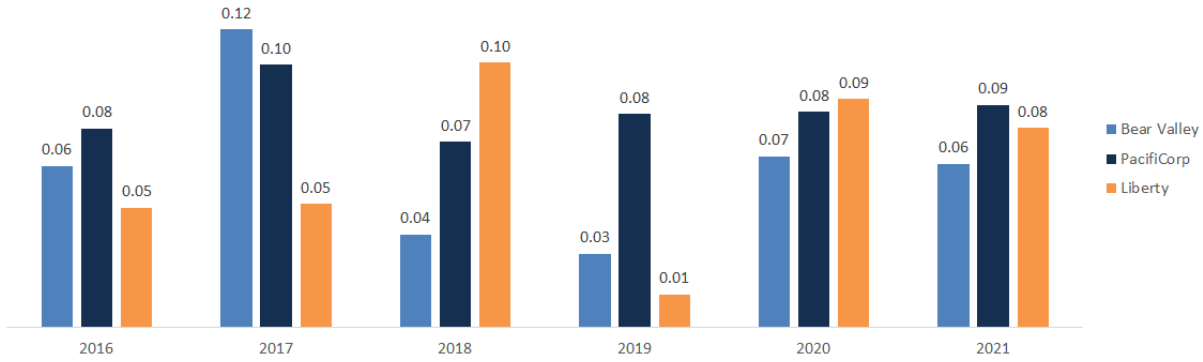
Figure 5.3.a: Grid design & system hardening maturity score progress, SMJUs and ITOs.



	Bear Valley	PacifiCorp	Liberty
2022 Planned total	$23.48	$13.08	$23.02
2021 Planned total	$45.32	$16.46	$23.40
2020 Actual total	$36.90	$7.51	$10.90

Source: Table 12 of utility 2021 WMPs and subsequent data requests

Figure 5.3.a: Grid design & system hardening spend per HFTD overhead circuit mile, SMJUs 2020-2022.



Source: Table 7.1 of utility 2021 WMPs

Figure 5.3.c: Risk events per circuit mile due to equipment/facility failure: SMJUs.

5.4 Asset Management and Inspections

Introduction

The asset management and inspections section of the WMP Guidelines[76] requires the utility to discuss power line/infrastructure inspections for distribution and transmission assets within the HFTD, including infrared, light detection and ranging (LiDAR), substation, patrol, and detailed inspections, designed to minimize the risk of its facilities or equipment causing wildfires. The 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.

Overview

While BVES made minimal improvements to existing inspection programs, BVES has made improvements to augment its routine inspections by conducting infrared inspections on a five - year basis, additional third-party patrols on an annual basis, and conducting LiDAR and thermography scans on an annual basis. BVES is still in the process of developing a formal QA/QC program for its asset inspections.

Progress over the past year

[76] WSD-011 Attachment 2.2, 2021 Wildfire Mitigation Plan Guidelines Template, pp. 44-45 (accessed July 15, 2021): https://energysafety.ca.gov/wp-content/uploads/docs/wmp-2021/attachment-2.2-to-wsd-011-2021-wmp-guidelines-template.pdf.

Energy Safety finds that BVES has made the following progress:

- BVES hired a contractor to perform infrared inspections on BVES's entire overhead system every three years, but after a full survey was completed in 2019, paused the program to later be conducted every five years as the inspections yielded fewer findings than expected.
- BVES performed a LiDAR[77] inspection pilot to analyze clearance effectiveness, and found the pilot to be useful and intends to continue inspections on an annual basis. Moving forward, BVES will evaluate the added benefit of combining UAV[78] high-definition (HD) imagery and thermography efforts as part of its LiDAR inspections. In 2021, BVES is contracting a third-party to perform the UAV flyover inspections and will evaluate whether HD imagery, thermography, and LiDAR data can be coalesced into one platform to both minimize cost and increase efficiency for determining findings.
- A third-party contractor performs an additional patrol on BVES's entire overhead system, so that two GO 165 patrols are performed annually, which was made a permanent annual program after 2020 based on positive results from 2019 and 2020.

Key Areas for Improvement and Remedies

Energy Safety finds that BVES must focus on the following areas as significant to reducing utility-related wildfire risk:

Utility-#	Issue title	Issue description	Remedies required
BVES-21-09	Lack of asset inspection quality assurance and quality control (QA/QC) program.	BVES is in the process of adopting a formal QA/QC program in 2021 but did not provide dates on when it intends to implement such, did not provide details on its current informal QA/QC process, nor provide details on the scope of the QA/QC program currently in development.	BVES must: 1. Provide a timeline for its implementation of a formal QA/QC process. 2. Explain how it conducts quality checks of its asset inspections prior to the adoption of the formal program. 3. Develop an interim QA/QC procedure for asset inspections between now and the establishment of its new QA/QC program, if such has

[77] Light Detection and Ranging

[78] Unmanned Ariel Vehicle

Utility-#	Issue title	Issue description	Remedies required
			yet to be adopted, in order to ensure that work is being completed accurately and effectively. 4. Provide updates on the development of its QA/QC program in its Progress Report, including: (i) the scope of the QA/QC program, (ii) procedures of the QA/QC program that BVES has developed, and (iii) the status of the QA/QC program implementation.

Additional Issues and Remedies

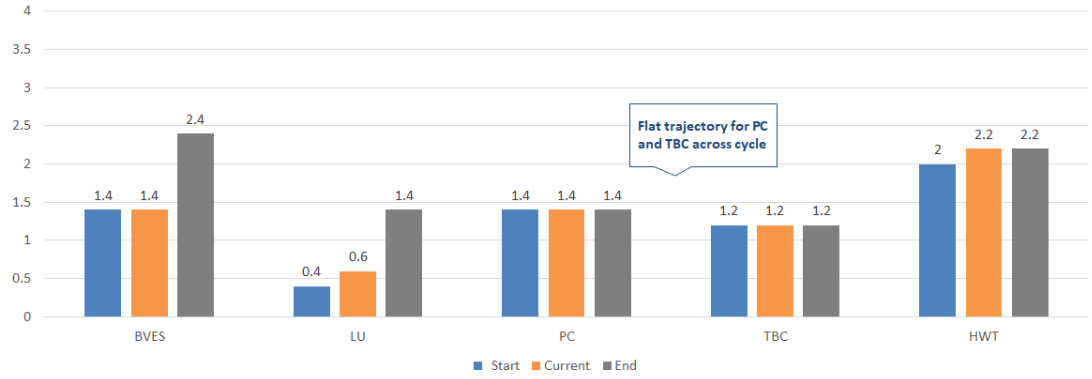
In addition to the key areas listed above, Energy Safety finds the following additional issues and associated remedies. Energy Safety expects BVES to take action to address these issues and report on progress made over the year in its 2022 WMP Update.

- ISSUE: BVES does not currently tailor its detailed inspections to specifically target wildfire risk, instead relying on its existing GO 165 five-year inspections. BVES also has no plans to modify, monitor, nor audit the existing inspection program, although vaguely references that it "applies annual lessons learned or identified improvements and tracks developing inspection practices in the industry."[79] BVES does not explain how it goes about these improvements, and does not provide any examples.
    - REMEDY: BVES must (a) evaluate its current detailed inspection program to determine the effectiveness it has in monitoring equipment and situations specific to wildfire risk, (b) provide details on how it tracks annual lessons and industry-based improvements to its detailed inspections, including any improvements made in 2020 and 2021, and (c) augments its current detailed inspection program to specifically target assets and areas known to have higher wildfire risk.

Figures

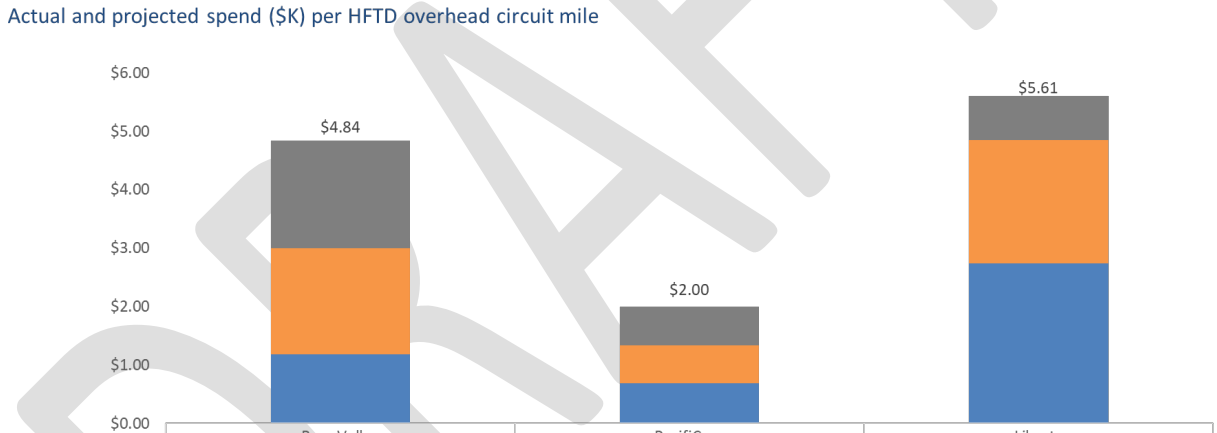
[79] BVES 2021 WMP Update Revision – Redlined, p. 137.

Below are charts used as part of Energy Safety's review of BVES's asset management and inspections section:



Source: 2021 Maturity Model survey data

Figure 5.4.a: Asset management & inspections maturity score progress, SMJUs and ITOs.



	Bear Valley	PacifiCorp	Liberty
2022 Planned total	$1.85	$0.66	$0.76
2021 Planned total	$1.82	$0.65	$2.12
2020 Actual total	$1.18	$0.69	$2.73

Source: Table 12 of utility 2021 WMPs and subsequent data requests

Figure 5.4.a: Asset management & inspections spend per HFTD overhead circuit mile, SMJUs 2020-2022.

5.5 Vegetation Management and Inspections

Introduction

This section of the WMP Guidelines[80] requires utilities to discuss vegetation management inspections, including inspections that go beyond existing regulation, as well as infrared, light detection and ranging (LiDAR), and patrol inspections of vegetation around distribution and transmission lines/equipment, quality control of those inspections, and limitations on the availability of workers. The utility must also 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 (erosion, flooding, etc.).

Overview

BVES has historically relied exclusively on a single contractor to conduct its vegetation management (VM) program. With the hiring of full-time contracted utility forester, BVES is better integrating VM into its internal operations. As BVES looks to matures it VM program, Energy Safety encourages BVES collaborate with other California electric utilities to inform best management practices particularly regarding clearance distance, data collection, and the use of LiDAR or other remote sensing inspection technologies.

Progress over the past year

Energy Safety finds that BVES has made the following progress:

- BVES has contracted a full-time utility forester whose "duties include inspections, auditing, customer contact and issue resolution, work plan development, specialized projects, contractor safety observations, and vegetation management program documentation and data analysis. The Forester is expected to be onsite as of April 2021."[81]
- BVES is performing LiDAR inspections once per year and has determined that "truck-mounted mobile LiDAR will be utilized more often because it is more cost-effective."[82]
- BVES will use LiDAR, third party ground patrol, and UAV HD imagery surveys to improve and "cross check" the effectiveness of its ground patrol techniques.[83]
- BVES continues to make improvements to its GIS capabilities "supporting data collection and mapping associated with the WMP."[84]

[80] WSD-011 Attachment 2.2, 2021 Wildfire Mitigation Plan Guidelines Template, p. 45 (accessed July 15, 2021): https://energysafety.ca.gov/wp-content/uploads/docs/wmp-2021/attachment-2.2-to-wsd-011-2021-wmp-guidelines-template.pdf.

[81] BVES 2021 WMP Update Revision – Clean, p. 159.

[82] BVES 2021 WMP Update Revision – Clean, p. 155.

[83] BVES 2021 WMP Update Revision – Clean, p. 158.

[84] BVES 2021 WMP Update Revision – Clean, p. 164.

BVES has room for improvement in the following areas:

- BVES's discussion in the repeated subsection "4) Progress on Initiative" is limited to the expenditure on the initiative; no substantive details are given.
- BVES provides no details other than expenditure in Section 7.3.5.6: Improvement of inspections and 7.3.5.13: Quality assurance / quality control of vegetation inspections.
- In Section 7.3.5.1, BVES does not discuss how it communicates with the community regarding VM, nor does it discuss environmental permitting strategies.
- In Section 7.3.5.4, Emergency response vegetation management due to red flag warning or other urgent conditions, BVES self-defines this initiative as "Operational Protocols for High Risk Conditions" but does not go on to explain what those protocols are; instead, BVES simply alludes to adhering to federal and state laws and that fact that it "may result in an adjustment to scheduled inspection activities."[85]
- BVES often states "no comparative alternative exists"[86] or "there are no applicable alternatives"[87] but that is not necessarily true. For example, for LiDAR, an alternative could be another remote sensing technology or the choice between ground and ariel-based LiDAR. Additionally, another alternative is to not perform the initiative i.e., do nothing.

Key Areas for Improvement and Remedies

Energy Safety finds that BVES must focus on the following areas as significant to reducing utility-related wildfire risk:

Utility-#	Issue title	Issue description	Remedies required
BVES-21-10	Limited discussion of community outreach	BVES-R7 requires BVES to discuss its community engagement and outreach as it relates to VM in Section 7.3.5.1. BVES instead discusses fuels management activities performed by other entities including Big Bear Fire Department and Bear Valley Community Service District.[88] BVES mentions outreach efforts to "USFS, CAL FIRE and Big Bear	BVES must: 1. Provide descriptions of notification and communication methods for customers and partner agencies regarding VM activities including, but not limited to, tree-trimming and tree removal. 2. Detail any efforts in community outreach and

[85] BVES 2021 WMP Update Revision – Clean, p. 152.

[86] BVES 2021 WMP Update Revision – Clean, p. 155, 162, and 163.

[87] BVES 2021 WMP Update Revision – Clean, p. 153, 160, and 161.

[88] BVES 2021 WMP Update Revision – Clean, p. 149.

Utility-#	Issue title	Issue description	Remedies required
		Fire Department in an effort to develop collaborative measures in the area of fuels management," but fails to discuss how it mitigates the community impacts of major VM activities including tree-trimming and tree removal.	public education related to vegetation management.
BVES-21-11	Inadequate discussion of quality assurance / quality control (QA/QC) of VM inspections	From the discussion in Section 7.3.5.13, it is difficult to know whether BVES has a QA/QC program for VM. A brief mention of third-party evaluations is the only unequivocal detail. It is unclear whom at BVES performs QA/QC, how often QA/QC is performed, and what goals and targets exist for QA/QC.	BVES must: 1. Describe the "lessons learned from third party evaluations and inspections."[89] 2. Provide the number of QA/QC evaluation and inspections completed each year. 3. Provide a QA/QC audit target as a percentage of total VM inspections per year. 4. Detail BVES's differentiation between its quality assurance program and quality control program. 5. Report on BVES's plan to add a QA program to the current QC program.[90]

Additional Issues and Remedies

In addition to the key areas listed above, Energy Safety finds the following additional issues and associated remedies. Energy Safety expects BVES to take action to address these issues and report on progress made over the year in its 2022 WMP Update.

- ISSUE: BVES uses the term "Enhanced Vegetation Management" (EVM) to describe numerous aspects of its VM program: fuel reduction,[91] "collaborative measures with the

[89] BVES 2021 WMP Update Revision – Clean, p. 159.

[90] BVES 2021 WMP Update Revision – Clean, p. 159.

[91] BVES 2021 WMP Update Revision – Clean, p. 46 and p. 158.

USFS,"[92] "off-schedule" risk-based inspections and VM activities,[93] the contracting of a full-time utility forester,[94] at-risk species remediation,[95] strike potential tree removal,[96] its vegetation inventory system,[97] and equipment clearances.[98]
    - REMEDY: BVES must use the term "EVM" more deliberately and align its definition of EVM with its peer utilities.
- ISSUE: In Section 7.3.5.20, BVES states that it "currently does not remove trees on hillsides."[99] As such, Energy Safety is concerned that BVES is not meeting the requirements of General Order (GO) 95, Rule 35 particularly regarding the removal of "dead, rotten or diseased trees… [that] may fall into a span of supply or communication lines."
    - REMEDY: BVES must clarify how it is meeting the requirements of GO 95, Rule 35 while choosing to not remove trees on hillsides.
- ISSUE: Condition BVES-R2 requires BVES to "provide detailed information on its fuels management and slash reduction practices."[100] Instead of describing its own fuels management practices, BVES instead discusses fuels management activities performed by other entities including Big Bear Fire Department and Bear Valley Community Service District.[101] While it is laudable that the Big Bear Valley Community as a whole is addressing fuels management issue, Energy Safety expects BVES to detail its own fuels management activities and how it has contributed to the community fuels management activities it describes. BVES states that fuels management activities are required "by GOs and applicable standards."[102] General Orders (GOs) do not mention fuels and "slash" management; instead, these standards are outlined by the Board of Forestry's Forest Practice Rules and Public Resources Code 4293; as such, Energy Safety is concerned that BVES is not implementing "applicable standards."
    - REMEDY: In Section 7.3.5.5, BVES must provide detailed information on its fuels management and slash reduction practices including methods used and destination of downed woody debris (e.g., biomass energy facility, landfill, etc.).
    - REMEDY: In Section 7.3.5.5, BVES must provide the number of poles it cleared in 2021 in accordance with Public Resources Code 4293.

[92] BVES 2021 WMP Update Revision – Clean, p. 88.
[93] BVES 2021 WMP Update Revision – Clean, p. 156.
[94] BVES 2021 WMP Update Revision – Clean, p. 159.
[95] BVES 2021 WMP Update Revision – Clean, p. 160.
[96] BVES 2021 WMP Update Revision – Clean, p. 161.
[97] BVES 2021 WMP Update Revision – Clean, p. 163.
[98] BVES 2021 WMP Update Revision – Clean, p. 164.
[99] BVES 2021 WMP Update Revision – Clean, p. 166.
[100] Resolution WSD-013, Appendix A, p. A6.
[101] BVES 2021 WMP Update Revision – Clean, p. 149.
[102] BVES 2021 WMP Update Revision – Clean, p. 153.

- ISSUE: BVES-R7 requires BVES to discuss its system for tracking the compliance status of trees. Energy Safety acknowledges that BVES is still developing GIS and data tracking capabilities; BVES even states that vegetation management activities "will be tracked in BVES's tree tracking program."[103] However, BVES does not demonstrate progress towards developing and implementing a tree tracking program and instead uses equivocating language stating, in regards to a vegetation inventory system, "BVES plans to integrate the contracted forester services into BVES vegetation management operations in the next year."[104]
    - REMEDY: BVES must detail its plan to develop and implement its tree tracking program.
    - REMEDY: BVES must, in accordance with the conditions of BVES-R2, demonstrate how it *currently* tracks its trees or groups of trees to ensure they are treated according to an appropriate schedule and appropriate specifications that ensure they do not pose a risk of wildfire, and whether this tracking documents the condition of trees to ensure they are maintained in proper condition over time.

Figures

Below are charts used as part of Energy Safety's review of BVES's vegetation management and inspections section:

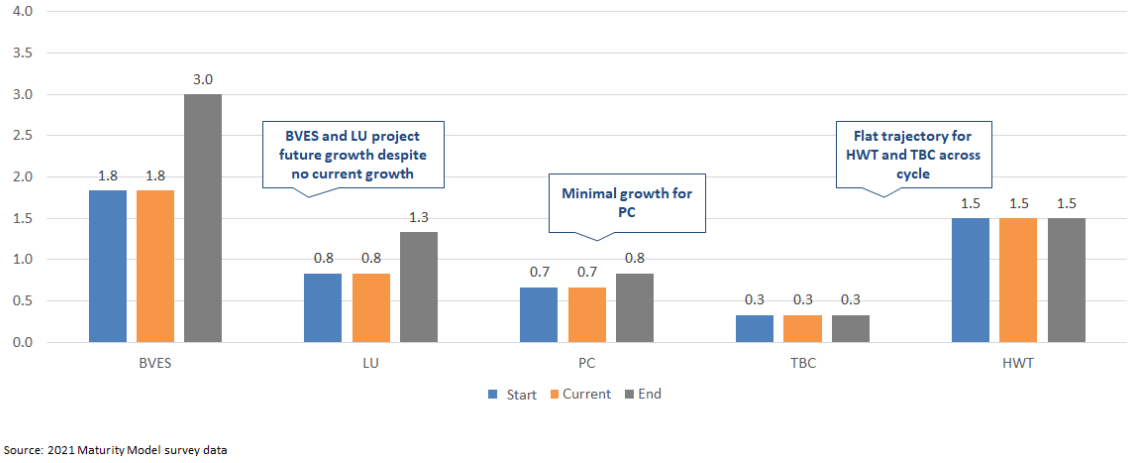


Figure 5.5.a: Vegetation management & inspections maturity score progress, SMJUs and ITOs.

[103] BVES 2021 WMP Update Revision – Clean, p.166.

[104] BVES 2021 WMP Update Revision – Clean, p.164.

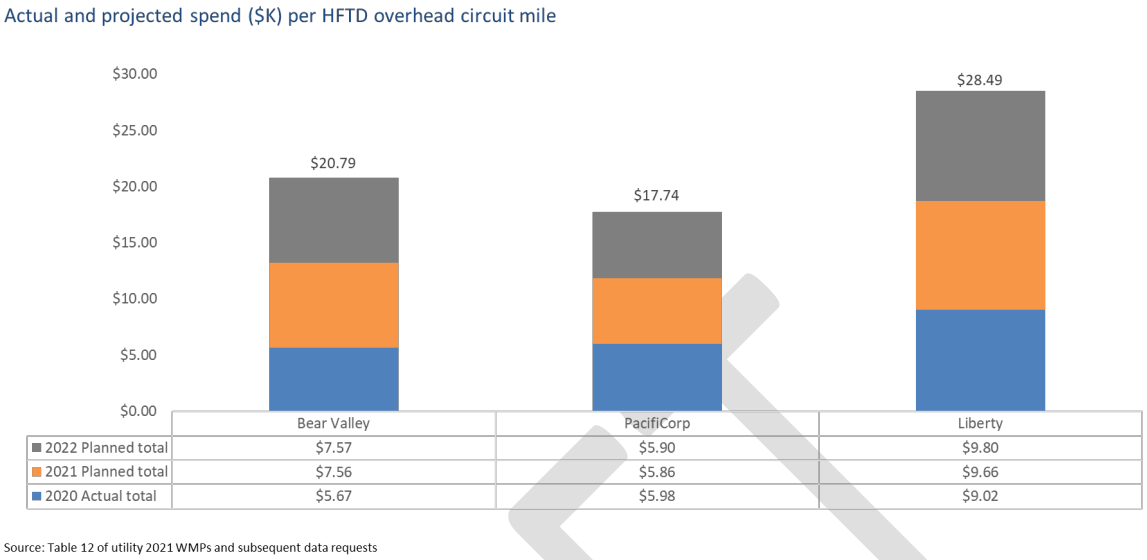


Figure 5.5.a: Vegetation management & inspections spend per HFTD overhead circuit mile, SMJUs 2020-2022.

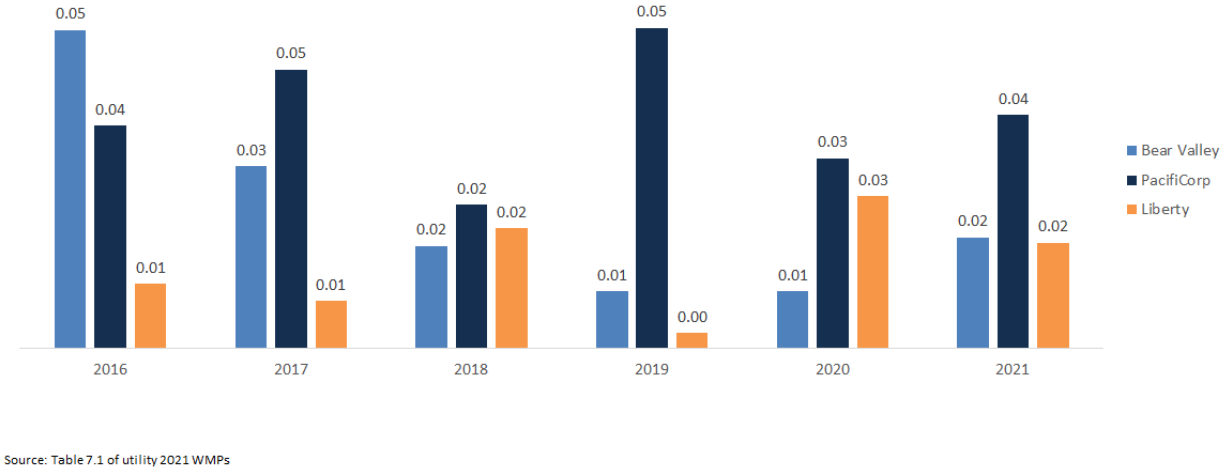


Figure 5.5.c: Risk events per circuit mile due to vegetation contact: SMJUs.

5.6 Grid Operations and Operating Protocols, Including PSPS

Introduction

The grid operations and operating protocols section of the WMP Guidelines[105] requires discussion of ways the utility operates its system to reduce wildfire risk. For example, disabling

[105] WSD-011 Attachment 2.2, 2021 Wildfire Mitigation Plan Guidelines Template, p. 45 (accessed July 15, 2021):
Footnote continued on next page.

the reclosing function of automatic reclosers[106] during periods of high fire danger (e.g., during Red Flag Warning conditions) can reduce utility ignition potential by minimizing the duration and amount of energy released when there is a fault. This section also requires discussion of work procedures in elevated fire risk conditions and protocols to reduce the frequency and scope of de-energization including PSPS events (e.g., through sectionalization, etc.). This section also requires the utility to report whether it has stationed and/or on-call ignition prevention and suppression resources and services.

Overview

BVES has made progress in its Grid Operations and Operating Protocol initiatives by accounting for recloser settings tailored to the wildfire season, as well as developing teams specific to wildfire protection and emergency response. However, BVES lacks progress in PSPS initiatives.

Progress over the past year

Energy Safety finds that BVES has made the following progress:

- In order to optimize safety reliability during colder temperatures, BVES has determined that from November 1 to March 31 reclosers will continue to be set on automatic. From April 1 to October 31, BVES sets TripSaver fuses to not reclose, adjusts Auto-Reclosers settings to summer load, and de-energizes its Radford 34.5 kV line. BVES also monitors and enacts decisions based on NFDRS fire danger forecasts, including performing patrols after outages in elevated fire-threat conditions.
- BVES has established a Wildfire Infrastructure Protection Team (WIPT) which coincides with BVES's Emergency Response Team (ERT). These teams oversee any reports of instances that could lead to wildfire

BVES has room for improvement in the following areas:

- BVES does not provide actual protocols in place to reduce scope, frequency, and duration of PSPS, and also fails to outline which of its high-risk circuits are subject to PSPS. This issue is handled by BVES-21-13 in Section 6 below.
- BVES relies on existing suppression services such as CAL FIRE and local fire departments, as it has determined that contracting firefighting support has not provided effective

https://energysafety.ca.gov/wp-content/uploads/docs/wmp-2021/attachment-2.2-to-wsd-011-2021-wmp-guidelines-template.pdf.

[106] 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.

benefit at this time, particularly since BVES has not had a recent "reportable wildfire".[107]

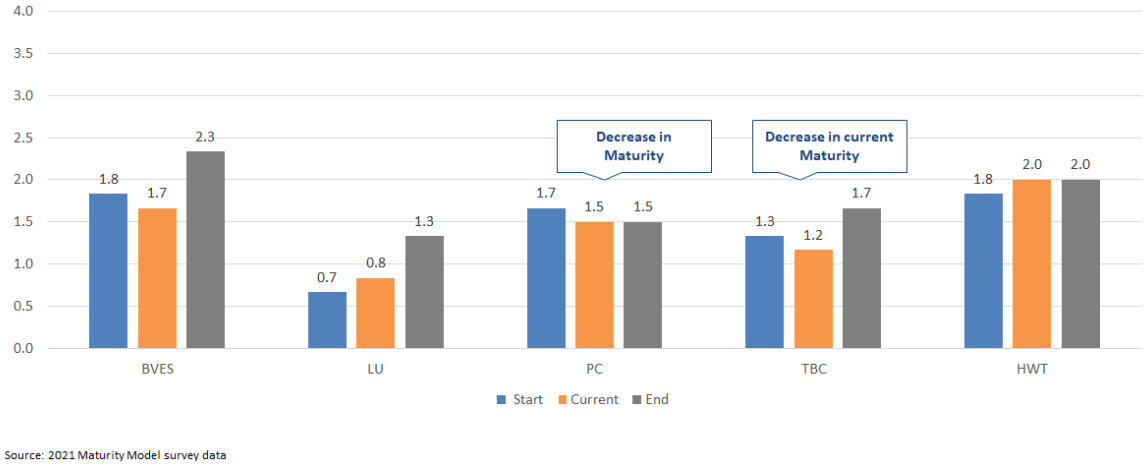
Issues and Remedies

While Energy Safety did not identify key areas for improvement in this competency, Energy Safety finds the following issue and associated remedies. Energy Safety expects BVES to take action to address these issues and report on progress made over the year in its 2022 WMP Update.

- ISSUE: BVES does not have specific crew designated for ignition prevention and suppression, instead relying on de-energizing work, and maintaining the ability to contract work out if deemed necessary. BVES did not provide details on the thresholds used to determine when ignition prevention and suppression work would be contracted.
    - REMEDY: BVES must provide details on the thresholds used to determine whether or not additional resources would be contracted for a project specific to ignition prevention and fire suppression.

Figures

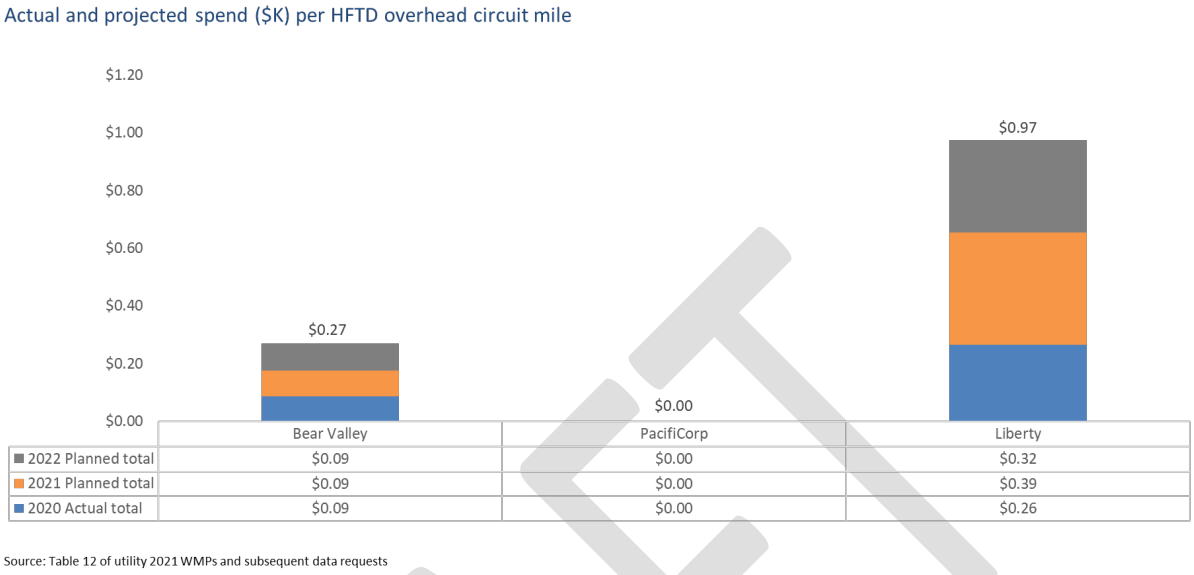
Below are charts used as part of Energy Safety's review of BVES's grid operations and operating protocols section:



Source: 2021 Maturity Model survey data

Figure 5.6.a: Grid operations & protocols maturity score progress, SMJUs and ITOs.

[107] BVES 2021 WMP Update Revision - Redlined, p. 172.



Source: Table 12 of utility 2021 WMPs and subsequent data requests

Figure 5.6.a: Grid operations & protocols spend per HFTD overhead circuit mile, SMJUs 2020-2022.

5.7 Data Governance

Introduction

The data governance section of the WMP Guidelines[108] require information on the utility's initiatives to create a centralized wildfire-related data repository, conduct collaborative research on utility ignition and wildfire, document and share wildfire-related data and algorithms, and track and analyze near-miss data. In addition, this section discusses the quality and completeness of Quarterly Data Reports (QDR), consisting of spatial and non-spatial data submitted as required by condition Guidance-10 in resolution WSD-002. Initial submissions of data were received in September 2020, and QA/QC reports were issued for the spatial data component of those submissions in December 2020. Since those initial QA/QC reports, Energy Safety has received two more QDRs in December 2020 and in February or March 2021 (submitted with the utility's 2021 WMP Update). The spatial data are subject to Energy Safety GIS Data Reporting Standard (GIS Standard), the first version of which was published by Energy Safety on August 21, 2020, and which was updated on February 4, 2021.[109] The analysis of

[108] WSD-011 Attachment 2.2, 2021 Wildfire Mitigation Plan Guidelines Template, p. 45 (accessed July 15, 2021): https://energysafety.ca.gov/wp-content/uploads/docs/wmp-2021/attachment-2.2-to-wsd-011-2021-wmp-guidelines-template.pdfv.

[109] The most recent version of Energy Safety GIS Standard is available at: https://energysafety.ca.gov/wp-content/uploads/docs/wmp-2021/wsd-gis-data-reporting-standard-v2.pdf.

spatial data in this section focuses on specific areas where the data SDG&E submitted with its 2021 WMP Update do not meet the GIS Standard.

Overview

BVES reports making progress on developing its GIS data capabilities, commensurate with increases in actual and planned spend.[110] Energy Safety has identified numerous areas for improvement for BVES's WMP data submissions, as detailed below.

Progress over the past year

Energy Safety finds that BVES has made the following progress:

- BVES made significant progress over previous quarters in providing some of the spatial data required (BVES submitted no data for Q3, and only eight datasets for Q2; for Q4, BVES submitted at least some data in 17 datasets).

BVES has room for improvement in the following area:

- Several fundamental issues were found in BVES's Q4 2020 data which negatively affect the usability of the data and do not meet Energy Safety's standards. Many of the issues indicate a lack of internal quality control review of data which may have been converted from other formats or systems. Some of the more significant problems are listed in the next section.

Key Areas for Improvement and Remedies

Energy Safety finds that BVES must focus on the following areas as significant to reducing utility-related wildfire risk:

Utility-#	Issue title	Issue description	Remedies required
BVES-21-12	Spatial data issues	Energy Safety has identified numerous areas for improvement for BVES's Quarterly Data Reports. These issues negatively affect the usability of the data and do not	See Table 3 for specific remedies related to each data issue. In the November 1, 2021 report, BVES must report on its progress in advancing its GIS capabilities.

[110] BVES 2021 WMP Update Revision – Clean, Table 3.1-2: Summary of WMP Expenditures by Category, pp. 16-17.

Utility-#	Issue title	Issue description	Remedies required
		meet Energy Safety GIS Standard. Energy Safety has specified these issues in Table 3 of this Action Statement.	

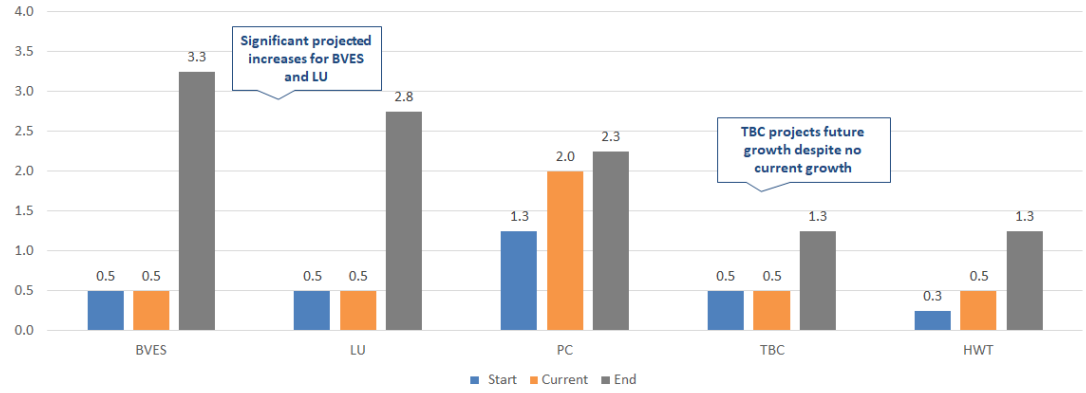
Table 3: Specific Issues & Remedies for Key Issue BVES-21-12: Data Issues.

Data issue title	Data issue description	Data remedies required
Empty/null geometry	Of 37 records submitted in the "Red Flag Warning Day" feature, 36 have no geometry. The single record with a polygon associated with it has no attributes.	BVES must follow Energy Safety GIS Data Reporting Standard, including items that require a geometry.
OH and UG conductors separated	Overhead and underground asset line (conductor) data were reported separately, which is not necessary and does not meet the data standard.	Underground and overhead assets comprising the same portion of a utility's infrastructure (transmission / primary distribution / secondary distribution) are to be submitted in a single feature class, and the field "Asset OH or UG" used to describe the location of each asset.
Non-unique primary keys	Primary keys were not unique. Primary key / unique ID fields are fundamental, and data submitted without a unique primary key is not useable.	Each record submitted must have a primary key; each primary key must be unique.
Missing foreign keys	The records in the "VM Outages" feature class submitted did not have any values in the "DoutageID" field, which is the foreign key to the Distribution Outage feature.	Foreign keys must be submitted where specified in the data standard.
Domain values not used	In several cases, BVES submitted data which did not conform to the domains specified. One example of this is the "Asset OH or UG" field in the Transformer feature class.	BVES must use coded-value domains where specified in the data standard.

Data issue title	Data issue description	Data remedies required
Changed field names	BVES submitted data which did not conform to the specifications in many cases. Fields/feature classes listed below do not match the specified names: "Substation" in Primary Distribution Line "DvmOutageI", "Inspection", "Assoc", "Assoc1", "TreeSpecie", "TreeD", "VmOutgDe", "Location", "Y_Coord", and "X_Coord" in VM Outages "Y2_COORD" and "X2_COORD" in Critical Facility	BVES must use feature class and field names specified in the data standard.
Removed fields	The data BVES submitted is missing the following fields specified in the data standard: "CircuitName", "SubstationID", and "Conductor Type" in Primary Distribution Line (OH) "CircuitName" and "SubstationName" in Primary Distribution Line (UG) "Basic Object Cause Comment" in Distribution Outage	BVES must not remove fields from the geodatabase template.
Changed field type or length	BVES submitted data which did not conform to the specifications in many cases. Fields/feature classes listed below were not of the correct type, or were longer than specified: "Outage Description", Damaged Device Comment", "MED", and "Expulsion Fuse Operation" in Distribution Outage Every string type field in VM Outage feature (11 fields) "Red flag warning issue date" and "Fire Weather ZoneName" in Red Flag Warning Day	BVES must not modify the length or data type of fields.

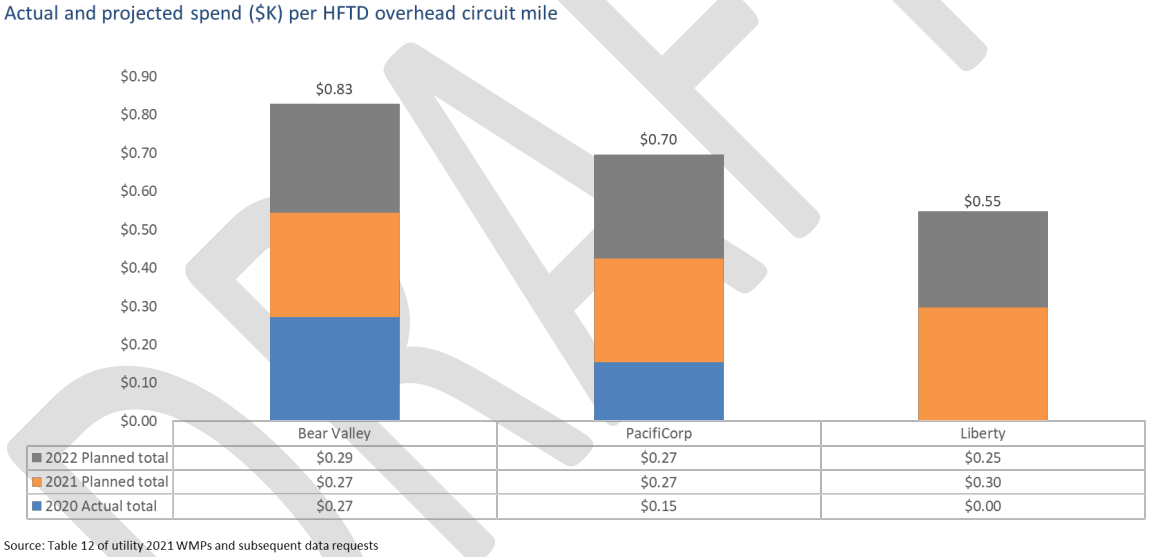
Figures

Below are charts used as part of Energy Safety's review of BVES's data governance section:



Source: 2021 Maturity Model survey data

Figure 5.7.a: Data governance maturity score progress, SMJUs and ITOs.



	Bear Valley	PacifiCorp	Liberty
2022 Planned total	$0.29	$0.27	$0.25
2021 Planned total	$0.27	$0.27	$0.30
2020 Actual total	$0.27	$0.15	$0.00

Source: Table 12 of utility 2021 WMPs and subsequent data requests

Figure 5.7.a: Data governance spend per HFTD overhead circuit mile, SMJUs 2020-2022.

5.8 Resource Allocation Methodology

Introduction

The resource allocation methodology section of the WMP Guidelines[111] requires the utility to describe its methodology for prioritizing programs by cost-efficiency. This section requires

[111] WSD-011 Attachment 2.2, 2021 Wildfire Mitigation Plan Guidelines Template, p. 45 (accessed July 15, 2021): https://energysafety.ca.gov/wp-content/uploads/docs/wmp-2021/attachment-2.2-to-wsd-011-2021-wmp-guidelines-template.pdf.

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

Overview

Since the 2020 WMP, BVES has made some progress in its risk-based decision-making capabilities by providing more RSE estimates for wildfire and PSPS mitigation initiatives and outlining its Risk-Based Decision-Making Framework.[112] Even with the recent developments, it is still unclear why some RSE estimates are different from last year and how exactly RSE estimates impact decision-making compared to other decision-making factors. BVES must continue to improve its risk-based decision-making capabilities by addressing the remedies set-forth in this section and report any updates to its Resource Allocation Methodology in its future WMP filings. Energy Safety acknowledges that BVES has made progress in Resource Allocation Methodology and finds this portion of BVES's 2021 WMP Update to be sufficient.

Progress over the past year

Energy Safety finds that BVES has made the following progress:

- BVES reported ten additional RSE estimates for wildfire mitigation initiatives.
- BVES reported two additional RSE estimates for PSPS mitigation initiatives.
- BVES started the development of an ignition risk model, with a consultant, to assist with mitigation initiative selection and deployment at a circuit level.[113]

BVES has room for improvement in the following areas:

- Compared to its 2020 WMP, BVES reported different RSE estimates for six wildfire mitigation initiatives and four PSPS mitigation initiatives without providing adequate justification. Table 4 and Table 5 below lists the mitigation initiatives that have different RSE estimates. BVES must fully justify the change in RSE estimates for the initiatives below by providing all relevant supporting documents and workpapers.

Table 4: Changes in RSE Estimates for Wildfire Mitigation Initiatives.

Wildfire Mitigation Initiatives	2021 RSE[114]	2020 RSE[115]	RSE Difference
Increased Vegetation Management	0.35	0.27	(+) 29.63%
Covered Wire Installation Program (34.5 kV)	0.40	0.48	(-) 16.67%
Evacuation Route Hardening	2.69	0.60	(+) 348.33%

[112] BVES 2021 WMP Update, p. 19.

[113] BVES' 2021 WMP Update, p. 19

[114] Figure 3: Risk Reduction and Efficiencies of Mitigation Initiatives, BVES 2021 WMP Update, p. 21

[115] Figure 4-4. Risk Reduction and Efficiencies of Mitigation Initiatives, BVES 2020 WMP Update, p. 86

Automatic Recloser Upgrades	3.84	3.72	(+) 3.23%
Install Grid Automation	1.18	0.59	(+) 100.00%
Situational Awareness Enhancement Project	2.51	3.34	(-) 24.85%

Table 5: Changes in RSE Estimates for PSPS Mitigation Initiatives.

PSPS Mitigation Initiatives	2021 RSE[116]	2020 RSE[117]	RSE Difference
Rebuild Radford Line	0.46	0.50	(-) 8.00%
Install Grid Automation	2.68	1.34	(+) 100.00%
Situational Awareness Enhancement Project	5.26	7.01	(-) 24.96%
Construct Energy Storage Facility	0.20	0.29	(-) 31.03%

Key Areas for Improvement and Remedies

Energy Safety finds that BVES must focus on the following areas as significant to reducing utility-related wildfire risk:

Utility-#	Issue title	Issue description	Remedies required
BVES-21-13	Unexplained changes to RSE estimates for wildfire and PSPS mitigation initiatives	In its 2021 Revised WMP Update, BVES reported six different RSE estimates for wildfire mitigation initiatives and four different RSE estimates for PSPS mitigation initiatives compared to its 2020 WMP without explanation. Refer to Table 4 and Table 5 for specific initiatives and RSE estimates.	BVES must provide all supporting documents and workpapers to justify the changes in RSE estimates outlined in Table 4 and Table 5 of this Action Statement.

Additional Issues and Remedies

In addition to the key areas listed above, Energy Safety finds the following additional issue/issues and associated remedy/remedies. Energy Safety expects BVES to take action to address these issues and report on progress made over the year in its 2022 WMP Update.

- ISSUE: For many initiatives in Table 12 of its 2021 WMP Update, BVES states, "BVES has RSE calculations for its entire service territory, which is primarily Tier 2, some Tier 3 and

[116] Figure 4: Risk Spend Ratio / Risk Reduction for PSPS Mitigations, BVES 2021 WMP Update, p. 22

[117] Figure 4-5. Risk Spend Ratio / Risk Reduction for PSPS Mitigations, BVES 2020 WMP Update, p. 87

no non-HFTD or Zone 1 areas. BVES will enhance its methodology to account for distinct RSE values for Tier 2 and Tier 3 in the future." BVES must eliminate the usage of equivocating language, such as "*in the future*", to make quantifiable, verifiable, and measurable commitments with respect to RSE improvements.

  - REMEDY: BVES must provide quantifiable, verifiable, and measurable commitments to produce distinct RSE estimates for Tier 2 and Tier 3 HFTD in its 2022 WMP Update.

- ISSUE: For Capability 41c of the 2021 Maturity Survey, BVES selected "RSE estimates are verified by historical or experimental pilot data"[118] for 2021 and "RSE estimates are verified by historical or experimental pilot data and confirmed by independent experts or other utilities in CA"[119] for 2023. However, BVES does not provide details in its 2021 WMP Update regarding the verification of RSE estimates
  - REMEDY: BVES must provide all supporting data for the verification of RSE estimates.

Figures

Below are charts used as part of Energy Safety's review of BVES's resource allocation methodology section:

Top 5 Initiative Activities by Planned Spend – Bear Valley ($K)

	Initiative Activity	Category	2020 Plan *From 2020 WMP*	2020 Actual *From 2021 WMP*	2021 Plan	2022 Plan	Total WMP Cycle Planned Spend	Initiative Spend as % of Total Planned Spend
1	7.3.3.3 Covered conductor installation	Grid Design & System Hardening	$1,833	$2,147	$5,438	$5,438	$13,022	23%
2	7.3.5.20 Vegetation management to achieve clearances around electric lines and equipment	Vegetation Management & Inspections	$2,745	$1,636	$2,054	$2,054	$5,744	10%
3	7.3.3.13 Pole loading infrastructure hardening and replacement program based on pole loading assessment program	Grid Design & System Hardening	$0	$2,419	$1,475	$1,475	$5,370	9%
4	7.3.3.12 Other corrective action	Grid Design & System Hardening	$156	$2,233	$1,895	$581	$4,709	8%
5	7.3.3.7 Expulsion fuse replacement	Grid Design & System Hardening	$2,600	$3,559	$742	$0	$4,301	8%
	Total spend for top 5 initiatives		**$7,064**	**$11,995**	**$11,604**	**$9,549**	**$33,148**	**58%**

Top 2 initiatives same as PacifiCorp

Zero spend in 2022

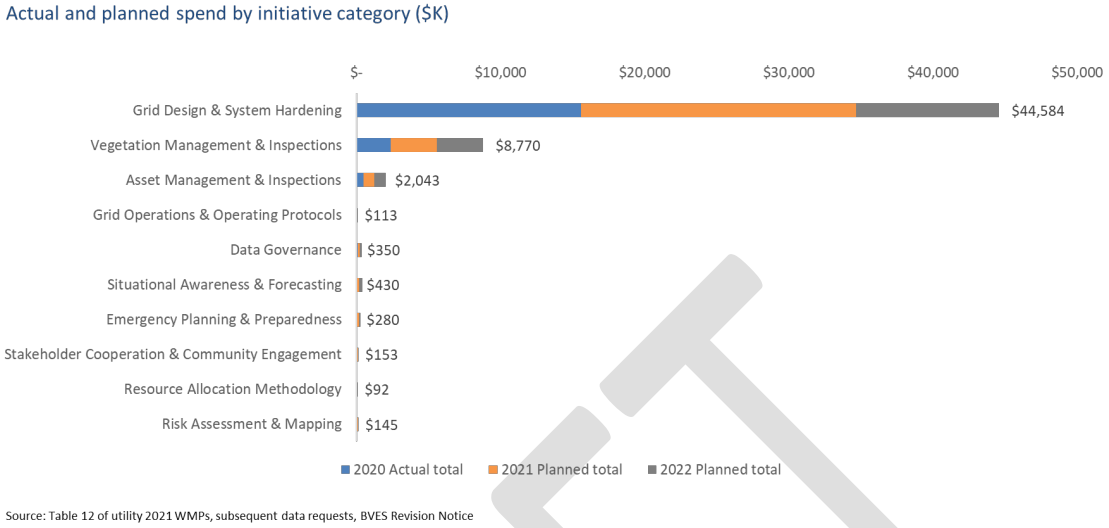
Top 5 initiatives compose >50% of total spend

Source: Table 12 of 2021 utility WMPs, Tables 21-30 of 2020 utility WMPs, and subsequent data requests.

Figure 5.8.a: Resource allocation detail for top five initiative activities by planned spend, BVES.

[118] Utilities that submitted a WMP were required to complete a survey in which they answered specific questions which assessed their existing and future wildfire mitigation practices across 52 capabilities at the time of submission and at the end of the three-year plan horizon. The 52 capabilities are mapped to the same ten categories identified for mitigation initiatives. The results of the survey can be found in Attachment 11.1. The most recent survey for each utility can be found on the Energy Safety website here: https://www.energysafety.ca.gov

[119] Ibid.



Source: Table 12 of utility 2021 WMPs, subsequent data requests, BVES Revision Notice

Figure 5.8.a: Overview of spend by initiative category, BVES.

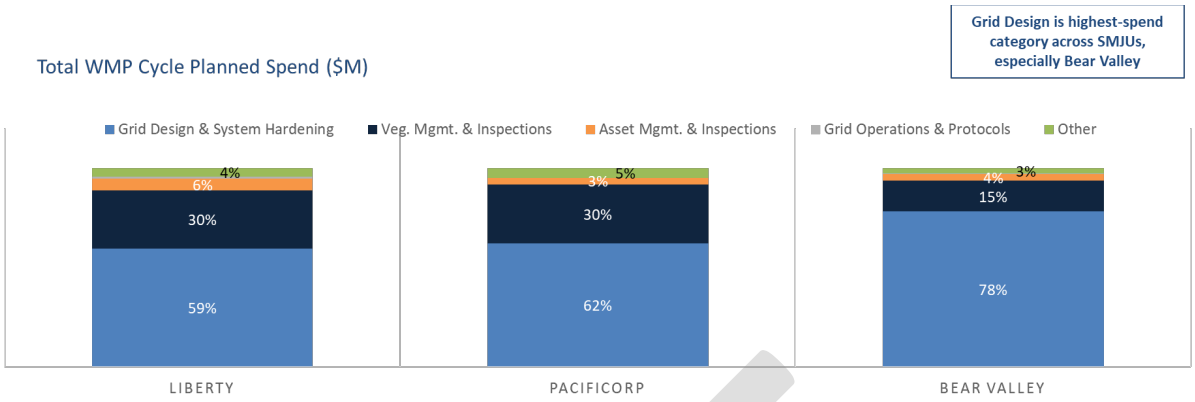
Top 3 categories are the same across SMJUs

Total WMP Cycle Planned Spend ($K)

	Liberty Plan Total	PacifiCorp Plan Total	Bear Valley Plan Total
Grid Design & System Hardening	$80,592 (59%)	$43,338 (62%)	$44,584 (78%)
Veg Mgmt. & Inspections	$40,050 (30%)	$20,754 (30%)	$8,770 (15%)
Asset Mgmt. & Inspections	$7,881 (6%)	$2,338 (3%)	$2,043 (4%)
Grid Operations & Protocols	$1,369 (1%)	$0 (0%)	$113 (0.2%)
Data Governance	$769 (0.6%)	$815 (1.2%)	$350 (1%)
Situational Awareness & Forecasting	$980 (1%)	$1,738 (2%)	$430 (1%)
Emergency Planning & Preparedness	$2,706 (2%)	$0 (0%)	$280 (0.5%)
Stakeholder Cooperation & Community Engagement	$734 (0.5%)	$182 (0.3%)	$153 (0.3%)
Resource Allocation Methodology	$379 (0.3%)	$0 (0%)	$92 (0.2%)
Risk Assessment & Mapping	$87 (0.1%)	$558 (0.8%)	$145 (0.3%)
Total Planned Spend for WMP cycle	**$135,548**	**$69,722**	**$56,961**

Source: Table 12 of 2021 utility WMPs, BVES Revision Notice

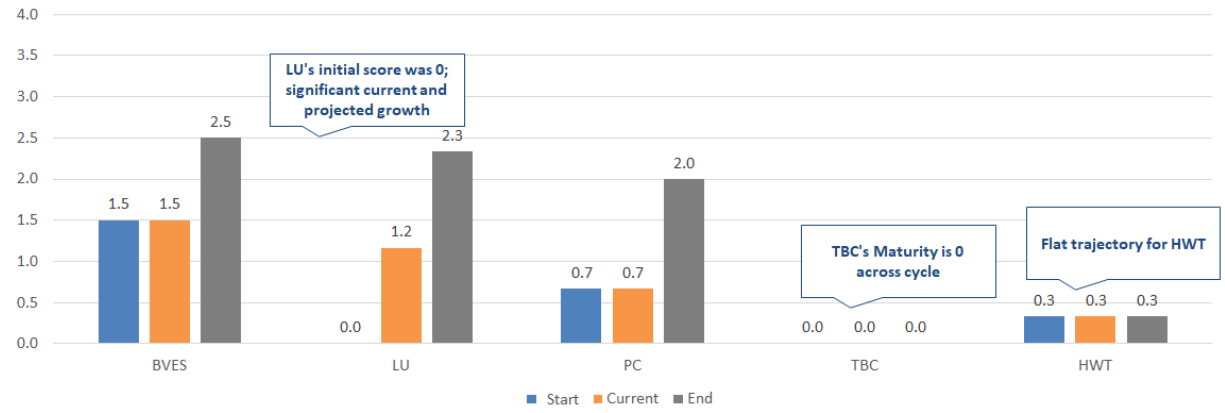
Figure 5.8.c: Breakdown of planned spend by category, SMJUs.



	Liberty ($M)	PacifiCorp ($M)	Bear Valley ($M)
Grid Design & System Hardening	$81	$43	$45
Veg. Mgmt. & Inspections	$40	$21	$9
Asset Mgmt. & Inspections	$8	$2	$2
Grid Operations & Protocols	$2	$0	$.11
Other	$6	$3	$1.5

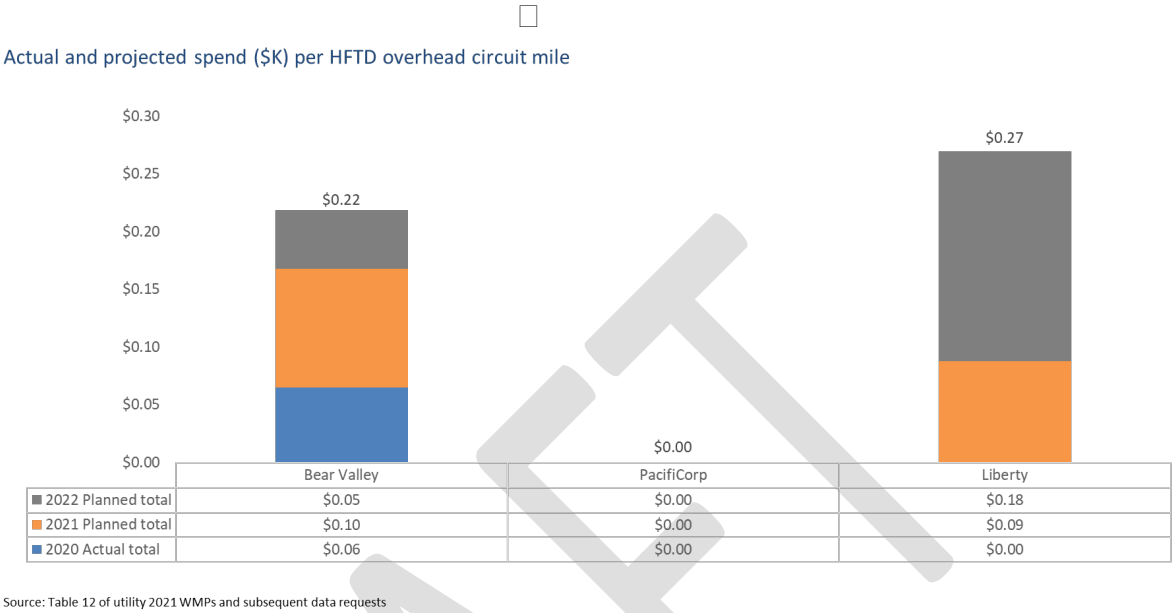
Source: Table 12 of 2021 utility WMPs, BVES Revision Notice

Figure 5.8.d: Overview of total planned spend, SMJUs.



Source: 2021 Maturity Model survey data

Figure 5.8.e: Resource allocation maturity score progress, SMJUs and ITOs.



Source: Table 12 of utility 2021 WMPs and subsequent data requests

Figure 5.8.f: Resource allocation methodology spend per HFTD overhead circuit mile, SMJUs 2020-2022.

5.9 Emergency Planning and Preparedness

Introduction

This section of the WMP Guidelines[120] requires a general description of the utility's overall emergency preparedness and response plan, including discussion of how the plan is consistent with legal requirements for customer support before, during, and after a wildfire, including support for low-income customers, billing adjustments, deposit waivers, extended payment plans, suspension of disconnection and nonpayment fees, and repairs. Utilities are also required to describe emergency communications before, during, and after a wildfire in languages deemed prevalent in a utility's territory (D.19-05-036, supplemented by D.20-03-004),[121] and other languages required by the Commission.

This section of the WMP 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

[120] WSD-011 Attachment 2.2, 2021 Wildfire Mitigation Plan Guidelines Template, p. 46 (accessed July 15, 2021): https://energysafety.ca.gov/wp-content/uploads/docs/wmp-2021/attachment-2.2-to-wsd-011-2021-wmp-guidelines-template.pdf.

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

employees, and a showing that the utility has an adequately sized and trained workforce to promptly restore service after a major event.

Overview

In general, BVES does not report new changes, but instead, appears to be continuing business-as-usual for its Emergency Planning and Preparedness programs implemented in previous years.

Progress over the past year

BVES appears to have not made any significant progress in its Emergency Planning and Preparedness program. Although BVES does provide information in this section of its 2021 WMP Update, it is difficult to distinguish progress made this year from the position reported in its 2020 WMP. Under the "Progress on initiative" subheadings for each mitigation initiative in this section, BVES only provides details on initiative spend and budget, and no details on progress made since 2020. Additionally, BVES states that it has no current plans for the next year[122] for its initiatives in this category, or otherwise discusses its planned spend for 2021 exclusively.

Issues and Remedies

While Energy Safety did not identify key areas for improvement in this competency, Energy Safety finds the following issues and associated remedies. Energy Safety expects BVES to take action to address these issues and report on progress made over the year in its 2022 WMP Update.

- ISSUE: BVES does not adequately demonstrate progress and plans for next year in this mitigation initiative category.
    - REMEDY: BVES must discuss in detail its *progress on* and *future improvements to*[123] each of its Emergency Planning and Preparedness initiatives, without exclusively providing its planned spend or initiative budget.
- ISSUE: BVES does not demonstrate the adequacy of its service restoration workforce within its 2021 WMP Update.
    - REMEDY: BVES must discuss the type and number of personnel classifications it employs and the number of contractors in place for service restoration.
- ISSUE: While BVES claims to engage with customers and communities regarding wildfire safety and PSPS preparedness year-round to increase awareness and support wildfire

[122] BVES 2021 WMP Update Revision – Clean, pp. 179-189.

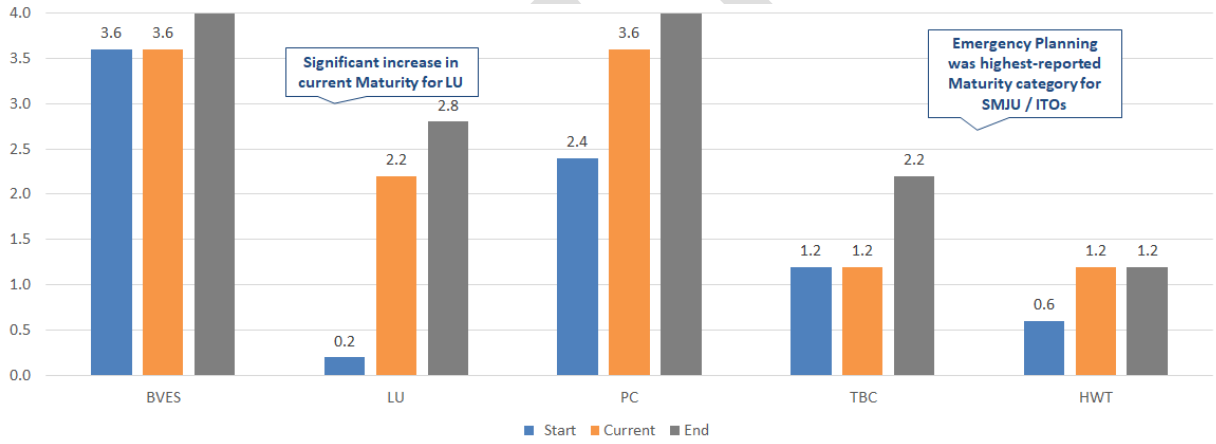
[123] WSD-011 Attachment 2.2, 2021 Wildfire Mitigation Plan Guidelines Template, Section 7.3.b requirement, subparts 4 and 5.

mitigation activities, it does not explain how it collects stakeholder feedback and how it incorporates them into both its community engagement efforts and wildfire mitigation planning.

- REMEDY: BVES must explain how it collects stakeholder feedback and how it incorporates feedback into both its community engagement efforts and wildfire mitigation planning.

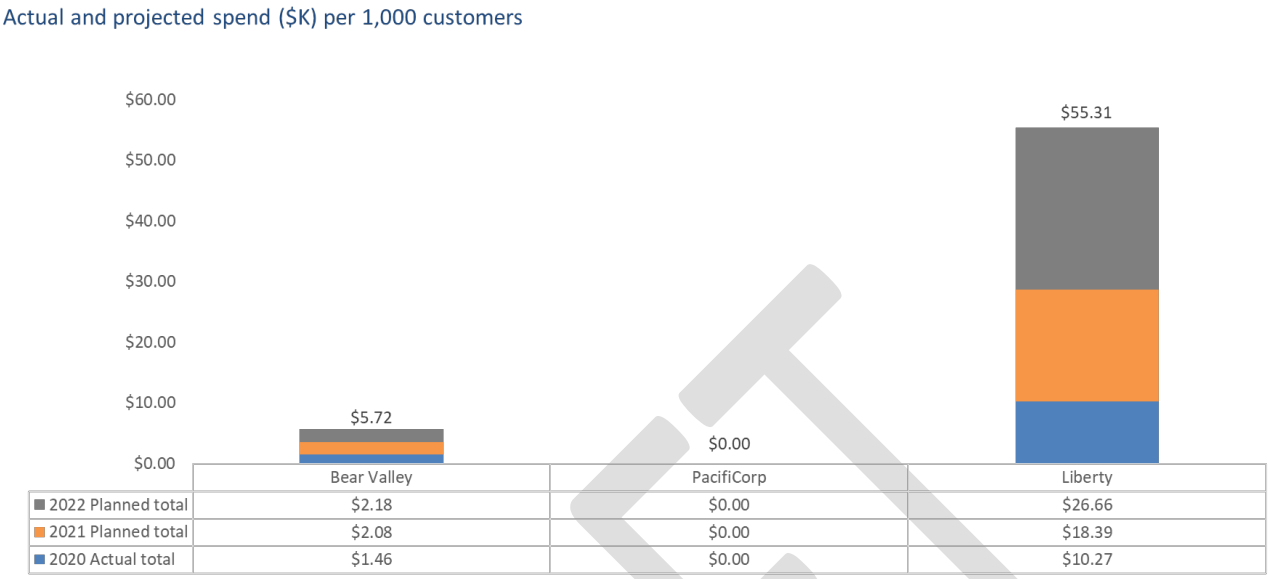
Figures

Below are charts used as part of Energy Safety's review of BVES's emergency planning and preparedness section:



Source: 2021 Maturity Model survey data

Figure 5.9.a: Emergency planning & preparedness maturity score progress, SMJUs and ITOs.



Source: Table 12 of utility 2021 WMPs and subsequent data requests

Figure 5.9.a: Emergency planning & preparedness spend per 1,000 customers, SMJUs 2020-2022.

5.10 Stakeholder Cooperation and Community Engagement

Introduction

The final initiative category in the WMP Guidelines[124] requires the utility to report on the extent to which it will engage the communities it serves and cooperate and share best practices with community members, agencies outside California, fire suppression agencies, forest service entities and others engaged in vegetation management or fuel reduction.

Overview

BVES reports minimal progress in Stakeholder Cooperation and Community Engagement in its 2021 WMP Update. As with BVES's Emergency Planning and Preparedness section, it is difficult to distinguish progress made this year from the position reported in its 2020 WMP. For three out four of its mitigation initiatives in this category, BVES provides scant and equivocating statements of progress and/or plans for next year, or otherwise discusses its planned spend for 2021, under the "Progress on initiative" subheadings. The only initiative that includes details on

[124] WSD-011 Attachment 2.2, 2021 Wildfire Mitigation Plan Guidelines Template, p. 46 (accessed July 15, 2021): https://energysafety.ca.gov/wp-content/uploads/docs/wmp-2021/attachment-2.2-to-wsd-011-2021-wmp-guidelines-template.pdf.

progress is *7.3.10.1 Community Engagement*; however, most progress points discuss BVES's efforts in 2019, not 2020. Areas of progress that pertain to 2020 are detailed below.

Progress over the past year

Energy Safety finds that BVES has made the following progress:

- As part of its wildfire public outreach and awareness activities, BVES featured its WMP and PSPS plan in its winter 2019/2020 newsletters.
- In February of 2020, BVES provided WMP postcards at a start-up meeting for the Fire Safe Council for Big Bear Valley.
- BVES states that it, "Posted the equipment upgrades, vegetation management, and operational improvements included in the 2019 WMP online to the public in the following languages: English, Spanish, French, Tagalog, Vietnamese, and Chinese."[125] It is not clear from this statement, however, whether BVES posted this information in 2019 or 2020.
- As a result of decision D.20-03-004,[126] BVES submitted Advice Letter No. 389-E[127] to engage with local communities, agencies, and public safety partners on emergency notification and communication procedures before, during, and after a wildfire.

Issues and Remedies

While Energy Safety did not identify key areas for improvement in this competency, Energy Safety finds the following issues and associated remedies. Energy Safety expects BVES to take action to address these issues and report on progress made over the year in its 2022 WMP Update.

- ISSUE: BVES does not adequately demonstrate progress and plans for next year in this mitigation initiative category.
    - REMEDY: BVES must discuss in detail its *progress on* and *future improvements to* each of its Stakeholder Cooperation and Community Engagement initiatives.

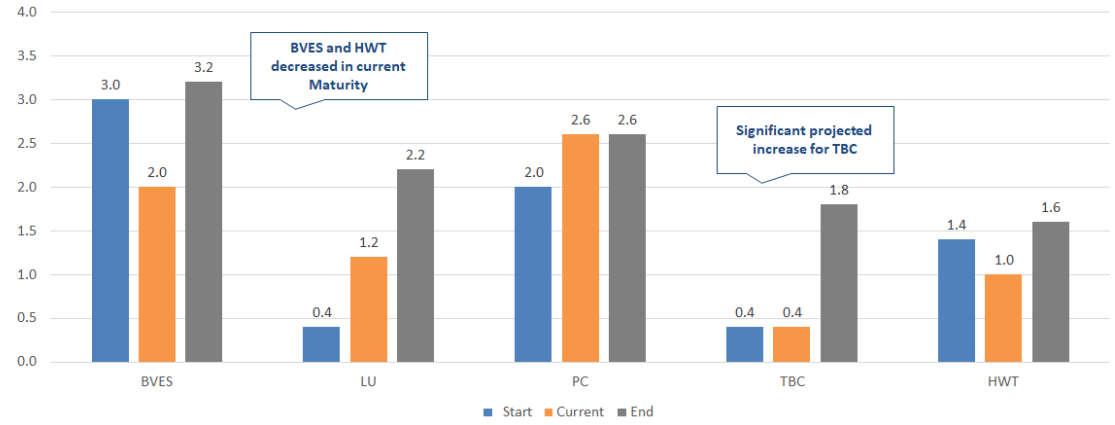
Figures

Below are charts used as part of Energy Safety's review of BVES's stakeholder cooperation and community engagement section:

[125] BVES 2021 WMP Update Revision – Clean, p. 192.

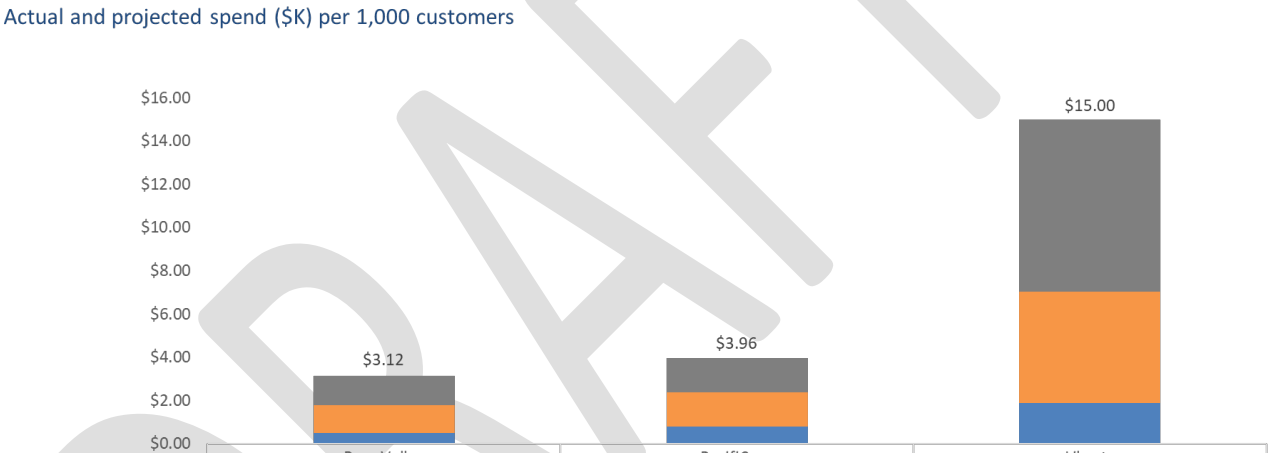
[126] D.20-03-004 required the IOUs to facilitate and file independent survey results assessing the effectiveness of their community outreach and engagement efforts before, during and after a wildfire, whether pursuant to the in-language requirements or in English, by December 31, 2020.

[127] Advice Letter No. 389-E can be found at: https://www.bvesinc.com/media/managed/389_E_Wildfire_Community_Awareness_and_Public_Outreach_Activities_Approval.pdf



Source: 2021 Maturity Model survey data

Figure 5.10.a: Stakeholder cooperation & community engagement maturity score progress, SMJUs and ITOs.



	Bear Valley	PacifiCorp	Liberty
2022 Planned total	$1.33	$1.58	$7.98
2021 Planned total	$1.30	$1.58	$5.14
2020 Actual total	$0.49	$0.79	$1.88

Source: Table 12 of utility 2021 WMPs and subsequent data requests

Figure 5.10.a: Stakeholder cooperation & community engagement spend per 1,000 customers, SMJUs 2020-2022.

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

Introduction

In recent years, Public Safety Power Shutoffs (PSPS) have been increasingly used by utilities to mitigate wildfire risk. PSPS events introduce substantial risk to the public and impose a significant burden on public services that must activate during a PSPS event. Energy Safety

supports the use of PSPS only as a last resort and expects the utilities to clearly present plans for reducing the scale, scope, and frequency of PSPS events.

For 2021, the WSD 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 Guidance Resolution WSD-002 and PSPS decisions D.19-05-036 and D.20-03-004).[128] This section of the WMP Guidelines[129] 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.

Overview

BVES has provided a detailed PSPS response plan for anticipating and implementing potential de-energization events as needed. BVES has not yet articulated its organization-wide, strategic approach and proactive vision (described as "directional vision" in WMP guidance) necessary to reduce potential need for PSPS by reducing scale, scope, and frequency through its mitigation initiatives and programs in the near term.

Progress over the past year

Energy Safety finds that BVES has made the following progress:

- BVES revised its PSPS plan on February 24, 2021, an important step forward, and attached it to the BVES 2021 WMP Update.[130] BVES indicates this plan is in response to lessons learned, and satisfies deficiencies raised by Energy Safety (including, most recently, BVES-R10).[131] The plan describes BVES's protocols for PSPS execution and addresses operational issues and coordination.
- The plan acknowledges that PSPS, itself, is an emergency and consequences of PSPS should be treated in a similar manner as any other emergency that may result in loss of power, such as earthquakes, floods or non-utility caused fire events.

[128] 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.

[129] WSD-011 Attachment 2.2, 2021 Wildfire Mitigation Plan Guidelines Template, pp. 46-49 (accessed July 15, 2021): https://energysafety.ca.gov/wp-content/uploads/docs/wmp-2021/attachment-2.2-to-wsd-011-2021-wmp-guidelines-template.pdf.

[130] BVES 2021 WMP Update Revision – Clean - Appendix A, "Bear Valley Electric Service, Inc. Public Safety Power Shutoff Plan" pp. 219-266.

[131] https://energysafety.ca.gov/wp-content/uploads/docs/misc/docket/336608441.pdf

Partner Coordination

- BVES is vulnerable to impacts from a PSPS event initiated by SCE's de-energizing lines supplying energy to BVES's territory. In its PSPS plan BVES describes detailed, written protocols for coordinating with SCE ahead of fire season and during potential de-energization events.

Protocols

- The PSPS Plan describes operational decision thresholds shown in Table 4-4, including that Emergency Operations Center (EOC) activation for PSPS is initiated when forecasted or sustained wind or 3-second wind gusts are expected to exceed 55 or actual sustained wind or 3-second wind gusts exceed 45 mph and are expected to increase, and a period of high fire threat exists.[132]
- BVES updated protocols regarding auto-reclosers and protective switches, fuse dropout reclosers, and deployment of wildfire risk teams to high risk areas.[133]
- The PSPS Plan describes BVES's re-energization decision protocol, subsequent to the criterion when wind speeds in de-energized areas calm below 50 mph for a minimum period of 20 minutes.
- The plan identifies high risk areas for PSPS consideration; supply lines, sources of power and sub-transmission systems; and community resource center protocols.

General Public PSPS Communications

- The PSPS Plan describes the cadence and types of customer notification before, during, and after a PSPS event.
- BVES indicates it plans to integrate recommendations as a result of a survey outreach done in 2020, including: to increase messaging around preparing emergency kit, readiness plans; use direct mail and its website for channels of communication about wildfire preparedness; use TV news and social networks to educate on PSPS events, and to make additional efforts to reach those with medical conditions.

Engaging Vulnerable Communities

- BVES established an advisory board representative of people/communities with access and functional needs (AFN), senior citizens groups, business owners, and public health and health care providers, including those with medical needs.
- BVES contracted a public relations firm to enhance its ability to engage vulnerable communities and establish new surveys to better identify and engage with its marginalized and at-risk communities.
- BVES developed mailers to vulnerable communities in Spanish and English and posted them on its website in multiple other prevalent languages.
- BVES implemented and began using newly acquired two-way texting capabilities to notify customers about PSPS events and other emergencies.

[132] BVES's 2021 WMP Update Revision - Clean, p. 237 – Appendix A, Table 4-4 "Operational Direction Based on Wildfire Risk Forecast".

[133] Ibid

BVES has room for improvement in the following areas:

- BVES indicates that "[b]ecause [it] has never enacted a PSPS and believes that there is a low likelihood that [it] will need to enact a PSPS in the future, BVES does not have a defined vision for the continued evolution of its PSPS Plan."[134] BVES further states that it "does not anticipate a need to develop an organization-wide plan to reduce the scale, scope, and frequency of PSPS impacts by this timeframe beyond the recently adopted PSPS Plan. The current protocols outlined in the PSPS Plan are reasonable and suitable for this period."[135] These statements do not convey a proactive, company-wide plan to reduce scale, scope and frequency of PSPS, nor convince Energy Safety that BVES has a comprehensive strategy for reducing the need to implement PSPS events. While commendable focus has been on a plan to execute and prepare for imminent PSPS events, an overall mitigation strategy is still needed.
- BVES indicates that it has not needed to enact a PSPS in the past and further states that "as BVES continues to reduce ignition risk, the need for its PSPS should become even more remote, but BVES will remain vigilant and continue to evaluate the risk and necessity for enacting a PSPS event."[136] BVES indicates that "over the course of the ten-year planning period, grid hardening initiatives, enhanced vegetation management programs, more robust forecasting capabilities, and increased situational awareness will continue to keep the likelihood of PSPS activation remote."[137] These statements about lack of past PSPS occurrence do not demonstrate a near-term commitment toward reduction in scale, scope, or frequency of PSPS.
- BVES says it "will endeavor to follow lessons learned across California regarding the use of PSPS and will update its PSPS Plan and Emergency Response Plan accordingly."[138] This statement does not articulate an approach toward testing effectiveness of its existing PSPS and Emergency Response plans.
- BVES indicates it "will assess the historical outlook of fire weather conditions over the last ten years and determine any instances where PSPS activation would have been justified using BVES's PSPS thresholds to assist in scenario development of forecasted risk."[139] Compared to activities undertaken by its peers, forecasting potential instances of PSPS activation in future years is a measurement Energy Safety believes BVES needs to incorporate in its next WMP Update.

Key Areas for Improvement and Remedies

[134] BVES 2021 WMP Update Revision – Clean, p. 196.

[135] BVES 2021 WMP Update Revision – Clean, p. 202.

[136] BVES 2021 WMP Update Revision – Clean, p. 202.

[137] BVES 2021 WMP Update Revision – Clean, p. 197.

[138] BVES 2021 WMP Update Revision – Clean, p. 206.

[139] BVES 2021 WMP Update Revision – Clean, p. 197.

Energy Safety finds that BVES must focus on the following areas as significant to reducing utility-related PSPS risk:

Utility-#	Issue title	Issue description	Remedies required
BVES-21-14	Limited discussion on reduction of scale, scope, and frequency of PSPS	BVES has limited discussion on its near-term progress for reduction in scale, scope, and frequency of PSPS. BVES stated that due to its minimal use of PSPS in the past, it is unable to further reduce PSPS. Nevertheless, BVES must still report its plans to minimize PSPS scale, scope, and frequency, normalized for weather events and climatic conditions.	BVES must report on its plan to minimize the scale, scope, and frequency of PSPS events normalized for weather events and climatic conditions, and fully describe how its planned mitigation initiatives minimize PSPS impact.

Additional Issues and Remedies

In addition to the key area listed above, Energy Safety finds the following additional issues and associated remedies. Energy Safety expects BVES to take action to address these issues and report on progress made over the year in its 2022 WMP Update.

- ISSUE: BVES states that it is currently unable to project PSPS reduction metrics, indicating it "will assess the historical outlook of fire weather conditions over the last ten years and determine any instances where a PSPS activation would have been justified using BVES's PSPS thresholds to assist in scenario development of forecasted risk."
    - REMEDY: BVES must provide robust analysis projecting quarterly and yearly PSPS metrics, or an explanation of how it intends to develop this capability.
- ISSUE: BVES says it "will endeavor to follow lessons learned across California regarding the use of PSPS and will update its PSPS Plan and Emergency Response Plan accordingly."[140] This statement does not articulate an adequately proactive approach toward testing and articulating effectiveness of its PSPS and Emergency Response plans in upcoming fire seasons.

[140] BVES 2021 WMP Update Revision – Clean, p. 206.

- REMEDY: BVES must describe how is has been testing its plan for effectiveness by potentially conducting emergency response exercises using its PSPS Plan and Emergency Response Plan and report on progress, lessons learned, and any resulting improvements to the PSPS and Emergency Response Plans based on application of the plan.
- REMEDY: BVES must describe how its PSPS and Emergency Response Plans have been coordinated and developed, and tested jointly with SCE, as a critical partner influencing PSPS Events ranked first in priority by BVES in "Table 8.1-1 Anticipated Characteristics of PSPS Use Over Next 10 Years."[141]

Figures

Below are charts used as part of Energy Safety's review of BVES's Public Safety Power Shutoff section:

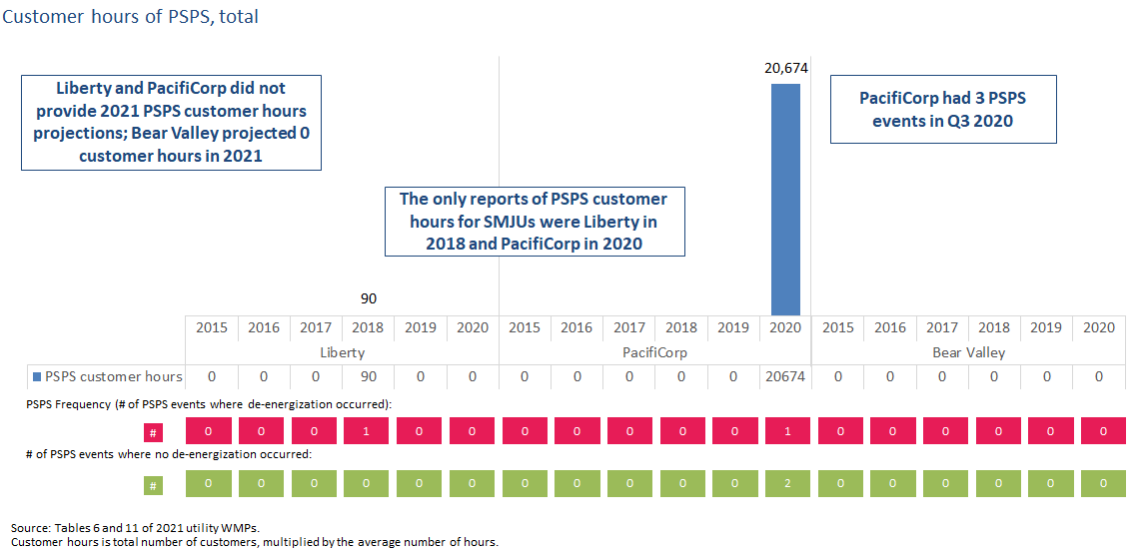
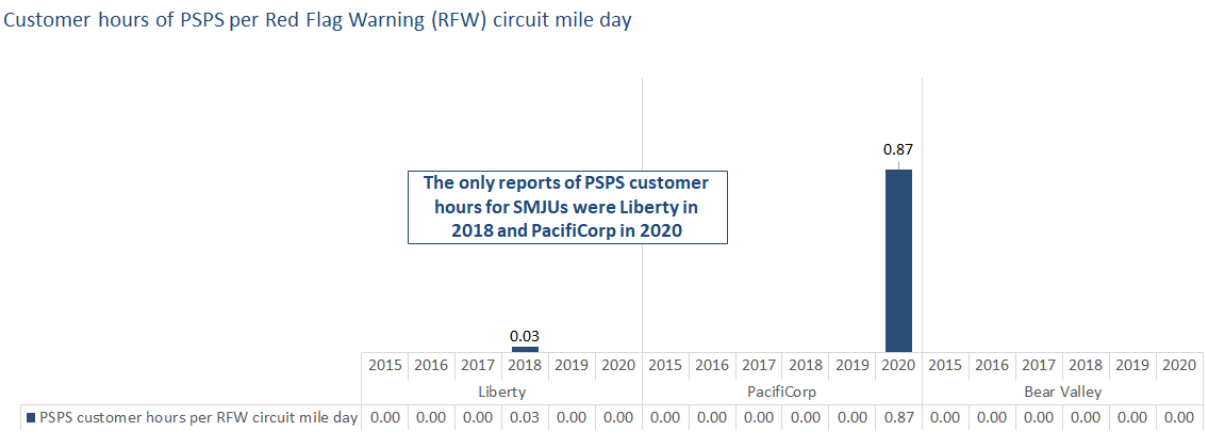


Figure 6.a: PSPS duration in customer hours (total), SMJUs 2015-2020.

[141] BVES 2021 WMP Update Revision – Clean, p. 197.



Source: Tables 6 and 11 of 2021 utility WMPs.
Note: Normalization calculations were done by taking the total customer hours per year and dividing by total RFW days per year.
Customer hours is total number of customers, multiplied by the average number of hours.

Figure 6.b: PSPS duration in customer hours (normalized by RFW circuit mile day), SMJUs 2015-2020.

7. Next Steps

BVES must address the issues identified in Energy Safety's review of BVES's 2021 WMP Update over the course of the next year. BVES must place particular focus on the key areas for improvement described above. BVES must report progress on these key areas in the Progress Reports, as described in Section 1.3 of this Action Statement.

Change Orders

If BVES seeks to significantly modify~~,~~ (i.e., 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 Report. At a high level, the objective of the change order process is to ensure the electrical corporation continues to follow the most effective and efficient approach to mitigating its wildfire risk. This could change as new information becomes available and as the electrical corporation gains experience and measures the outcomes of its initiatives.

The change order process set forth herein provides a mechanism for the electrical corporation to make adjustments based on this information and experience. The goal of this process is to ensure that utilities make significant changes to their WMPs only if the utilities demonstrate these changes to be improvements per WMP approval criteria (i.e., completeness, technical feasibility, effectiveness, and resource use efficiency). Another goal of the change order process

is to maximize Energy Safety's visibility and ability to respond to any significant changes to the approved plan as efficiently and in as streamlined a way as possible.

A "significant" change to a utility's WMP that would trigger the change order process is defined below:

- A change falls into the following initiative categories, i) risk assessment and mapping, ii) vegetation management and inspections, iv) grid design and system hardening, or v) asset management and inspections.

or

- A change to the utility's PSPS strategy, protocols and/or decision-making criteria.

and

- Meets one or more of the following criteria:
  - A change that would result in an increase, decrease, or reallocation of more than $5 million constituting a greater than 10% change in spend allocation.
  - A change that reduces or increases the estimated risk reduction value of an initiative more than 25%.
  - A change that results in a radical shift of either the strategic direction or purpose of an initiative (e.g., introducing use of a novel risk model that reverses the risk profile of the utility's circuits).

If an electrical corporation is unsure whether a change is significant, the corporation is encouraged to submit an advance inquiry on the matter. The change order process is not intended to provide electrical corporations with a pass to unilaterally change their WMP initiatives and program targets; rather, its purpose is to provide a mechanism for refining certain elements of WMP initiatives when there is demonstrable quantitative and qualitative justification for doing so.

Utilities shall submit any Change Order Reports by 5:00 p.m. on November 1, 2021. Energy Safety will review change orders and may issue either an approval or a denial if proposed changes are deemed to be materially out of alignment with Energy Safety's goals.

At a minimum, each proposed change order shall provide the following information:

i. The proposed change
   a. The initiative being altered with reference to where in the WMP the initiative is discussed
   b. The planned budget of that initiative, including:
      i. Planned spend in the 2020 WMP of the initiative being altered
      ii. Of the planned spend identified in i. above, how much has already been spent
      iii. Planned spend for the remainder of the WMP plan period

iv. If spend is being redeployed, how much is being redeployed and to/from which budget

c. The type of change being proposed, reported as one of the following:
   i. Increase in scale
   ii. Decrease in scale
   iii. Change in prioritization
   iv. Change in deployment timing
   v. Change in work being done
   vi. Other change (described)

d. A detailed description of the proposed change

ii. Justification for the proposed change

a. In what way, if any, does the change address or improve:
   i. Completeness
   ii. Technical feasibility of the initiative
   iii. Effectiveness of the initiative
   iv. Resource use efficiency over portfolio of WMP initiatives

iii. Change in expected outcomes from the proposed change

a. What outcomes, including quantitative ignition probability and PSPS risk reduction, was the changed initiative expected to achieve in the 2021 WMP Update?

b. What outcomes, including quantitative ignition probability and PSPS risk reduction, will the initiative deliver with the proposed adjustment?

Submission of Change Order Reports shall be through Energy Safety's e-filing system. Change orders must be submitted to the 2021 WMPs Docket (docket #2021-WMPs). Utilities shall concurrently serve all reports on the Department of Forestry and Fire Protection at CALFIREUtilityFireMitigationUnit@fire.ca.gov.

Stakeholders may comment on Change Order Reports within fifteen days of submission following the submission instructions above but may not otherwise seek change orders through this process. Energy Safety may modify the process for submitting or reviewing change orders at its discretion with written notice.

8. Consultation with CAL FIRE

Pub. Util. Code Section 8386.3(a) requires Energy Safety to consult with CAL FIRE in reviewing electrical corporations' 2021 WMP Updates. Energy Safety and CAL FIRE have a memorandum of understanding in place to facilitate this consultation (Pub. Util. Code Section 8386.5). Energy Safety has met these requirements, but this Action Statement does not purport to speak for CAL FIRE.

9. Conclusion

BVES's 2021 WMP 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 wildfire risk. Through the approval of 2021 WMP submission, 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. The BVES must meet the commitments in its 2021 WMP and fully comply with the conditions listed in this Action Statement to ensure it is achieving a meaningful reduction of utility-related wildfire and PSPS risk within its service territory.

/S/ LUCY MORGANS

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10. Appendix

10.1 Status of 2020 WMP Deficiencies

The 2020 WMP Resolutions for each utility contained a set of "Deficiencies" and associated "Conditions" to remedy those issues. Each issue was categorized into one of the following classes, with Class A being the most serious:

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

Class A deficiencies were of the highest concern and required a utility to develop and submit to the WSD a Remedial Compliance Plan (RCP) to resolve the identified issue within 45 days of Commission ratification of the Resolution. Class B deficiencies were of medium concern and required reporting by the utility to provide missing data or a progress update in its Quarterly Report. Such reporting was either on a one-time basis or ongoing as set forth in each condition. Class C deficiencies required the utility to submit additional detail and information or otherwise come into compliance in its following annual WMP Update. Detailed descriptions of the RCP and quarterly reports are contained in Resolution WSD-002, the Guidance Resolution on Wildfire Mitigation Plans.[142]

Deficiencies have either been resolved or are folded into 2021 issues, as detailed in the table below.

Deficiency	Description	WSD-013 Determination	Status
Guidance-1, Class B	Lack of risk spend efficiency (RSE) information	Insufficient	Energy Safety issued a new corresponding Deficiency in WSD-013. No action required for Guidance -1.
Guidance-2, Class B	Lack of alternatives analysis for chosen initiatives	Insufficient	Energy Safety issued a new corresponding Deficiency in WSD-013. No action required for Guidance-2.
Guidance-3, Class A	Lack of risk modeling to inform decision-making	Sufficient	Conditions met, resolved
Guidance-4, Class B	Lack of discussion on PSPS impacts	Sufficient	Conditions met, resolved

[142] Guidance Resolution WSD-002 can be found here (accessed July 15, 2021): https://energysafety.ca.gov/wp-content/uploads/docs/wmp-2020/docs/340859823.pdf.

Guidance-5, Class B	Aggregation of initiatives into programs	Sufficient	Conditions met, resolved
Guidance-6, Class B	Failure to disaggregate WMP initiatives from standard operations	Sufficient	Conditions met, resolved
Guidance-7, Class B	Lack of detail on effectiveness of "enhanced" inspection programs	Sufficient	Conditions met, resolved
Guidance-8, Class C	Prevalence of Equivocating Language – failure of commitment	N/A	Conditions not met: progress being monitored
Guidance-9, Class B	Insufficient discussion of pilot programs	Sufficient	Conditions met, resolved
Guidance-10, Class B	Data issues – general	Deferred	See report titled "Wildfire Safety Division Quality Control Report on GIS Data Submitted by Bear Valley Electric Service, Inc. on September 9, 2020"[143] for status.
Guidance-11, Class B	Lack of detail on plans to address personnel shortages	Sufficient	Conditions met, resolved
Guidance-12, Class B	Lack of detail on long-term planning	Insufficient	Energy Safety issued a new corresponding Deficiency in WSD-013. No action required for Guidance-12.
BVES-R1, Class C	Defining the year	N/A	Conditions met, resolved
BVES-R2, Class B	Details on risk spend efficiency and future modelling plans	N/A	Conditions not met: progress being monitored
BVES-R3, Class B	Long-term planning	N/A	Conditions met, resolved
BVES-R4, Class B	Pilot program impacts on strategy	N/A	Conditions met, resolved
BVES-R5, Class C	Emerging innovation installment programs	N/A	Conditions not met: Wrapped into a new issue for 2021
BVES-R6, Class B	Controls to ensure targets and goals are met	N/A	Conditions not met: wrapped into a new issue for 2021

[143] https://energysafety.ca.gov/wp-content/uploads/docs/wmp-2020/bves-20200909-data-submission-qc-report.pdf

BVES-R7, Class C	Vegetation management community outreach	N/A	Conditions not met: wrapped into a new issue for 2021
BVES-R8, Class C	Fuels management	N/A	Conditions not met: wrapped into a new issue for 2021
BVES-R9, Class C	Tracking of tree status	N/A	Conditions not met: wrapped into a new issue for 2021
BVES-R10, Class B	PSPS	N/A	Conditions met, resolved
BVES-R11, Class B	Data capabilities and planning for data governance, sharing, and repository	N/A	Conditions not met: progress being monitored
BVES-R12, Class C	Lack of wildfire issues addressed in emergency preparedness plan	N/A	Conditions met, resolved
BVES-R13, Class C	Collaboration	N/A	Conditions not met: progress being monitored
BVES-R14, Class C	"As needed" community engagement insufficient	N/A	Conditions not met: progress being monitored

10.2 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 2021 WMP Guidelines or Action Statements. 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; WMP Guidelines/ Action Statement: 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; Action Statement: 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

11. Attachments

Attachment 1: BVES's 2021 Maturity Survey

11.1.1. BVES: Description of Data Sources

Data related to the Maturity Model is based on the latest submitted versions of 2021 Utility Wildfire Mitigation Maturity Survey ("Survey") as of May 5, 2021. Data for the Maturity Model is pulled from Survey responses unless stated otherwise.

All source data (the WMP and the Survey responses) are available at: https://www.energysafety.ca.gov.

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

11.1.2. BVES: Introduction to Maturity Model Scoring[144]

In order to determine "maturity" in any one capability, Energy Safety assigned levels to each aspect of the electrical corporations' wildfire mitigation efforts. Each capability was assigned a level, from 0 – 4 range, with 0 being the lowest and 4 the highest. Energy Safety calculated a maturity level, in accordance with the required elements to achieve each level, as outlined in the maturity model rubric.

The levels were calculated using an "all or nothing" binary approach. That is, levels are reported as whole numbers only.[145] Thus, in order to reach a specific maturity level, an electrical corporation would have to meet 100 percent of the threshold requirements for that level, as detailed in the maturity model rubric. In general, the maturity model rubric outlines numerous elements that are required to be met to achieve a given level, and the sophistication of requirements to reach a level typically increases with each successively higher maturity level.

[144] From WSD-002 p. 10-11

[145] Note: The category averages shown in 11.1.3 (below) average the capability scores and may include decimals.

For example, to obtain a level of 1 in Capability 24 of the 52 total capabilities, titled "Vegetation grow-in mitigation," the electrical corporation (or utility) must demonstrate the following: "[u]tility maintains vegetation around lines and equipment according to minimum statutory and regulatory clearances. Utility: i) removes vegetation waste along right of ways and ii) within 1 week of cutting vegetation across entire grid."

Thus, in order to receive a maturity level of 1 for Capability 24, an electrical corporation would not only have to maintain minimum regulatory clearances around its overhead lines but also remove the vegetation waste along its right of ways within one week of conducting vegetation clearance work. If an electrical corporation meets only one of these requirements, then it would be assigned the next lowest level. In this example, a level of 0 would be assigned and the electrical corporation would not receive "partial credit" toward a level of 1.

11.1.3. BVES: Maturity detail by capability

Legend: *Maturity Model Scores*

0 | 1 | 2 | 3 | 4

10.2.1.1.1.1.1 Category A. Risk Assessment and Mapping

	Avg cycle start maturity: 0.6	Avg current maturity: 0.6	Avg projected cycle end maturity: 1.8
Capability 1. Climate scenario modeling			
Capability maturity level based on Maturity Rubric (0 - 4)	**Start of cycle: 1**	**By end of year 1 (current): 1**	**Planned state by end of cycle: 2 (projected)**
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	**Start of cycle**	**By end of year 1 (current)**	**Planned state by end of cycle**
1a: How sophisticated is utility's ability to estimate the risk of weather scenarios?	**ii. Wildfire risk can be reliably determined based on weather and its impacts**	**ii. Wildfire risk can be reliably determined based on weather and its impacts**	**iv. Risk for various weather scenarios can be reliably estimated**
1b: How are scenarios assessed?	**ii. Independent expert assessment**	**ii. Independent expert assessment**	**iii. Independent expert assessment, supported by historical data of incidents and near misses**
1c: How granular is utility's ability to model scenarios?	**ii. Regional**	**ii. Regional**	**iii. Circuit-based**
1d: How automated is the tool?	**ii. Partially (<50%)**	**ii. Partially (<50%)**	**iii. Mostly (>=50%)**
1e: What additional information is used to estimate model weather scenarios and their risk?	**ii. Weather, how weather effects failure modes and propagation**	**ii. Weather, how weather effects failure modes and propagation**	**iv. Weather measured at the circuit level, how weather effects failure modes and propagation, existing hardware**

1f: To what extent is future change in climate taken into account for future risk estimation?	ii. Future risk estimates take into account generally higher risk across entire service territory due to changing climate	ii. Future risk estimates take into account generally higher risk across entire service territory due to changing climate	iii. Basic temperature modeling used to estimate effects of a changing climate on future weather and risk, taking into account difference in geography and vegetation

Capability 2. Ignition risk estimation			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 1	By end of year 1 (current): 1	Planned state by end of cycle: 2 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
2a: How is ignition risk calculated?	ii. Tools and processes can reliably categorize the risk of ignition across the grid into at least two categories based on characteristics and condition of lines, equipment, surrounding vegetation, and localized weather patterns	ii. Tools and processes can reliably categorize the risk of ignition across the grid into at least two categories based on characteristics and condition of lines, equipment, surrounding vegetation, and localized weather patterns	iii. Tools and processes can quantitatively and accurately assess the risk of ignition across the grid based on characteristics and condition of lines, equipment, surrounding vegetation, and localized weather patterns
2b: How automated is the ignition risk calculation tool?	ii. Partially (<50%)	ii. Partially (<50%)	iii. Mostly (>=50%)
2c: How granular is the tool?	ii. Regional	ii. Regional	iii. Circuit-based
2d: How is risk assessment confirmed? Select all that apply.	ii. By historical data	i. By experts ii. By historical data	i. By experts ii. By historical data iii. Through real-time learning

2e: What confidence interval, in percent, does the utility use in its wildfire risk assessments?	>80%	>80%	>90%

Capability 3. Estimation of wildfire consequences for communities			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 0	By end of year 1 (current): 0	Planned state by end of cycle: 1 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
3a: How is estimated consequence of ignition relayed?	ii. Ignition events categorized as low or high risk to communities	ii. Ignition events categorized as low or high risk to communities	iii. Ignition events categorized with 5 or more levels of risk to communities
3b: What metrics are used to estimate the consequence of ignition risk?	ii. As a function of at least potential fatalities, and one or both of structures burned, or area burned	ii. As a function of at least potential fatalities, and one or both of structures burned, or area burned	iii. As a function of at least potential fatalities, structures burned, area burned, monetary damages, impact on air quality, and impact on GHG reduction goals
3c: Is the ignition risk impact analysis available for all seasons?	i. No	i. No	ii. Yes
3d: How automated is the ignition risk estimation process?	i. Not automated	i. Not automated	ii. Partially (<50%)
3e: How granular is the ignition risk estimation process?	ii. Regional	ii. Regional	iii. Circuit-based
3f: How are the outputs of the ignition risk impact assessment tool evaluated?	ii. Outputs independently assessed by experts	ii. Outputs independently assessed by experts	iii. Outputs independently assessed by experts and confirmed by historical data

3g: What other inputs are used to estimate impact?	i. Level and conditions of vegetation and weather, including the vegetation specifies immediately surrounding the ignition site	i. Level and conditions of vegetation and weather, including the vegetation specifies immediately surrounding the ignition site	iii. Level and conditions of vegetation and weather, including the vegetation specifies immediately surrounding the ignition site and up-to-date moisture content, local weather patterns

Capability 4. Estimation of wildfire and PSPS risk-reduction impact			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 1	By end of year 1 (current): 1	Planned state by end of cycle: 2 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
4a: How is risk reduction impact estimated?	iii. Approach reliably estimates risk reduction potential of initiatives on an interval scale (e.g. specific quantitative units)	iii. Approach reliably estimates risk reduction potential of initiatives, on an ordinal scale (e.g. 1-5)	iii. Approach reliably estimates risk reduction potential of initiatives on an interval scale (e.g. specific quantitative units)
4b: How automated is your ignition risk reduction impact assessment tool?	i. Not automated	i. Not automated	ii. Partially (<50%)
4c: How granular is the ignition risk reduction impact assessment tool?	ii. Regional	ii. Regional	iii. Circuit-based
4d: How are ignition risk reduction impact assessment tool estimates assessed?	ii. With evidence and logical reasoning	ii. With evidence and logical reasoning	iii. Independent expert assessment
4e: What additional information is used to estimate risk reduction impact?	v. Existing hardware type and condition, including operating history; level and condition of vegetation; weather; and combination of initiatives already deployed	v. Existing hardware type and condition, including operating history; level and condition of vegetation; weather; and combination of initiatives already deployed	v. Existing hardware type and condition, including operating history; level and condition of vegetation; weather; and combination of initiatives already deployed

Capability 5. Risk maps and simulation algorithms			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 0	By end of year 1 (current): 0	Planned state by end of cycle: 2 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
5a: What is the protocol to update risk mapping algorithms?	i. No defined process for updating risk mapping algorithms	i. No defined process for updating risk mapping algorithms	ii. Risk mapping algorithms updated based on detected deviations of risk model to ignitions and propagation
5b: How automated is the mechanism to determine whether to update algorithms based on deviations?	i. Not automated	i. Not automated	ii. Partially (<50%)
5c: How are deviations from risk model to ignitions and propagation detected?	ii. Manually	ii. Manually	iii. Semi-automated process
5d: How are decisions to update algorithms evaluated?	ii. Independently evaluated by experts	ii. Independently evaluated by experts	iii. Independently evaluated by experts and historical data
5e: What other data is used to make decisions on whether to update algorithms?	ii. Current and historic ignition and propagation data	iii. Current and historic ignition and propagation data; near-miss data	iv. Current and historic ignition and propagation data; near-miss data; data from other utilities and other sources

Category B. Situational Awareness and Forecasting

	Avg cycle start maturity: 1	Avg current maturity: 1.2	Avg projected cycle end maturity: 2.2
Capability 6. Weather variables collected			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 2	By end of year 1 (current): 2	Planned state by end of cycle: 4 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
6a: What weather data is currently collected?	iii. Range of accurate weather variables (e.g. humidity, precipitation, surface and atmospheric wind conditions) that impact probability of ignition and propagation from utility assets	iii. Range of accurate weather variables (e.g. humidity, precipitation, surface and atmospheric wind conditions) that impact probability of ignition and propagation from utility assets	iv. Range of accurate weather variables that impact probability of ignition and propagation from utility assets; additional data to measure physical impact of weather on grid collected (e.g., sway in lines, sway in vegetation)
6b: How are measurements validated?	ii. Manual field calibration measurements	ii. Manual field calibration measurements	iii. Automatic field calibration measurements
6c: Are elements that cannot be reliably measured in real time being predicted (e.g., fuel moisture content)?	ii. Yes	ii. Yes	ii. Yes
6d: How many sources are being used to provide data on weather metrics being collected?	iii. More than one	iii. More than one	iii. More than one

Capability 7. Weather data resolution			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 1	By end of year 1 (current): 2	Planned state by end of cycle: 2 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
7a: How granular is the weather data that is collected?	iii. Weather data has sufficient granularity to reliably measure weather conditions in HFTD areas, and along the entire grid and in all areas needed to predict weather on the grid	iii. Weather data has sufficient granularity to reliably measure weather conditions in HFTD areas, and along the entire grid and in all areas needed to predict weather on the grid	iv. Weather data has sufficient granularity to reliably measure weather conditions in HFTD areas, and along the entire grid and in all areas needed to predict weather on the grid. Also includes wind estimations at various atmospheric altitudes relevant to ignition risk
7b: How frequently is data gathered	iii. At least four times per hour	v. At least sixty times per hour	v. At least sixty times per hour
7c: How granular is the tool?	ii. Regional	iii. Circuit-based	iii. Circuit-based
7d: How automated is the process to measure weather conditions?	ii. Partially (<50%)	iii. Mostly (>=50%)	iv. Fully

Capability 8. Weather forecasting ability			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 0	By end of year 1 (current): 0	
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
8a: How sophisticated is the utility's weather forecasting capability?	ii. Utility has independent weather forecasting ability sufficiently accurate to fulfill PSPS requirements	ii. Utility has independent weather forecasting ability sufficiently accurate to fulfill PSPS requirements	iii. Utility has the ability to use a combination of accurate weather stations and external weather data to make accurate forecasts
8b: How far in advance can accurate forecasts be prepared?	ii. At least two weeks in advance	ii. At least two weeks in advance	iii. At least three weeks in advance
8c: At what level of granularity can forecasts be prepared?	ii. Regional	ii. Regional	ii. Regional
8d: How are results error-checked?	ii. Results are error checked against historical weather patterns	ii. Results are error checked against historical weather patterns	iii. Criteria for option (ii) met, and forecasted results are subsequently error checked against measured weather data
8e: How automated is the forecast process?	ii. Partially (<50%)	ii. Partially (<50%)	iii. Mostly (>=50%)

Capability 9. External sources used in weather forecasting			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 2	By end of year 1 (current): 2	Planned state by end of cycle: 3 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
9a: What source does the utility use for weather data?	iv. Utility uses a combination of accurate weather stations and external weather data, and elects to use the data set, as a whole or in composite, that is most accurate	iv. Utility uses a combination of accurate weather stations and external weather data, and elects to use the data set, as a whole or in composite, that is most accurate	iv. Utility uses a combination of accurate weather stations and external weather data, and elects to use the data set, as a whole or in composite, that is most accurate
9b: How is weather station data checked for errors?	ii. Mostly manual processes for error checking weather stations with external data sources	ii. Mostly manual processes for error checking weather stations with external data sources	iii. Mostly automated processes for error checking weather stations with external data sources
9c: For what is weather data used?	i. Weather data is used to make decisions	i. Weather data is used to make decisions	iii. Weather data is used to create a single visual and configurable live map that can be used to help make decisions

Capability 10. Wildfire detection processes and capabilities			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 0	By end of year 1 (current): 0	Planned state by end of cycle: 2 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
10 : Are there well-defined procedures for detecting ignitions along the grid?	ii. Yes	ii. Yes	ii. Yes
10b: What equipment is used to detect ignitions?	i. No consistent set of equipment for detecting ignitions along grid	i. No consistent set of equipment for detecting ignitions along grid	iii. Well-defined equipment for detecting ignitions along grid, including remote detection equipment including cameras
10 : How is information on detected ignitions reported?	iii. Procedure exists for notifying suppression forces and key stakeholders	iii. Procedure exists for notifying suppression forces and key stakeholders	iv. Procedure automatically, accurately, and in real time notifies suppression forces and key stakeholders
10d: What role does ignition detection software play in wildfire detection?	i. Ignition detection software not currently deployed	i. Ignition detection software not currently deployed	iii. Ignition detection software in cameras operates automatically as part of ignition detection procedures

Category C. Grid design and system hardening

	Avg cycle start maturity: 1.8	Avg current maturity: 1.6	Avg projected cycle end maturity: 3
Capability 11. Approach to prioritizing initiatives across territory			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 3	By end of year 1 (current): 2	Planned state by end of cycle: 4 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
11a: How are wildfire risk reduction initiatives prioritized?	iv. Plan prioritizes wildfire risk reduction initiatives at the span level based on i) risk modeling driven by local geography and climate/weather conditions, fuel loads and moisture content and topography ii) detailed wildfire and PSPS risk simulations across individual circuits	iii. Plan prioritizes wildfire risk reduction initiatives based on local geography and conditions within only HFTD areas	v. Plan prioritizes wildfire risk reduction initiatives at the asset level based on i) risk modeling driven by local geography and climate/weather conditions, fuel loads and moisture content and topography ii) risk estimates across individual circuits, including estimates of actual consequence, and iii) taking power delivery uptime into account (e.g. reliability, PSPS, etc.)

Capability 12. Grid design for minimizing ignition risk			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 1	By end of year 1 (current): 1	Planned state by end of cycle: 4 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
12a: Does grid design meet minimum G095 requirements and loading standards in HFTD areas?	ii. Yes	ii. Yes	iii. Grid topology exceeds design requirements, designed based on accurate understanding of drivers of utility ignition risk
12b: Does the utility provide micro grids or islanding where traditional grid infrastructure is impracticable and wildfire risk is high?	i. No	i. No	ii. Yes
12c: Does routing of new portions of the grid take wildfire risk into account?	i. Yes	i. Yes	i. Yes
12d: Are efforts made to incorporate the latest asset management strategies and new technologies into grid topology?	ii. Yes, some effort made in HFTD areas	iii. Yes, across the entire service area	iii. Yes, across the entire service area

Capability 13. Grid design for resiliency and minimizing PSPS			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 2	By end of year 1 (current): 2	Planned state by end of cycle: 3 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
13a: What level of redundancy does the utility's transmission architecture have?	ii. n-1 redundancy for all circuits subject to PSPS	ii. n-1 redundancy for all circuits subject to PSPS	ii. n-1 redundancy for all circuits subject to PSPS
13b: What level of redundancy does the utility's distribution architecture have?	iii. n-1 redundancy covering at least 70% of customers in HFTD	iii. n-1 redundancy covering at least 70% of customers in HFTD	iv. n-1 redundancy covering at least 85% of customers in HFTD
13c: What level of sectionalization does the utility's distribution architecture have?	iv. Switches in HFTD areas to individually isolate circuits, such that no more than 1000 customers sit within one switch	iv. Switches in HFTD areas to individually isolate circuits, such that no more than 1000 customers sit within one switch	iv. Switches in HFTD areas to individually isolate circuits, such that no more than 1000 customers sit within one switch
13d: How does the utility consider egress points in its grid topology?	ii. Egress points used as an input for grid topology design	ii. Egress points used as an input for grid topology design	iii. Egress points available and mapped for each customer, with potential traffic mapped based on traffic simulation and taken into consideration for grid topology design

Capability 14. Risk-based grid hardening and cost efficiency			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 2	By end of year 1 (current): 1	Planned state by end of cycle: 2 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
14a: Does the utility have an understanding of the risk spend efficiency of hardening initiatives?	ii. Utility has an accurate understanding of the relative cost and effectiveness of different initiatives	ii. Utility has an accurate understanding of the relative cost and effectiveness of different initiatives	iii. Utility has an accurate understanding of the relative cost and effectiveness of different initiatives, tailored to the circumstances of different locations on its grid
14b: At what level can estimates be prepared?	iii. Circuit-based	ii. Regional	iii. Circuit-based
14c: How frequently are estimates updated?	iii. Annually or more frequently	iii. Annually or more frequently	iii. Annually or more frequently
14d: What grid hardening initiatives does the utility include within its evaluation?	iv. All	iv. All	v. All, supported by independent testing
14e: Can the utility evaluate risk reduction synergies from combination of various initiatives?	ii. Yes	ii. Yes	ii. Yes

Capability 15. Grid design and asset innovation			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 1	By end of year 1 (current): 2	Planned state by end of cycle: 2 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
15 : How are new hardening solution initiatives evaluated?	ii. New initiatives evaluated based on installation into grid and measuring direct reduction in ignition events	iii. New initiatives evaluated based on installation into grid and measuring direct reduction in ignition events, and measuring reduction impact on near-miss metrics	iii. New initiatives evaluated based on installation into grid and measuring direct reduction in ignition events, and measuring reduction impact on near-miss metrics
15b: Are results of pilot and commercial deployments, including project performance, project cost, geography, climate, vegetation etc. shared in sufficient detail to inform decision making at other utilities?	ii. Yes, with a limited set of partners	ii. Yes, with a limited set of partners	iii. Yes, extensively with industry, academia, and other utilities
15 : Is performance of new initiatives independently audited?	i. No	i. No	ii. Yes

Category D. Asset management and inspections

	Avg cycle start maturity: 1.4	Avg current maturity: 1.4	Avg projected cycle end maturity: 2.4
Capability 16. Asset inventory and condition assessments			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 0	By end of year 1 (current): 0	Planned state by end of cycle: 1 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
16a: What information is captured in the equipment inventory database?	iii. There is an accurate inventory of equipment that may contribute to wildfire risk, including age, state of wear, and expected lifecycle, including records of all inspections and repairs	iii. There is an accurate inventory of equipment that may contribute to wildfire risk, including age, state of wear, and expected lifecycle, including records of all inspections and repairs	iv. There is an accurate inventory of equipment that may contribute to wildfire risk, including age, state of wear, and expected lifecycle, including records of all inspections and repairs and up-to-date work plans on expected future repairs and replacements
16 : How frequently is the condition assessment updated?	ii. Annually	ii. Annually	iii. Quarterly
16c: Does all equipment in HFTD areas have the ability to detect and respond to malfunctions?	ii. A system and approach are in place to reliably detect incipient malfunctions likely to cause ignition	ii. A system and approach are in place to reliably detect incipient malfunctions likely to cause ignition	iii. Sensorized, continuous monitoring equipment is in place to determine the state of equipment and reliably detect incipient malfunctions likely to cause ignition
16 : How granular is the inventory?	iii. At the asset level	iii. At the asset level	iii. At the asset level

Capability 17. Asset inspection cycle			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 1	By end of year 1 (current): 1	Planned state by end of cycle: 3 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
17a: How frequent are your patrol inspections?	iii. Above minimum regulatory requirements, with more frequent inspections for highest risk equipment	iii. Above minimum regulatory requirements, with more frequent inspections for highest risk equipment	iii. Above minimum regulatory requirements, with more frequent inspections for highest risk equipment
17b: How are patrol inspections scheduled?	i. Based on annual or periodic schedules	i. Based on annual or periodic schedules	iii. Risk, as determined by predictive modeling of equipment failure probability and risk causing ignition
17c: What are the inputs to scheduling patrol inspections?	i. At least annually updated or verified static maps of equipment and environment	i. At least annually updated or verified static maps of equipment and environment	ii. Predictive modeling of equipment failure probability and risk
17d: How frequent are detailed inspections?	ii. Consistent with minimum regulatory requirements	ii. Consistent with minimum regulatory requirements	iii. Above minimum regulatory requirements, with more frequent inspections for highest risk equipment
17e: How are detailed inspections scheduled?	i. Based on annual or periodic schedules	i. Based on annual or periodic schedules	iii. Risk, as determined by predictive modeling of equipment failure probability and risk causing ignition
17f: What are the inputs to scheduling detailed inspections?	i. At least annually updated or verified static maps of equipment and environment	i. At least annually updated or verified static maps of equipment and environment	ii. Predictive modeling of equipment failure probability and risk
17g: How frequent are your other inspections?	iii. Above minimum regulatory requirements, with more frequent inspections for highest risk equipment	iii. Above minimum regulatory requirements, with more frequent inspections for highest risk equipment	iii. Above minimum regulatory requirements, with more frequent inspections for highest risk equipment
17h: How are other inspections scheduled?	i. Based on annual or periodic schedules	i. Based on annual or periodic schedules	iii. Risk, as determined by predictive modeling of equipment failure probability and risk causing ignition

17i: What are the inputs to scheduling other inspections?	i. At least annually updated or verified static maps of equipment and environment	i. At least annually updated or verified static maps of equipment and environment	ii. Predictive modeling of equipment failure probability and risk

Capability 18. Asset inspection effectiveness			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 1	By end of year 1 (current): 1	Planned state by end of cycle: 2 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
18a: What items are captured within inspection procedures and checklists?	ii. Patrol, detailed, enhanced, and other inspection procedures and checklists include all items required by statute and regulations	ii. Patrol, detailed, enhanced, and other inspection procedures and checklists include all items required by statute and regulations	iii. Patrol, detailed, enhanced, and other inspection procedures and checklists include all items required by statute and regulations, and includes lines and equipment typically responsible for ignitions and near misses
18b: How are procedures and checklists determined?	i. Based on statute and regulatory guidelines only	i. Based on statute and regulatory guidelines only	ii. Based on predictive modeling based on vegetation and equipment type, age, and condition
18c: At what level of granularity are the depth of checklists, training, and procedures customized?	i. Across the service territory	i. Across the service territory	iii. At the circuit level

Capability 19. Asset maintenance and repair			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 3	By end of year 1 (current): 3	Planned state by end of cycle: 4 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
19a: What level are electrical lines and equipment maintained at?	iii. Electrical lines and equipment maintained as required by regulation, and additional maintenance done in areas of grid at highest wildfire risk based on detailed risk mapping	iii. Electrical lines and equipment maintained as required by regulation, and additional maintenance done in areas of grid at highest wildfire risk based on detailed risk mapping	iii. Electrical lines and equipment maintained as required by regulation, and additional maintenance done in areas of grid at highest wildfire risk based on detailed risk mapping
19b: How are service intervals set?	ii. Based on wildfire risk in relevant circuit	ii. Based on wildfire risk in relevant circuit	iii. Based on wildfire risk in relevant circuit, as well as real-time monitoring from sensors
19c: What do maintenance and repair procedures take into account?	ii. Wildfire risk, performance history, and past operating conditions	ii. Wildfire risk, performance history, and past operating conditions	ii. Wildfire risk, performance history, and past operating conditions

Capability 20. QA/QC for asset management			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 2	By end of year 1 (current): 2	Planned state by end of cycle: 2 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
20a: How is contractor activity audited?	iii. Through an established and demonstrably functioning audit process to manage and confirm work completed by subcontractors, where contractor activity is subject to semi-automated audits using technologies capable of sampling the contractor's work (e.g., LiDAR scans, photographic evidence)	ii. Through an established and functioning audit process to manage and confirm work completed by subcontractors	iii. Through an established and demonstrably functioning audit process to manage and confirm work completed by subcontractors, where contractor activity is subject to semi-automated audits using technologies capable of sampling the contractor's work (e.g., LiDAR scans, photographic evidence)
20b: Do contractors follow the same processes and standards as utility's own employees?	ii. Yes	ii. Yes	ii. Yes
20c: How frequently is QA/QC information used to identify deficiencies in quality of work performance and inspections performance?	iv. Regularly	iv. Regularly	iv. Regularly
20d: How are work and inspections that do not meet utility-prescribed standards remediated?	iii. QA/QC information is used to identify systemic deficiencies in quality of work and inspections, and recommend training based on weaknesses	iii. QA/QC information is used to identify systemic deficiencies in quality of work and inspections, and recommend training based on weaknesses	iv. QA/QC information is used to identify systemic deficiencies in quality of work and inspections, grade individuals, and recommend specific pre-made and tested training based on weaknesses
20e: Are workforce management software tools used to manage and confirm work completed by subcontractors?	ii. Yes	ii. Yes	ii. Yes

Category E. Vegetation management and inspections

	Avg cycle start maturity: 1.8	Avg current maturity: 1.8	Avg projected cycle end maturity: 3
Capability 21. Vegetation inventory and condition assessments			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 1	By end of year 1 (current): 2	Planned state by end of cycle: 3 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
21a: What information is captured in the inventory?	ii. Centralized inventory of vegetation clearances based on most recent inspection	iii. Centralized inventory of vegetation clearances, including predominant vegetation species and individual high risk-trees across grid	iv. Centralized inventory of vegetation clearances, including individual vegetation species and their expected growth rate, as well as individual high risk-trees across grid
21b: How frequently is inventory updated?	iv. Within 1 week of collection	iv. Within 1 week of collection	v. Within 1 day of collection
21c: Are inspections independently verified by third party experts?	ii. Yes	ii. Yes	ii. Yes
21d: How granular is the inventory?	iv. Asset-based	iv. Asset-based	iv. Asset-based

Capability 22. Vegetation inspection cycle			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 2	By end of year 1 (current): 2	Planned state by end of cycle: 3 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
22a: How frequent are all types of vegetation inspections?	iii. Above minimum regulatory requirements, with more frequent inspections for highest risk areas	iii. Above minimum regulatory requirements, with more frequent inspections for highest risk areas	iii. Above minimum regulatory requirements, with more frequent inspections for highest risk areas
22b: How are vegetation inspections scheduled?	ii. Based on up-to-date static maps of predominant vegetation species and environment	ii. Based on up-to-date static maps of predominant vegetation species and environment	iii. Risk, as determined by predictive modeling of vegetation growth and growing conditions
22c: What are the inputs to scheduling vegetation inspections?	ii. Up to date, static maps of vegetation and environment, as well as data on annual growing conditions	ii. Up to date, static maps of vegetation and environment, as well as data on annual growing conditions	iii. Predictive modeling of vegetation growth

Capability 23. Vegetation inspection effectiveness			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 1	By end of year 1 (current): 1	Planned state by end of cycle: 2 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
23a: What items are captured within inspection procedures and checklists?	ii. Patrol, detailed, enhanced, and other inspection procedures and checklists include all items required by statute and regulations	ii. Patrol, detailed, enhanced, and other inspection procedures and checklists include all items required by statute and regulations	iii. Patrol, detailed, enhanced, and other inspection procedures and checklists include all items required by statute and regulations, and includes vegetation types typically responsible for ignitions and near misses
23b: How are procedures and checklists determined?	i. Based on statute and regulatory guidelines only	i. Based on statute and regulatory guidelines only	iii. Based on predictive modeling based on vegetation and equipment type, age, and condition and validated by independent experts
23c: At what level of granularity are the depth of checklists, training, and procedures customized?	ii. Across a region	ii. Across a region	iii. At the circuit level

Capability 24. Vegetation grow-in mitigation			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 3	By end of year 1 (current): 3	Planned state by end of cycle: 4 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
24a: How does utility clearance around lines and equipment perform relative to expected standards?	iii. Utility exceeds minimum statutory and regulatory clearances around all lines and equipment	iii. Utility exceeds minimum statutory and regulatory clearances around all lines and equipment	iii. Utility exceeds minimum statutory and regulatory clearances around all lines and equipment
24b: Does utility meet or exceed minimum statutory or regulatory clearances during all seasons?	ii. Yes	ii. Yes	ii. Yes
24c: What modeling is used to guide clearances around lines and equipment?	i. Ignition risk modeling	i. Ignition risk modeling	ii. Ignition and propagation risk modeling
24d: What biological modeling is used to guide clearance around lines and equipment	ii. Species growth rates and species limb failure rates, cross referenced with local climatological conditions	ii. Species growth rates and species limb failure rates, cross referenced with local climatological conditions	ii. Species growth rates and species limb failure rates, cross referenced with local climatological conditions
24e: Are community organizations engaged in setting local clearances and protocols?	ii. Yes	ii. Yes	ii. Yes
24f: Does the utility remove vegetation waste along its right of way across the entire grid?	ii. Yes	ii. Yes	ii. Yes
24g: How long after cutting vegetation does the utility remove vegetation waste along right of way?	iv. On the same day	iv. On the same day	iv. On the same day

24h: Does the utility work with local landowners to provide a cost-effective use for cutting vegetation?	ii. Yes	ii. Yes	ii. Yes
24i: Does the utility work with partners to identify new cost-effective uses for vegetation, taking into consideration environmental impacts and emissions of vegetation waste?	ii. Yes	ii. Yes	ii. Yes

Capability 25. Vegetation fall-in mitigation			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 1	By end of year 1 (current): 1	Planned state by end of cycle: 3 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
25a: Does the utility have a process for treating vegetation outside of right of ways?	iii. Utility systematically removes vegetation outside of right of way	ii. Utility removes some vegetation outside of right of ways	iv. Utility systematically removes vegetation outside of right of way, informing relevant communities of removal
25b: How is potential vegetation that may pose a threat identified?	ii. Based on the height of trees with potential to make contact with electric lines and equipment	ii. Based on the height of trees with potential to make contact with electric lines and equipment	iii. Based on the probability and consequences of impact on electric lines and equipment as determined by risk modeling
25c: Is vegetation removed with cooperation from the community?	ii. Yes	ii. Yes	ii. Yes
25d: Does the utility remove vegetation waste outside its right of way across the entire grid?	ii. Yes	ii. Yes	ii. Yes

25e: How long after cutting vegetation does the utility remove vegetation waste outside its right of way?	**iv. On the same day**	**iv. On the same day**	**iv. On the same day**
25f: Does the utility work with local landowners to provide a cost-effective use for cutting vegetation?	**ii. Yes**	**ii. Yes**	**ii. Yes**
25g: Does the utility work with partners to identify new cost-effective uses for vegetation, taking into consideration environmental impacts and emissions of vegetation waste?	**ii. Yes**	**ii. Yes**	**ii. Yes**

Capability 26. QA/QC for vegetation management			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 3	By end of year 1 (current): 2	Planned state by end of cycle: 3 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
26a: How is contractor and employee activity audited?	iii. Through an established and demonstrably functioning audit process to manage and confirm work completed by subcontractors, where contractor activity is subject to semi-automated audits using technologies capable of sampling the contractor's work (e.g., LiDAR scans, photographic evidence)	iii. Through an established and demonstrably functioning audit process to manage and confirm work completed by subcontractors, where contractor activity is subject to semi-automated audits using technologies capable of sampling the contractor's work (e.g., LiDAR scans, photographic evidence)	iii. Through an established and demonstrably functioning audit process to manage and confirm work completed by subcontractors, where contractor activity is subject to semi-automated audits using technologies capable of sampling the contractor's work (e.g., LiDAR scans, photographic evidence)
26b: Do contractors follow the same processes and standards as utility's own employees?	ii. Yes	ii. Yes	ii. Yes
26c: How frequently is QA/QC information used to identify deficiencies in quality of work performance and inspections performance?	iv. Regularly	iv. Regularly	iv. Regularly
26d: How is work and inspections that do not meet utility-prescribed standards remediated?	iii. QA/QC information is used to identify systemic deficiencies in quality of work and inspections, and recommend training based on weaknesses	ii. QA/QC information is used to identify systemic deficiencies in quality of work and inspections	iv. QA/QC information is used to identify systemic deficiencies in quality of work and inspections, grade individuals, and recommend specific pre-made and tested training based on weaknesses
26e: Are workforce management software tools used to manage and confirm work completed by subcontractors?	ii. Yes	ii. Yes	ii. Yes

Category F. Grid operations and protocols

	Avg cycle start maturity: 1.7	Avg current maturity: 1.8	Avg projected cycle end maturity: 2.5
Capability 27. Protective equipment and device settings			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 3	By end of year 1 (current): 3	Planned state by end of cycle: 3 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
27a: How are grid elements adjusted during high threat weather conditions?	iii. Utility increases sensitivity of risk reduction elements during high threat weather conditions and monitors near misses	iii. Utility increases sensitivity of risk reduction elements during high threat weather conditions and monitors near misses	iv. Utility increases sensitivity of risk reduction elements during high threat weather conditions based on risk mapping and monitors near misses
27b: Is there an automated process for adjusting sensitivity of grid elements and evaluating effectiveness?	ii. Partially automated process	ii. Partially automated process	ii. Partially automated process
27c: Is there a predetermined protocol driven by fire conditions for adjusting sensitivity of grid elements?	ii. Yes	ii. Yes	ii. Yes

Capability 28. Incorporating ignition risk factors in grid control			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 1	By end of year 1 (current): 1	Planned state by end of cycle: 2 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
28a: Does the utility have a clearly explained process for determining whether to operate the grid beyond current or voltage designs?	ii. Yes	ii. Yes	ii. Yes
28b: Does the utility have systems in place to automatically track operation history including current, loads, and voltage throughout the grid at the circuit level?	ii. Yes	ii. Yes	ii. Yes
28c: Does the utility use predictive modeling to estimate the expected life and make equipment maintenance, rebuild, or replacement decisions based on grid operating history, and is that model reviewed?	i. Modeling is not used	i. Modeling is not used	ii. Modeling is used, but not evaluated by external experts
28d: When does the utility operate the grid above rated voltage and current load?	iii. Never	iii. Never	iii. Never

Capability 29. PSPS op. model and consequence mitigation			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 2	By end of year 1 (current): 2	Planned state by end of cycle: 2 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
29a: How effective is PSPS event forecasting?	iv. PSPS event generally forecasted accurately with fewer than 25% of predictions being false positives	iv. PSPS event generally forecasted accurately with fewer than 25% of predictions being false positives	iv. PSPS event generally forecasted accurately with fewer than 25% of predictions being false positives
29b: What share of customers are communicated to regarding forecasted PSPS events?	iv. PSPS event are communicated to >99% of affected customers and >99.9% of medical baseline customers in advance of PSPS action	iv. PSPS event are communicated to >99% of affected customers and >99.9% of medical baseline customers in advance of PSPS action	iv. PSPS event are communicated to >99% of affected customers and >99.9% of medical baseline customers in advance of PSPS action
29c: During PSPS events, what percent of customers complain?	iii. Less than 0.5%	iii. Less than 0.5%	iii. Less than 0.5%
29d: During PSPS events, does the utility's website go down?	i. No	i. No	i. No
29e: During PSPS events, what is the average downtime per customer?	v. Less than 0.1 hours	v. Less than 0.1 hours	v. Less than 0.1 hours
29f: Are specific resources provided to all affected customers to alleviate the impact of the power shutoff (e.g., providing backup generators, supplies, batteries, etc.)?	i. No	i. No	i. No

Capability 30. Protocols for PSPS initiation			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 1	By end of year 1 (current): 2	Planned state by end of cycle: 2 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	**Start of cycle**	**By end of year 1 (current)**	**Planned state by end of cycle**
30a: Does the utility have explicit thresholds for activating a PSPS?	iii. Utility has explicit policies and explanation for the thresholds above which PSPS is activated, but maintains grid in sufficiently low risk condition to not require any PSPS activity, though may de-energize specific circuits upon detection of damaged condition of electrical lines and equipment, or contact with foreign objects	iii. Utility has explicit policies and explanation for the thresholds above which PSPS is activated, but maintains grid in sufficiently low risk condition to not require any PSPS activity, though may de-energize specific circuits upon detection of damaged condition of electrical lines and equipment, or contact with foreign objects	iii. Utility has explicit policies and explanation for the thresholds above which PSPS is activated, but maintains grid in sufficiently low risk condition to not require any PSPS activity, though may de-energize specific circuits upon detection of damaged condition of electrical lines and equipment, or contact with foreign objects
30b: Which of the following does the utility take into account when making PSPS decisions? Select all that apply	i. SME opinion	i. SME opinion ii. A partially automated system which recommends circuits for which PSPS should be activated and is validated by SMEs	i. SME opinion ii. A partially automated system which recommends circuits for which PSPS should be activated and is validated by SMEs
30c: Under which circumstances does the utility de-energize circuits? Select all that apply.	ii. When circuit presents a safety risk to suppression or other personnel iii. When equipment has come into contact with foreign objects posing ignition risk	i. Upon detection of damaged conditions of electric equipment ii. When circuit presents a safety risk to suppression or other personnel iii. When equipment has come into contact with foreign objects posing ignition risk iv. Additional reasons not listed	i. Upon detection of damaged conditions of electric equipment ii. When circuit presents a safety risk to suppression or other personnel iii. When equipment has come into contact with foreign objects posing ignition risk iv. Additional reasons not listed

30d: Given the condition of the grid, with what probability does the utility expect any large scale PSPS events affecting more than 10,000 people to occur in the coming year?	i. Less than 5 % - Grid is in sufficiently low risk condition that PSPS events will not be required, and the only circuits which may require de-energization have sufficient redundancy that energy supply to customers will not be disrupted	i. Less than 5 % - Grid is in sufficiently low risk condition that PSPS events will not be required, and the only circuits which may require de-energization have sufficient redundancy that energy supply to customers will not be disrupted	i. Less than 5 % - Grid is in sufficiently low risk condition that PSPS events will not be required, and the only circuits which may require de-energization have sufficient redundancy that energy supply to customers will not be disrupted

Capability 31. Protocols for PSPS re-energization			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 2	By end of year 1 (current): 2	Planned state by end of cycle: 2 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
31a: Is there a process for inspecting de-energized sections of the grid prior to re-energization?	ii. Existing process for accurately inspecting de-energized sections of the grid prior to re-energization	ii. Existing process for accurately inspecting de-energized sections of the grid prior to re-energization	ii. Existing process for accurately inspecting de-energized sections of the grid prior to re-energization
31b: How automated is the process for inspecting de-energized sections of the grid prior to re-energization?	ii. Partially automated (<50%)	ii. Partially automated (<50%)	iii. Mostly automated (>=50%)

31c: What is the average amount of time that it takes you to re-energize your grid from a PSPS once weather has subsided to below your de-energization threshold?	v. Within 8 hours	v. Within 8 hours	v. Within 8 hours
31d: What level of understanding of probability of ignitions after PSPS events does the utility have across the grid?	ii. Some probability estimates exist	ii. Some probability estimates exist	ii. Some probability estimates exist

Capability 32. Ignition prevention and suppression			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 1	By end of year 1 (current): 1	Planned state by end of cycle: 4 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
32a: Does the utility have defined policies around the role of workers in suppressing ignitions?	ii. Utilities have explicit policies about the role of crews at the site of ignition	ii. Utilities have explicit policies about the role of crews at the site of ignition	iii. Utilities have explicit policies about the role of crews, including contractors and subcontractors, at the site of ignition
32b: What training and tools are provided to workers in the field?	iii. All criteria in option (ii) met; In addition, suppression tools and training to suppress small ignitions caused by workers or in immediate vicinity of workers are provided	ii. Training and communications tools are provided to immediately report ignitions caused by workers or in immediate vicinity of workers	0

32c: In the events where workers have encountered an ignition, have any Cal/OSHA reported injuries or fatalities occurred in in the last year?	**i. No**	**i. No**	**i. No**
32d: Does the utility provide training to other workers at other utilities and outside the utility industry on best practices to minimize, report and suppress ignitions?	**i. No**	**i. No**	**ii. Yes**

Category G. Data governance

	Avg cycle start maturity: 0.5	Avg current maturity: 0.5	Avg projected cycle end maturity: 3.3
Capability 33. Data collection and curation			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 0	By end of year 1 (current): 0	Planned state by end of cycle: 4 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
33a: Does the utility have a centralized database of situational, operational, and risk data?	i. No	i. No	ii. Yes
33b: Is the utility able to use advanced analytics on its centralized database of situational, operational, and risk data to make operational and investment decisions?	i. No	i. No	iii. Yes, for both short term and long-term decision making
33c: Does the utility collect data from all sensored portions of electric lines, equipment, weather stations, etc.?	ii. Yes	ii. Yes	ii. Yes
33d: Is the utility's database of situational, operational, and risk data able to ingest and share data using real-time API protocols with a wide variety of stakeholders?	i. No	i. No	ii. Yes
33e: Does the utility identify highest priority additional data sources to improve decision making?	ii. Yes	ii. Yes	iii. Yes, with plans to incorporate these into centralized database of situational, operational and risk data

33f: Does the utility share best practices for database management and use with other utilities in California and beyond?	i. No	i. No	iii. Yes, with specific processes to do so in place

Capability 34. Data transparency and analytics			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 0	By end of year 1 (current): 0	Planned state by end of cycle: 2 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
34a: Is there a single document cataloguing all fire-related data and algorithms, analyses, and data processes?	i. No	i. No	ii. Yes
34b: Is there an explanation of the sources, cleaning processes, and assumptions made in the single document catalog?	i. No	i. No	ii. Yes
34c: Are all analyses, algorithms, and data processing explained and documented?	i. Analyses, algorithms, and data processing are not documented	i. Analyses, algorithms, and data processing are not documented	iii. Analyses, algorithms, and data processing are documented and explained
34d: Is there a system for sharing data in real time across multiple levels of permissions?	i. No system capable of sharing data in real time across multiple levels of permissions	i. No system capable of sharing data in real time across multiple levels of permissions	ii. System is capable of sharing across at least two levels of permissions, including a.) utility-regulator permissions, and b.) first responder permissions
34e: Are the most relevant wildfire related data algorithms disclosed?	ii. Yes, disclosed to regulators and other relevant stakeholders upon request	ii. Yes, disclosed to regulators and other relevant stakeholders upon request	iii. Yes, disclosed publicly in WMP upon request

Capability 35. Near-miss tracking			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 1	By end of year 1 (current): 1	Planned state by end of cycle: 4 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
35a: Does the utility track near miss data for all near misses with wildfire ignition potential?	ii. Yes	ii. Yes	ii. Yes
35b: Based on near miss data captured, is the utility able to simulate wildfire potential given an ignition based on event characteristics, fuel loads, and moisture?	i. No	i. No	ii. Yes
35c: Does the utility capture data related to the specific mode of failure when capturing near-miss data?	ii. Yes	ii. Yes	ii. Yes
35d: Is the utility able to predict the probability of a near miss in causing an ignition based on a set of event characteristics?	i. No	i. No	ii. Yes
35e: Does the utility use data from near misses to change grid operation protocols in real time?	ii. Yes	ii. Yes	ii. Yes

Capability 36. Data sharing with research community			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 1	By end of year 1 (current): 1	Planned state by end of cycle: 3 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
36a: Does the utility make disclosures and share data?	ii. Utility makes required disclosures, but does not share data beyond what is required	ii. Utility makes required disclosures, but does not share data beyond what is required	iii. Utility makes required disclosures and shares data beyond what is required
36b: Does the utility in engage in research?	ii. Utility participates in collaborative research	ii. Utility participates in collaborative research	ii. Utility participates in collaborative research
36c: What subjects does utility research address?	ii. Utility ignited wildfires and risk reduction initiatives	ii. Utility ignited wildfires and risk reduction initiatives	ii. Utility ignited wildfires and risk reduction initiatives
36d: Does the utility promote best practices based on latest independent scientific and operational research?	ii. Yes	ii. Yes	ii. Yes

Category H. Resource allocation methodology

	Avg cycle start maturity: 1.5	Avg current maturity: 1.5	Avg projected cycle end maturity: 2.5
Capability 37. Scenario analysis across different risk levels			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 1	By end of year 1 (current): 1	Planned state by end of cycle: 2 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
37a: For what risk scenarios is the utility able to provide projected cost and total risk reduction potential?	iii. Utility provides an accurate high-risk reduction and low risk reduction scenario, in addition to their proposed scenario, and the projected cost and total risk reduction potential	ii. Utility provides an accurate high-risk reduction and low risk reduction scenario, and the projected cost and total risk reduction potential	iii. Utility provides an accurate high-risk reduction and low risk reduction scenario, in addition to their proposed scenario, and the projected cost and total risk reduction potential
37b: For what level of granularity is the utility able to provide projections for each scenario?	ii. Region level	ii. Region level	iii. Circuit level
37c: Does the utility include a long term (e.g., 6-10 year) risk estimate taking into account macro factors (climate change, etc.) as well as planned risk reduction initiatives in its scenarios?	ii. Yes	ii. Yes	ii. Yes
37d: Does the utility provide an estimate of impact on reliability factors in its scenarios?	ii. Yes	ii. Yes	ii. Yes

Capability 38. Presentation of relative risk spend efficiency for portfolio of initiatives			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 1	By end of year 1 (current): 1	Planned state by end of cycle: 2 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
38a: Does the utility present accurate qualitative rankings for its initiatives by risk spend efficiency?	ii. Yes	ii. Yes	ii. Yes
38b: What initiatives are captured in the ranking of risk spend efficiency?	iii. All commercial initiatives and emerging initiatives	iii. All commercial initiatives and emerging initiatives	iii. All commercial initiatives and emerging initiatives
38c: Does the utility include figures for present value cost and project risk reduction impact of each initiative, clearly documenting all assumptions (e.g. useful life, discount rate, etc.)?	ii. Yes	ii. Yes	ii. Yes
38d: Does the utility provide an explanation of their investment in each particular initiative?	ii. Yes, including the expected overall reduction in risk	ii. Yes, including the expected overall reduction in risk	iii. Yes, including the expected overall reduction in risk and estimates of impact on reliability factors
38e: At what level of granularity is the utility able to provide risk efficiency figures?	ii. Region level	ii. Region level	iii. Circuit level

Capability 39. Process for determining risk spend efficiency of vegetation management initiatives			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 1	By end of year 1 (current): 1	Planned state by end of cycle: 2 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
39a: How accurate of a risk spend efficiency calculation can the utility provide?	iii. Utility has accurate quantitative understanding of cost and effectiveness to produce a reliable risk spend efficiency estimate	iii. Utility has accurate quantitative understanding of cost and effectiveness to produce a reliable risk spend efficiency estimate	iv. Utility has accurate quantitative understanding of cost, including sensitivities and effectiveness to produce a reliable risk spend efficiency estimate
39b: At what level can estimates be prepared?	ii. Regional	ii. Regional	iii. Circuit-based
39c: How frequently are estimates updated?	iii. Annually or more frequently	iii. Annually or more frequently	iii. Annually or more frequently
39d: What vegetation management initiatives does the utility include within its evaluation?	iv. All	iv. All	v. All, supported by independent testing
39e: Can the utility evaluate risk reduction synergies from combination of various initiatives?	ii. Yes	i. No	ii. Yes

Capability 40. Process for determining risk spend efficiency of system hardening initiatives			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 1	By end of year 1 (current): 1	Planned state by end of cycle: 2 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
40a: How accurate of a risk spend efficiency calculation can the utility provide?	iii. Utility has accurate quantitative understanding of cost and effectiveness to produce a reliable risk spend efficiency estimate	iii. Utility has accurate quantitative understanding of cost and effectiveness to produce a reliable risk spend efficiency estimate	iv. Utility has accurate quantitative understanding of cost, including sensitivities, and effectiveness to produce a reliable risk spend efficiency estimate
40b: At what level can estimates be prepared?	ii. Regional	ii. Regional	iii. Circuit-based
40c: How frequently are estimates updated?	iii. Annually or more frequently	iii. Annually or more frequently	iii. Annually or more frequently
40d: What grid hardening initiatives are included in the utility risk spend efficiency analysis?	iv. All commercially available grid hardening initiatives	iv. All commercially available grid hardening initiatives	v. All commercially available grid hardening initiatives, as well as those initiatives that are lab tested
40e: Can the utility evaluate risk reduction effects from the combination of various initiatives?	ii. Yes	i. No	ii. Yes

Capability 41. Portfolio-wide initiative allocation methodology			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 3	By end of year 1 (current): 3	Planned state by end of cycle: 4 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
41a: To what extent does the utility allocate capital to initiatives based on risk-spend efficiency (RSE)?	iv. Accurate RSE estimates for all initiatives are used to determine capital allocation across portfolio (e.g. prioritizing between vegetation management and grid hardening)	iv. Accurate RSE estimates for all initiatives are used to determine capital allocation across portfolio (e.g. prioritizing between vegetation management and grid hardening)	iv. Accurate RSE estimates for all initiatives are used to determine capital allocation across portfolio (e.g. prioritizing between vegetation management and grid hardening)
41b: What information does the utility take into account when generating RSE estimates?	ii. Specific information by initiative, including state of equipment and location where initiative will be implemented	ii. Specific information by initiative, including state of equipment and location where initiative will be implemented	iii. Specific information by initiative at the asset level, including state of specific assets and location where initiative will be implemented
41c: How does the utility verify RSE estimates?	ii. RSE estimates are verified by historical or experimental pilot data	ii. RSE estimates are verified by historical or experimental pilot data	iii. RSE estimates are verified by historical or experimental pilot data and confirmed by independent experts or other utilities in CA
41d: Does the utility take into consideration impact on safety, reliability, and other priorities when making spending decisions?	ii. Yes	ii. Yes	ii. Yes

Capability 42. Portfolio-wide innovation in new wildfire initiatives			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 2	By end of year 1 (current): 2	Planned state by end of cycle: 3 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
42a: How does the utility develop and evaluate the efficacy of new wildfire initiatives?	iv. Utility uses pilots, followed by in-field testing, measuring reduction in ignition events and near-misses.	iii. Utility uses pilots and measures direct reduction in ignition events and near-misses.	iv. Utility uses pilots, followed by in-field testing, measuring reduction in ignition events and near-misses.
42b: How does the utility develop and evaluate the risk spend efficiency of new wildfire initiatives?	ii. Utility uses total cost of ownership	ii. Utility uses total cost of ownership	ii. Utility uses total cost of ownership
42c: At what level of granularity does the utility measure the efficacy of new wildfire initiatives?	ii. Entire territory	ii. Entire territory	iii. Circuit
42d: Are the reviews of innovative initiatives audited by independent parties?	i. No	i. No	ii. Yes
42e: Does the utility share the findings of its evaluation of innovative initiatives with other utilities, academia, and the general public?	ii. Yes	ii. Yes	ii. Yes

Category I. Emergency planning and preparedness

	Avg cycle start maturity: 3.6	Avg current maturity: 3.6	Avg projected cycle end maturity: 4
Capability 43. Wildfire plan integrated with overall disaster/ emergency plan			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 4	By end of year 1 (current): 4	Planned state by end of cycle: 4 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
43a: Is the wildfire plan integrated with overall disaster and emergency plans?	iii. Wildfire plan is an integrated component of overall plan	iii. Wildfire plan is an integrated component of overall plan	iii. Wildfire plan is an integrated component of overall plan
43b: Does the utility run drills to audit the viability and execution of its wildfire plans?	ii. Yes	ii. Yes	ii. Yes
43c: Is the impact of confounding events or multiple simultaneous disasters considered in the planning process?	ii. Yes	ii. Yes	ii. Yes
43d: Is the plan integrated with disaster and emergency preparedness plans of other relevant stakeholders (e.g., CAL FIRE, Fire Safe Councils, etc.)?	ii. Yes	ii. Yes	ii. Yes
43e: Does the utility take a leading role in planning, coordinating, and integrating plans across stakeholders?	ii. Yes	ii. Yes	ii. Yes

Capability 44. Plan to restore service after wildfire related outage			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 4	By end of year 1 (current): 4	Planned state by end of cycle: 4 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
44a: Are there detailed and actionable procedures in place to restore service after a wildfire related outage?	ii. Yes	ii. Yes	ii. Yes
44b: Are employee and subcontractor crews trained in, and aware of, plans?	ii. Yes	ii. Yes	ii. Yes
44c: To what level are procedures to restore service after a wildfire-related outage customized?	iii. Circuit level	iii. Circuit level	iii. Circuit level
44d: Is the customized procedure to restore service based on topography, vegetation, and community needs?	ii. Yes	ii. Yes	ii. Yes
44e: Is there an inventory of high risk spend efficiency resources available for repairs?	ii. Yes	ii. Yes	ii. Yes
44f: Is the wildfire plan integrated with overall disaster and emergency plans?	iii. Wildfire plan is an integrated component of overall plan	iii. Wildfire plan is an integrated component of overall plan	iii. Wildfire plan is an integrated component of overall plan

Capability 45. Emergency community engagement during and after wildfire			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 4	By end of year 1 (current): 4	Planned state by end of cycle: 4 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
45a: Does the utility provide clear and substantially complete communication of available information relevant to affected customers?	iii. Yes, along with referrals to other agencies	iii. Yes, along with referrals to other agencies	iii. Yes, along with referrals to other agencies
45b: What percent of affected customers receive complete details of available information?	v. >99.9% of medical baseline customers	v. >99.9% of medical baseline customers	v. >99.9% of medical baseline customers
45c: What percent of affected medical baseline customers receive complete details of available information?	v. >99.9% of medical baseline customers	v. >99.9% of medical baseline customers	v. >99.9% of medical baseline customers
45d: How does the utility assist where helpful with communication of information related to power outages to customers?	ii. Through availability of relevant evacuation information and links on website and toll-free telephone number, and assisting disaster response professionals as requested	ii. Through availability of relevant evacuation information and links on website and toll-free telephone number, and assisting disaster response professionals as requested	ii. Through availability of relevant evacuation information and links on website and toll-free telephone number, and assisting disaster response professionals as requested
45e: How does the utility with engage other emergency management agencies during emergency situations?	iii. Utility has detailed and actionable established protocols for engaging with emergency management organizations	iii. Utility has detailed and actionable established protocols for engaging with emergency management organizations	iii. Utility has detailed and actionable established protocols for engaging with emergency management organizations
45f: Does the utility communicate and coordinate resources to communities during emergencies (e.g.,	ii. Yes	ii. Yes	ii. Yes

shelters, supplies, transportation etc.)?			
Capability 46. Protocols in place to learn from wildfire events			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 4	By end of year 1 (current): 4	Planned state by end of cycle: 4 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
46a: Is there a protocol in place to record the outcome of emergency events and to clearly and actionably document learnings and potential process improvements?	ii. Yes	ii. Yes	ii. Yes
46b: Is there a defined process and staff responsible for incorporating learnings into emergency plan?	ii. Yes	ii. Yes	ii. Yes
46c: Once updated based on learnings and improvements, is the updated plan tested using "dry runs" to confirm its effectiveness?	ii. Yes	ii. Yes	ii. Yes
46d: Is there a defined process to solicit input from a variety of other stakeholders and incorporate learnings from other stakeholders into the emergency plan?	ii. Yes	ii. Yes	ii. Yes

Capability 47. Processes for continuous improvement after wildfire and PSPS			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 2	By end of year 1 (current): 2	Planned state by end of cycle: 4 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	**Start of cycle**	**By end of year 1 (current)**	**Planned state by end of cycle**
47a: Does the utility conduct an evaluation or debrief process after a wildfire?	ii. Yes	ii. Yes	ii. Yes
47b: Does the utility conduct a customer survey and utilize partners to disseminate requests for stakeholder engagement?	iii. Both	iii. Both	iii. Both
47c: In what other activities does the utility engage?	iii. Debriefs with partners	iii. Debriefs with partners	iv. Public listening sessions, debriefs with partners, and others
47d: Does the utility share with partners findings about what can be improved?	ii. Yes	ii. Yes	ii. Yes
47e: Are feedback and recommendations on potential improvements made public?	ii. Yes	ii. Yes	ii. Yes
47f: Does the utility conduct proactive outreach to local agencies and organizations to solicit additional feedback on what can be improved?	ii. Yes	ii. Yes	ii. Yes

47g: Does the utility have a clear plan for post-event listening and incorporating lessons learned from all stakeholders?	ii. Yes	ii. Yes	ii. Yes
47h: Does the utility track the implementation of recommendations and report upon their impact?	ii. Yes	ii. Yes	ii. Yes
47i: Does the utility have a process to conduct reviews after wildfires in other the territory of other utilities and states to identify and address areas of improvement?	ii. Yes	ii. Yes	ii. Yes

Category J. Stakeholder cooperation and community engagement

	Avg cycle start maturity: 3	Avg current maturity: 2.8	Avg projected cycle end maturity: 4
Capability 48. Cooperation and best practice sharing with other utilities			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 4	By end of year 1 (current): 4	Planned state by end of cycle: 4 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
48a: Does the utility actively work to identify best practices from other utilities through a clearly defined operational process?	iii. Yes, from other global utilities	iii. Yes, from other global utilities	iii. Yes, from other global utilities

48b: Does the utility successfully adopt and implement best practices identified from other utilities?	ii. Yes	ii. Yes	ii. Yes
48c: Does the utility seek to share best practices and lessons learned in a consistent format?	ii. Yes	ii. Yes	ii. Yes
48d: Does the utility share best practices and lessons via a consistent and predictable set of venues/media?	ii. Yes	ii. Yes	ii. Yes
48e: Does the utility participate in annual benchmarking exercises with other utilities to find areas for improvement?	ii. Yes	ii. Yes	ii. Yes
48f: Has the utility implemented a defined process for testing lessons learned from other utilities to ensure local applicability?	ii. Yes	ii. Yes	ii. Yes

Capability 49. Engagement with communities on utility wildfire mitigation initiatives			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 4	By end of year 1 (current): 4	Planned state by end of cycle: 4 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle

49a: Does the utility have a clear and actionable plan to develop or maintain a collaborative relationship with local communities?	**ii. Yes**	**ii. Yes**	**ii. Yes**
49b: Are there communities in HFTD areas where meaningful resistance is expected in response to efforts to mitigate fire risk (e.g. vegetation clearance)?	**i. No**	**i. No**	**i. No**
49c: What percent of landowners are non-compliant with utility initiatives (e.g., vegetation management)?	**v. Less than 0.5%**	**v. Less than 0.5%**	**v. Less than 0.5%**
49d: What percent of landowners complain about utility initiatives (e.g., vegetation management)?	**iv. Less than 1 %**	**v. Less than 0.5%**	**v. Less than 0.5%**
49e: Does the utility have a demonstratively cooperative relationship with communities containing >90% of the population in HFTD areas (e.g. by being recognized by other agencies as having a cooperative relationship with those communities in HFTD areas)?	**ii. Yes**	**ii. Yes**	**ii. Yes**
49f: Does utility have records of landowners throughout communities containing >90% of the population in HFTD areas reaching out to notify of risks, dangers or issues in the past year?	**ii. Yes**	**ii. Yes**	**ii. Yes**

Capability 50. Engagement with LEP and AFN populations			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 0	By end of year 1 (current): 0	Planned state by end of cycle: 4 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
50a: Can the utility provide a plan to partner with organizations representing Limited English Proficiency (LEP) and Access & Functional Needs (AFN) communities?	i. No	i. No	ii. Yes
50b: Can the utility outline how these partnerships create pathways for implementing suggested activities to address the needs of these communities?	i. No	i. No	ii. Yes
50c: Can the utility point to clear examples of how those relationships have driven the utility's ability to interact with and prepare LEP & AFN communities for wildfire mitigation activities?	i. No	i. No	ii. Yes
50d: Does the utility have a specific annually-updated action plan further reduce wildfire and PSPS risk to LEP & AFN communities?	i. No	ii. Yes	ii. Yes

Capability 51. Collaboration with emergency response agencies			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 4	By end of year 1 (current): 4	Planned state by end of cycle: 4 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
51a: What is the cooperative model between the utility and suppression agencies?	iii. Utility cooperates with suppression agencies by working cooperatively with them to detect ignitions, in addition to notifying them of ignitions as needed	iii. Utility cooperates with suppression agencies by working cooperatively with them to detect ignitions, in addition to notifying them of ignitions as needed	iii. Utility cooperates with suppression agencies by working cooperatively with them to detect ignitions, in addition to notifying them of ignitions as needed
51b: In what areas is the utility cooperating with suppression agencies	iii. Throughout utility service areas	iii. Throughout utility service areas	iii. Throughout utility service areas
51c: Does the utility accurately predict and communicate the forecasted fire propagation path using available analytics resources and weather data?	ii. Yes	ii. Yes	ii. Yes
51d: Does the utility communicate fire paths to the community as requested?	ii. Yes	ii. Yes	ii. Yes
51e: Does the utility work to assist suppression crews logistically, where possible?	ii. Yes	ii. Yes	ii. Yes

Capability 52. Collaboration on wildfire mitigation planning with stakeholders			
Capability maturity level based on Maturity Rubric (0 - 4)	Start of cycle: 3	By end of year 1 (current): 2	Planned state by end of cycle: 4 (projected)
Responses to survey questions Survey questions and the utility's responses are shown below			
Question	Start of cycle	By end of year 1 (current)	Planned state by end of cycle
52a: Where does the utility conduct substantial fuel management?	iii. Utility conducts fuel management throughout service area	ii. Utility conducts fuel management along rights of way	iii. Utility conducts fuel management throughout service area
52b: Does the utility engage with other stakeholders as part of its fuel management efforts?	iv. Utility shares fuel management plans with other stakeholders, and coordinates fuel management activities, including adjusting plans, to cooperate with other stakeholders state-wide to focus on areas that would have the biggest impact in reducing wildfire risk	ii. Utility shares fuel management plans with other stakeholders	v. Utility shares fuel management plans with other stakeholders, and pro-actively coordinates fuel management activities, including adjusting plans, to cooperate with other stakeholders state-wide to focus on areas that would have the biggest impact in reducing wildfire risk
52c: Does the utility cultivate a native vegetative ecosystem across territory that is consistent with lower fire risk?	ii. Yes	ii. Yes	ii. Yes
52d: Does the utility fund local groups (e.g., fire safe councils) to support fuel management?	ii. Yes	ii. Yes	ii. Yes

11.1.4. BVES: Numerical maturity summary

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

Start: Score reported in February 2020; **Current:** Score reported in February 2021; **End:** Score reported in February 2021 projected for February 2023

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