California Wildfire Safety Advisory Board

# Draft Recommendations on the 2021 Wildfire Mitigation Plan Updates of Small and Multi-Jurisdictional Utilities

May 11, 2021

California Wildfire Safety Advisory Board

## Background

Following the catastrophic fires of 2017 and 2018, the California Public Utilities Commission (CPUC) opened Rulemaking 18-10-007 to provide guidance on the form, contents, and process for review and implementation of the Investor-Owned Utilities' (IOUs) Wildfire Mitigation Plans (WMPs) to be filed pursuant to Senate Bill 901. Assembly Bill (AB) 1054 and AB 111 established the Wildfire Safety Advisory Board (WSAB or the Board) consisting of seven independent members appointed by the Governor, Speaker of the Assembly, and Senate Committee on Rules, and mandates the WSAB to develop and make recommendations related to the electric corporations' WMPs. To meet its AB 1054 mandate, the WSAB operates as an independent entity outside of the WSD and the CPUC, which has ensured its ability to provide separate analysis and expert guidance as the basis of its recommendations to the WSD on wildfire safety issues.

The WSAB is comprised of seven appointed member experts. Each board member brings a unique perspective and expertise to the state and to their review of the Wildfire Mitigation Plans.[1] Additional information about the WSAB and its members can be found on its website: www.cpuc.ca.gov/WSAB.

- Marcie Edwards, Chair
- Diane Fellman, Vice Chair
- Ralph Armstrong
- Jessica Block
- Chris Porter
- John Mader
- Alexandra Syphard

## Acknowledgements

The WSAB recognizes California's SMJUs dedication to wildfire mitigation as reflected in these plans and looks forward to continued collaboration. The WSAB is further appreciative of the WSD's efforts and appreciates the ability to provide observations and recommendations on the 2021 WMP Updates. We also acknowledge the dedication, creativity, and project management of our advisors, Katherine Stockton and Lea Haro.

[1] The Board approves these recommendations as a whole, but each recommendation may not reflect the views of individual Board members.

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# 1. Introduction

Pursuant to Public Utilities Code Section 326.2(b) and 8389(b)(1),[2] the Wildfire Safety Advisory Board (WSAB) provides these recommendations to the Wildfire Safety Division (WSD) for its consideration as it evaluates the sufficiency of the 2021 Wildfire Mitigation Plan (WMP) Updates for the small and multi-jurisdictional utilities (SMJUs): Bear Valley Electric Service, Inc. (BVES), PacifiCorp's Pacific Power Utility (PacifiCorp), and Liberty Utilities, LLC. (Liberty).

## The Board's 2021 Observations

California's increase in wildfire events is partly attributable to several factors that become problematical when they occur synchronously. These include an extended period of drought, upwards of 10 years, increased fuel for fires in certain forest types, unprecedented climatological conditions causing extreme weather events, and an expansion of housing that increases the possibility of human-caused ignitions coinciding with extreme fire-weather. The most destructive wildfire seasons on record have occurred within the last four years, with a cumulative total of more than 50,000 structures destroyed and an unprecedented loss of human life. California also experienced a record-setting annual area burned in 2020.

Utility-related wildfires and wildfire-related consequences have received great public scrutiny and attention, but these challenges cannot be resolved by electric utilities alone. In addition to the CPUC and the WSD, the WSAB recognizes the important conversations that are occurring in other arenas, including other regulatory agencies like the Department of Fire and Forest Protection (CAL FIRE) and the California Buildings and Standards Commission, local planning or zoning boards, as well as the California Legislature, especially around the issue of housing development in the wildland urban interface and ingress/egress routes.[3]

We offer our assessment specific to electric utility regulation and preventing utility ignited wildfires. These recommendations should inform the WSD's evaluation of the SMJUs' 2021 WMP Updates. Overall, the WSAB intends our observations and recommendations to apply to the SMJUs and the large IOUs.[4]

The WSAB recognizes the SMJUs' extensive effort to develop their WMP filings and acknowledges that the information has improved since the 2020 filings. The WSAB observed the following recurring issues

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[2] Public Utilities Code Section 326.2(b) states that the Board shall

> "[d]evelop recommendations related to the contents of wildfire mitigation plans pursuant to Chapter 6 (commencing with Section 8385 of Division 4.1."

Further, Public 8389(b)(1) states that the Board shall make recommendations to the WSD on

> "(1) appropriate performance metrics and processes for determining an electrical corporation's compliance with its approved wildfire mitigation plan."

3 For example, in the 2021-2022 legislative session many bills address issues of housing developments and safety in the wildland urban interface including Assembly Bill (AB) 642, AB 853, AB 1141, AB 1519, Senate Bill (SB) 12, SB 45, and SB 63.

[4] See WSAB, Recommendations on the 2021 Wildfire Mitigation Plan Updates for Large Investor-Owned Utilities, available at: https://www.cpuc.ca.gov/uploadedFiles/CPUCWebsite/Content/About_Us/Organization/Divisions/WSD/WSAB%20Recommendations%20on%202021%20Large%20IOU%20WMP%20Updates%20Issued%204.16.2021.pdf.

across the SMJUs' 2021 WMP Update filings:

- *Specific guidance to SMJUs:* The WSAB recognizes that the SMJUs have smaller service territories than the three large IOUs and may be more resource constrained. The WSD should consider providing specific guidance to the SMJUs to help them best allocate their limited resources. Similarly, the WSD should consider whether the SMJUs may be relieved of some of the reporting requirements for the same reason.

- *Transparency in models used to make decisions:* The WSAB would like to specifically call out the need for additional information on the risk models that SMJUs rely on to make decisions. As discussed in the WSAB's Recommendations on the Large IOU 2021 WMP Updates, and Section 2 herein, these models must be vetted. A process like scientific peer review would benefit the SMJUs and California at large. If utilities base their decision-making on these models, this information must be clear and transparent. Stakeholders should collaborate and consider developing standardized risk models that are used across the utilities.

- *Public safety power shutoffs are less of a concern for SMJUs:* The WSAB does not have recommendations specific to public safety power shutoffs (PSPS), other than providing more details on risk modeling that is used to prioritize grid hardening measures. First, the SMJUs call PSPS infrequently, if at all, especially compared the large IOUs. Second, while the WSAB recommended the large IOUs make improvements in PSPS data collection, this may not be applicable to the SMJUs because of the reduced rate of grid hardening compared to the large IOUs, meaning there may be less data to track.

In its next set of recommendations, the WSAB will focus on requirements in the 2022 WMP Update Guidelines addressing these observations, along with recommendations on the WSD safety culture assessment and performance metrics. We look forward to collaborating with the WSD on the 2022 WMP Update Guidelines.

## 2 Risk Assessment, Mapping and Resource Allocation

*Risk modeling, assumptions, and methodology:* Overall, the WSAB found similar issues in its review of the SMJUs' 2021 WMP Updates as the IOUs' 2021 WMP Updates. The WSAB did not find enough information about the modeling methods and assumptions to complete a thorough review and provide meaningful input. The WSAB recognizes BVES's efforts to establish the fire circuit safety matrix as a "living document" to increase transparency and gauge progress. BVES uses the fire circuit safety matrix to evaluate enterprise risk; however, it does not provide detail about its risk score and methodology. Further, BVES does not include what factors are considered, how the factors are weighted, how missing data are treated, or how complete the data sets are for asset, topography, or weather. BVES also states its enterprise risk evaluation considers a "reasonable worst-case scenario," however, it does not provide any explanation of what this means.[5]

BVES uses a "risk reduction toolkit" to establish priorities and, within the next one to two years, will hire a consultant to enhance its risk assessment with more sophisticated modeling approaches. The WSAB recommends the consultant that it hires is qualified with ample experience to develop something appropriate, and that the methodology undergoes peer review to ensure that it meets scientific standards.

The WSAB recognizes Liberty's and PacifiCorp's risk assessment and modeling efforts; however, like with the large IOUs, it would be helpful for the reviewer to understand what goes into the development of its fire risk polygons. The WSAB recognizes progress PacifiCorp is making in developing new models such as the Pyregence Ignition Model, but like the other SMJUs, PacifiCorp did not provide enough information for the WSAB to provide meaningful feedback.[6] Liberty is working with Reax Engineering to perform its risk analysis, however, Liberty's 2021 WMP Update does not describe the consultant's background, that is, there is no explanation if consultants are experienced fire scientists or ecologists or their experience with modeling. Ideally, the consultant's team would consist of expert scientists and ecologists who have extensive modeling experience. Further, Liberty's 2021 WMP Update explains that it assesses wildfire risk through various levels of analysis, it considers various factors, and these factors are reviewed independently of Liberty's asset performance of risk.[7] However, it is unclear who is conducting this review and what is being reviewed.

*Fire risk mapping*: The WSAB appreciates that Liberty is now using fire risk mapping tools. The WSAB recognizes that BVES territory is mainly designated a Tier 2 High Fire Threat District (HFTD) under the CPUC's Fire Threat Map,[8] and has used a granular approach to help identify areas of "higher-risk" within Tier 2.[9] The WSAB recommends that BVES uses ecologists or scientists to provide the appropriate determination the finer-detail mapped designations. BVES has not provided information about its consultants who are developing its fire risk mapping tools, but minimum qualifications are included for vegetation management inspections, vegetation work, asset inspections, and grid hardening

[5] BVES 2021 WMP Update at 19.

[6] PacifiCorp 2021 WMP Update at 52.

[7] Liberty 2021 WMP Update at 26.

[8] The CPUC Fire Threat Maps were developed with multi-agency input and a nine-year working group process. The CPUC maps and the HFTD were adopted in Decision 17-12-024.

[9] BVES defines "high-risk areas" as an area with high vegetation density and high winds. BVES 2021 WMP Update at 26 and 115.

work.[10] It would be helpful for the reviewer to be able to evaluate the consultants' knowledge and experience. For example, who are the consultants and what is their background? What are their qualifications to ensure that the assumptions about fuel and fire danger are appropriate to the geographical context?

*Standardized risk model*: The WSAB applauds the SMJU's efforts to create risk models for PSPS, wildfire consequence, and probability of ignition, with little guidance from the CPUC. However, the WSAB is concerned that since neither the CPUC nor WSD provides clear guidance in the form of a standardized risk model, each of the large IOUs and SMJUs create their own in-house models and use models created by other vendors. This makes it very difficult for the regulators and stakeholders to evaluate and determine the effectiveness of models and whether the application of these models correctly accounts for differences in topography and weather, that vary by region and service territory. As discussed in Section 2 of the WSAB's Recommendations on the 2021 Large IOU WMP Updates, more information is needed from the IOUs and SMJUs on modeling assumptions, inputs, outcomes, and how that information guides utility decision-making.

*Machine learning*: Liberty's 2021 WMP Update explains that it is using machine learning, particularly neural networks, and claims that this is better than regression modelling because it is not seeking to explain the variance of ignitions but rather it is seeking to predict ignitions.[11] The WSAB applauds Liberty's efforts to use more sophisticated approaches and more advanced technologies. While machine learning has a number of advantages, the WSAB would like to caution the SMJUs about potential disadvantages to machine learning. The variables used are not always based on an informed understanding of the drivers, but rather throwing the kitchen sink at something and letting the machine sort out the relationships between the data. The machines may not always correctly recognize patterns, so other approaches may be more effective. This lessens the opportunity for real learning and, thus, how to anticipate changes given changes in the drivers. One approach is to evaluate different modeling methods and to quantify uncertainty.

*Data collection and analytics*: The WSAB recognizes that PacifiCorp appears to be doing its due diligence in terms of analytics, tracking, and data collection to better understand its specific vulnerabilities and account for more factors such as weather and fuel characteristics into its estimations of risk.[12] PacifiCorp's 2021 WMP Update refers to its fire risk modeling roadmap, states its method was reliant on the HFTDs, and Table 4.4 outlines the localized risk assessment model (LRAM) data elements.[13] PacifiCorp is piloting an arc energy fault model and explains that its line sections and protective zones and circuits were scored based on arc energy and line length.[14] However, it does not provide information about where the lines and equipment are located in HFTDs or the amount of line in its service territory, which makes it difficult for a reviewer to determine their risk.

*Scientific review*: PacifiCorp utilizes a LRAM, which it has subjected to limited peer review and anticipates

[10] BVES 2021 WMP Update at 70-80.

[11] Liberty 2021 WMP Update at 26.

[12] See PacifiCorp description of their data collection and risk modelling efforts. PacifiCorp 2021 WMP Update at 45-56.

[13] PacifiCorp 2021 WMP Update at 55-57.

[14] PacifiCorp 2021 at 50.

expanding its review with other utility stakeholders, as the opportunity arises.[15] The WSAB reiterates the importance of neutral peer review, collaboration, and more accessible data are necessary to ensure use of the best emerging science, tools, and technology.

## BOARD RECOMMENDATIONS

1. The WSD should request that BVES provide details of risk score and fire circuit safety matrix methodology. The WSD should request BVES provide a detailed explanation of what "worst-case scenario" means in its risk models, assumptions, and methodology.
2. The WSD should request that Liberty provide more details about what experts review its fire risk mapping tools and risk analysis models, and what these experts are reviewing. The WSD should require that the IOUs and SMJUs provide detailed descriptions of the background, experience, and qualifications of consultants or staff completing risk modeling and fire risk mapping work.
3. The WSD should request that PacifiCorp provide information about where its lines and equipment are located in HFTDs, and the amount of line in its service territory.
4. The WSD should require SMJUs to hire or contract with ecologists or fire scientists to review the justifications and whether the designation of "higher-risk areas" in its fire map are appropriate.
5. The WSD should host workshops to develop proposals and guidance to create open-sourced and standardized risk models that all IOUs and SMJUs could utilize.
6. The WSD should request SMJUs provide more detail about how it is using machine learning, explain how it quantifies uncertainties, and how the machines recognize patterns.
7. The WSD should continue to facilitate more transparency with respect to modeling methods.

[15] PacifiCorp 2021 WMP Update at 57.

## 3 Vegetation Management: Inspections, Strategies and Pilots

*Use of LiDAR for vegetation clearances.* Liberty appears to be making good progress, particularly with the adoption of Light Detection and Radar (LiDAR). Liberty is performing 100% of its inspections for vegetation clearances with LiDAR.[16] Liberty continues to perform patrol inspections to identify hazardous trees.[17] Liberty is making more use of LiDAR in the area of vegetation clearances than the large IOUs and SMJUs. PG&E performs LiDAR inspection on 100% of its transmission system at the beginning of the cycle and mid-cycle, which occurs at the height of growing season and the beginning of the most active part of fire season.[18] PG&E is piloting LiDAR for vegetation clearances on its distribution system. SCE performs LiDAR inspections for clearances between SCE's overhead transmission lines and vegetation.[19] SCE is analyzing samplings of LiDAR data collected for other purposes to determine whether it should expand the program to distribution lines.[20] Like SCE, PacifiCorp is analyzing samples of LiDAR collected for other uses.[21] It completed analysis with several vendors and found many false-positives. PacifiCorp is working to improve the accuracy of results. In 2020, SDG&E piloted the use of LiDAR to inspect clearances in a small area. In 2021 it will continue piloting the technology, especially for auditing activities in HFTDs and transmission corridors.[22] BVES conducts LiDAR inspections using both helicopter, fixed wing flights, and mobile truck mounted systems, to evaluate vegetation clearances around distribution electric lines and equipment.[23] The Board encourages the SMJUs' use of LiDAR but cautions against replacing visual and detailed inspections with only LiDAR. The large IOUs and some electric Publicly Owned Utilities and Cooperatives (POU) conduct additional inspections beyond what is required. For example, PG&E conducts annual visual inspections before fire season begins. The SMJUs should provide information on the date of their LiDAR inspections as well as visual inspections. LiDAR should be conducted annually, particularly in areas of rapid growth and HFTDs. The Board recommends that LiDAR is used in addition to visual patrol inspections. The Board also recommends that all Tier 3 lines are inspected annually, all lines in Tier 2 are inspected at least every three years, and all other lines are inspected on a five-year cycle. The Board also recommends that the SMJUs follow the POUs and IOUs best practices for visual inspections.

*Use of tree growth regulators and herbicides.* PacifiCorp uses tree growth regulators, a chemical that is injected into the soil in the tree root zone that reduces the growth rate of trees and new shoots.[24] SDG&E treated approximately 3,400 fast-growing trees in 2020.[25] Whether environmental laws and regulations permit the use of these chemicals or not, the WSAB is concerned about the environmental impact of these chemicals. Utilities should provide more information about tree growth regulator use because any chemical used on the soil may leech into the water table and potentially impact drinking water sources.

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[16] Liberty 2021 WMP Update at 112.
[17] Liberty 2021 WMP Update at 113.
[18] PG&E 2021 WMP Update at 649.
[19] SCE 2021 WMP Update at 266.
[20] SCE 2021 WMP Update at 265.
[21] PacifiCorp 2021 WMP Update at 44-45 and 164-165.
[22] SDG&E 2021 WMP Update at 274-275.
[23] PacifiCorp 2021 WMP Update at 63 and 120.
[24] PacifiCorp 2021 WMP Update at 161-162.
[25] SDG&E 2021 WMP Update at 275.

PacifiCorp, and Liberty use herbicides.[26] Like tree growth regulators, the WSAB is concerned about the impact of herbicides on the environment. Utilities must provide more information on herbicide use because herbicides generally kill all the vegetation treated and has cumulative impacts on ecological and human health. Additionally, the dead vegetation that remains must be cleared. When all vegetation is cleared, there are opportunities for new plants to grow, especially grass, which tends to be more flammable than woody vegetation.

It could be useful for the WSD to understand the chemical composition of tree growth regulators and herbicides, the volume, where and over how big of an area, and with what frequency they are applied. Further, the SMJUs should explain why these mitigation measures were chosen over other solutions. The WMPs should explain whether vegetation is cleared after the application of herbicides.

*Utility defensible space programs.* Liberty is working with other local partners on its Forest Resilience Corridors project, where it employs vegetation management practices that go above and beyond the minimum requirements of General Order 95, Rule 35. These corridors appear to be appropriate in this service territory, where there are more conifer forests, compared to other regions in California. Treatments vary depending upon the distance from the power line. Within 15 feet of power lines, Liberty removes shrubs that are greater than or equal to 18 inches in height, and defect trees that could hit or grow into utility infrastructure. Within 175 feet of power lines, Liberty removes trees with the potential to strike due to defects, reduces fuels, and thins trees. Consideration should be given to avoid removing too much green and woody biomass, especially woody shrubs. The removal of all shrubs that are taller than 18 inches could have negative consequences. If low-growing, low-flammability plants are cleared, it will be difficult to maintain those areas without the encroachment of flammable flashy fuels. Invasive grasses that establish in the open space are much more flammable than many woody shrubs, and thus the clearance of woody shrubs could result in the opposite of the desired effect. SCE, for example is taking the opposite approach and is planting low-growing shrubs underneath lines and assets to serve as ember catchers to prevent the invasion of flammable grasses in these areas.[27] The WSAB recommends SCE's approach for all utilities.

*Vegetation management databases.* PacifiCorp has made progress with various database and record-keeping improvements. Its Vegetation Management Database Pilot Program tracks vegetation management work in a central location and incorporates GPS locations from field work. This is an improvement over formerly used paper processes.[28] PacifiCorp is also exploring the use of external vegetation databases like the National Land Cover Database (NLCD) Canopy Cover raster data and LANDFIRE data layers.[29] However, PacifiCorp does not provide detail of how it is using the LANDFIRE data, what it is using it for, and its assumptions. The WSAB appreciates Liberty's efforts in tracking and monitoring fuel moisture and encourages it to utilize ecologists to evaluate how fuel moisture is used in risk models relative to geographical context.

*Qualifications of workers performing mitigations.* BVES uses Utility Engineer & Wildfire Mitigation Supervisors, Reliability Engineers, Field Inspectors, Utility Systems Specialists, and various Geospatial contractors to

[26] PacifiCorp 2021 WMP Update at 161-162, and SDG&E 2021 WMP Update at 288.

[27] SCE 2021 WMP Update at 333.

[28] PacifiCorp 2021 WMP Update at 46.

[29] PacifiCorp 2021 WMP Update at 46.

perform vegetation management inspections.[30] Field inspectors must have Journeyman Lineman certification, which seems to indicate Lineworkers are performing vegetation inspections. The use of Journeyman Lineworkers to identify how close vegetation is to a power line is good, provided that all the Lineworkers are consistent in recording observations in centralized databases. However, the lack of knowledge on tree species and their characteristics seems to be a shortfall in this program. This is not consistent with the practice of the large IOU's that utilize pre-inspectors who maintain certifications as arborist. Liberty and PacifiCorp also maintain at least minimal in-house vegetation management personnel.[31]

Further, BVES does not employ any internal personnel with knowledge or certifications in vegetation management. The personnel with the most knowledge of vegetation management and practices is the Tree Trim General Foreman who is a contractor used in the actual trimming and removal work. BVES should hire in-house professionals with vegetation management experience to oversee their program. This is critical, especially concerning any quality control measures. BVES staff should have the skillsets and training to identify and log the different tree species and their characteristics.

Finally, the WSAB could not find any evidence that any of the three SMJUs maintain as staff or contract with ecologists. As discussed in multiple past WSAB recommendations,[32] the vegetation mitigation practices impact the surrounding natural environment. Ecologists must review vegetation management practices and provide utilities with advice on how to lessen any potential impacts.

## BOARD RECOMMENDATIONS

1. Liberty should continue to make progress and advance the use of LiDAR in vegetation clearance inspections. However, the WSD should clarify that LiDAR inspections shall not replace visual inspections and is used in addition to visual patrol inspections. The WSD should require that LiDAR is conducted annually, particularly in areas of rapid growth and HFTDs. The WSD should require that all Tier 3 lines are inspected annually, all lines in Tier 2 are inspected at least every three years, and all other lines are inspected on a five-year cycle. The WSD should require that the SMJUs follow the POUs and IOUs best practices for visual inspections.
2. PacifiCorp should continue to convert paper processes to centralized databases.
3. The WSD should request additional information about the chemical composition, volume, frequency, and location of use of tree growth regulators and herbicides. SMJUs should include more information about why these mitigation measures were chose over others due to the impact of these chemicals on the environment and drinking water quality. The WSD should request additional information about whether vegetation is cleared after herbicides have taken effect to ensure that dry fuel that is left behind does not increase wildfire risk.

[30] BVES 2021 WMP Update at 73-74.

[31] Liberty 2021 WMP Update at 58-60, and PacifiCorp 2021 WMP Update at 99-101.

[32] WSAB's Recommendations on the 2021 Large IOU WMP Updates, Vegetation Management Section at 6-8; WSAB's Recommendations on 2020 Utility WMPs, Section 5 at 18; and WSAB's Recommendations on the 2021 WMP Guidelines, Section 3.4 at 29-31.

4. The WSD should request that PacifiCorp provide detailed explanation of how it is using the LANDFIRE data, what it is using it for, and its assumptions.
5. The WSD should consider requiring a certain number of in-house staff with minimum qualifications in vegetation management and ecological science.

## 4 System Design and Management: Grid Hardening, Operations, Inspections, and Emerging Technology

*Asset inspection cycles and safety*: PacifiCorp, BVES, and Liberty conduct annual inspections and more detailed, invasive inspections are conducted on a five-year cycle, where only 20% of the system is given a detailed inspection each year.[33] However performing detailed inspections every five years has yielded limited data for the SMJUs to evaluate their mitigation efforts. The WSAB recommends that more detailed, invasive inspections are conducted on a three-year cycle rather than a five-year cycle, until the SMJUs have adequate historical data to evaluate their mitigation efforts. The Board also recommends that all Tier 3 lines are inspected annually, all lines in Tier 2 are inspected at least every three years, and all other lines are inspected on a five-year cycle. The Board also recommends that the SMJUs follow the POUs and IOUs best practices for visual and detailed inspections.[34]

Further, the SMJUs do not explain whether they use infra-red for inspections. Therefore, the WSAB recommends that the SMJUs employ the most up to date technology to adequately inspect the infrastructure in the HFTD.

*Prioritizing grid hardening measures:* The WSAB acknowledges that the SMJUs are smaller than the three large IOUs and are more resource constrained. The WSAB is impressed with the SMJUs' deployment of weather stations and their plans to install more considering the size of their service territories. However, the SMJUs 2021 WMP Updates have not provided enough information about how the SMJUs prioritize mitigations efforts, what methodology they use to identify which hardening efforts are the most effective, and any barriers to infrastructure replacement. Although BVES's 2021 WMP Update discusses its plan for installing expulsion fuses, replacing tree attachments, and adding cameras to aid wildfires detection efforts, it is unclear how it determined its projected rate of completion and how it prioritized its mitigation efforts. For example, Supporting Table 5.3-2 indicates that BVES's Tree Attachment Removal project will be complete by 2026 at a rate of 10% per year.[35] The WSAB acknowledges that removing electrical equipment attached to trees is necessary to mitigate wildfire risk; however, it is unclear how BVES determined its projected rate of completion, and why it is only prioritizing 10% per year.

BVES's 2021 WMP states that it developed the Covered Wire Installation Programs to replace all bare 34.2Kv and 4Kv distribution wires in "high-risk areas."[36] BVES's territory is located in Tier 2 and Tier 3 HFTDs, therefore it is unclear if BVES is only targeting Tier 3 HFTD or if these programs include all of BVES's service territory. BVES's plans are unclear regarding how it will address the remaining bare conductors. The WSAB is concerned that BVES's bare wire replacement program is limited to areas it has designated using its own definition of "high-risk areas" and may not be aggressive enough to address urgent wildfire risks.

*Pole Loading Assessment and Remediation Program*: BVES's 2021 WMP Update indicates that it has evaluated

[33] PacifiCorp 2021 WMP Update at 140; BVES 2021 WMP Update at 119; and Liberty 2021 WMP Update at 98.

[34] For example, PG&E performs detailed inspections on all Tier 3 lines annually and all Tier 2 lines every three years (1/3 inspected per year). PG&E 2021 WMP Update at 237.

[35] BVES 2021 WMP Update at 68.

[36] BVES 2021 WMP Update at 114.

2,703 poles from 2018-2020.[37] 1,155 of the poles evaluated failed: 751 of the failed poles were replaced, 113 were remediated, and corrective action is being undertaken for the remaining failed poles. The WSAB is concerned that BVES's entire service territory is in Tier 2 and Tier 3 HFTDs and there is no explanation of what corrective action is being undertaken for the remaining 291 failed poles.

*Workforce training and qualified personnel*: The WSAB recognizes the strain that statewide wildfire mitigation efforts have placed on the limited pool of qualified personnel within the state. However, the WSAB sees an opportunity for the SMJUs to have already instituted and ramped up training programs to fill the immediate need for qualified electrical workers and other trained and competent personnel. The SMJU's propose to initiate addressing this issue later this year, which is admirable and a sign that they are heading in the right direction. However, the SMJUs' WMP Updates do not provide detailed explanations of how personnel are deployed, the constraints concerning personnel, and how contract inspectors are chosen and their actual role concerning mitigation work. The WSAB recommends a more concerted approach to staffing that includes developing a larger internal workforce to mitigate potential shortages in contract workers.

*Advanced fault protection:* The SMJU's 2021 WMP Update do not provide descriptions of how the SMJUs verify whether fault interrupting equipment is rated to expected fault duties. It is also not clear whether lightning arresters within the HFTDs have been replaced with CAL FIRE-approved arrestors. More information about the technology and verification processes would be useful.

Further, BVES's WMP Update indicates that it plans to target its limited resources at implementing grid automation into its system and install a fiber optic network, which will also serve to enable the more advanced fault protection technologies that reduce wildfire risk rather than sponsor advanced technology pilot programs.[38] The WSAB recognizes the SMJUs are resource constrained and are focusing their efforts to replace bare wire with covered conductor, which reduces their risk profile and provides an acceptable Risk Spend Efficiency. The WSAB also acknowledges that the SMJUs may be waiting for the large IOUs to complete their pilot programs before investing in their own. However, the WSAB is concerned with the pace at which the SMJUs are deploying fault duty protections. The WSAB cautions the SMJUs against waiting to see what is more commonly accepted by the large IOUs before deploying advanced fault detection and mitigation devices on a larger scale in their territories. Instead, SMJUs should do small-scale pilots to test a variety of technologies.

*De-energization of idle lines*: BVES's WMP Update acknowledges that its heaviest load and demand occurs during the winter months since Bear Lake mainly serves as a winter vacation destination. As a defensive measure, BVES de-energizes the Radford 34.5kV line from April 1 through October 31.[39] However, it is unclear from BVES's, PacifiCorp, and Liberty's WMP Updates if consideration has been given to de-energizing all lines that are not in use to lower the risk that idle lines pose.[40] The Board continues to encourage the de-energization of idle lines as a best practice.[41]

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[37] BVES 2021 WMP Update at 113.

[38] BVES 2021 WMP Update at 105.

[39] BVES 2021 WMP Update at 129.

[40] WSAB Recommendations on the 2021 Large IOU WMP Updates, Section 4at 10-11.

[41] See the Recommendations on the 2021 Large IOU WMP Updates, Section 4 at 10-11.

## BOARD RECOMMENDATIONS

1. The WSD should require the SMJUs to increase their more detailed, invasive inspections from every five years to every three years, until they have adequate historical data to evaluate their mitigation efforts. The WSD should require that all Tier 3 lines are inspected on an annual basis, all lines in Tier 2 are inspected at least every three years, and all other lines are inspected on a five-year cycle. The WSD should require that the SMJUs follow the POUs and IOUs' best practices for visual and detailed inspections.
2. The WSD should require the SMJUs to employ the most up to date technology, such as infrared, to adequately examine the infrastructure within the HFTDs.
3. The WSD should request that the SMJUs provide more information about how they prioritize their mitigations efforts, the rate the projects will be completed, what methodology they use to identify which hardening efforts are the most effective, and any barriers to infrastructure replacement. The WSD should request that BVES explain how it determined that it would complete its tree attachment removal at a rate of 10% per year. WSD should request that BVES clarify its Covered Wire Programs and explain its plan to replace all bare distribution wires.
4. The WSD should request that BVES provide a detailed explanation of what corrective action is being undertaken for the remaining poles that failed inspection.
5. The WSD should request that the SMJUs provide a detailed explanation of how personnel are deployed, the constraints concerning personnel, and how contract inspectors are chosen and their actual role concerning mitigation work. The SMJUs should consider developing a larger internal workforce.
6. The WSD should request that the SMJUs provide detailed explanations of (1) how fault interrupting equipment is checked to ensure it is rated to expected fault duties, (2) their use of infra-red inspections, and (3) whether lighting arrestors in the HFTDs have been changed to CAL FIRE arrestors. The SMJUs should consider small-scale pilots to test a variety of fault detecting and mitigation technologies.
7. The WSD should require the SMJUs to evaluate the feasibility of de-energizing additional idle lines.

## 5 Emergency Planning and Communication: Emergency Preparedness, Stakeholder Cooperation, and Community Engagement

*Public outreach and communication:* Each SMJU has their own mix of topography and core customer base and each has a unique approach to community engagement outreach. PacifiCorp's approach to emergency response and outreach is holistic. PacifiCorp's and Liberty's WMP Updates indicate that they use a variety of tactics and channels to communicate with their customers to provide information about wildfire safety.[42] PacifiCorp also provides additional PSPS notifications to individuals classified as medical baseline customers and individuals who self-identify as Access and Functional Needs (AFN) customers.[43] BVES's WMP Update states that it takes additional steps to ensure that vulnerable, marginalized, and at risk customers are informed about PSPS activities, and has established an advisory board.[44] PacifiCorp has also partnered with MDC Research to conduct annual online and phone surveys with customers regarding its PSPS and wildfire communications. PacifiCorp also indicated that it and the other SMJUs worked together to coordinate survey questions, as required by Decision 20-03-004, on the effectiveness of their 2020 wildfire preparedness and PSPS outreach to identify areas of improvement.[45] All the SMJUs have developed programs to reach out to the AFN populations and WSD should monitor that these efforts are not only maintained, but refined and improved.

*Community Resource Centers:* PacifiCorp, BVES, and Liberty have activated Community Resource Centers (CRC) that are strategically positioned to provide outreach. PacifiCorp's Mobile CRCs are an improvement from its 2020 WMP filing and a definite recognition that projected burn models may not always prove to be accurate. As a result, SMJUs should adapt where they place CRC locations to serve their customers.

*Emergency preparedness:* PacifiCorp has actively invested in fire suppression through investments in equipment for regional fire departments.

### BOARD RECOMMENDATIONS

1. The SMJUs should continue improving their communication and outreach, as efforts have improved over time and they are increasingly being refined.
2. The WSD should request more information about feedback the SMJUs have received from customers about their communication and outreach efforts and assess whether SMJUs are using the appropriate metrics including the incorporation of the survey results required by D.20-03-004.
3. The WSD should request the SMJUs continue to expand and refine outreach to the AFN community and vulnerable customers.

[42] PacifiCorp 2021 WMP Update at 185 and Liberty 2021 WMP at 137.

[43] PacifiCorp 2021 WMP Update at 187.

[44] BVES 2021 WMP Update at 156.

[45] PacifiCorp 2021 WMP Update at 186.