California Wildfire Safety Advisory Board

Recommendations of the Wildfire Safety Advisory Board on Safety Culture Assessment









Final August 31, 2022

California Wildfire Safety Advisory Board

Cover Photos



Shown: **Shrubs Under Utility Lines, Palm Springs**

Shrubs under utility lines can act as ember catchers and prevent the invasion of flammable grasses.



Shown: **Oak Trees in Snow Near Lines**

The WSAB recommends assessment of vegetation beyond the immediate area beneath and closely around power lines.



Shown: **Utility Workers Using Bucket Trucks**

New technologies and protocols can pose safety concerns for implementing workers



*Shown: **PG&E Signs Directing Traffic***

Sign providing directions to Pacific Gas and Electric shelter during Public Safety Power Shutoff (PSPS).

Background

Following recent catastrophic wildfires in California, Senate Bill (SB) 901 established requirements that utilities file Wildfire Mitigation Plans (WMPs) at the California Public Utilities Commission (CPUC). Assembly Bill (AB) 1054 and AB 111 established the Wildfire Safety Advisory Board (WSAB or the Board) consisting of seven members appointed by the Governor, Speaker of the Assembly, and Senate Committee on Rules, and established the Office of Energy Infrastructure Safety (Energy Safety) [1] as a department under the California Natural Resources Agency (CNRA). Public Utilities Code Section 8389 mandates that the WSAB develop and make recommendations to Energy Safety related to the electric corporations' wildfire mitigation practices and plans and the assessment of safety culture and compliance metrics for those corporations.

To meet its AB 1054 mandate, the WSAB operates as an independent entity from Energy Safety and CNRA, ensuring its ability to provide separate analysis and expert guidance as the basis of its recommendations to Energy on wildfire safety issues. The WSAB acts in an advisory role on wildfire mitigation plans and related issues to Energy Safety, as well as to publicly owned utilities in the State. Each member of the WSAB brings a unique perspective and expertise to their review of WMP requirements and performance metrics. Additional information about the WSAB and its members can be found on its website:

California Wildfire Safety Advisory Board Website
https://energysafety.ca.gov/what-we-do/wildfire-safety-advisory-board/[2].

The current WSAB members are:

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

[1] Formerly known as the Wildfire Safety Division at the CPUC.
[2] The Board approves the recommendations found here but individual recommendations may not reflect the views of individual Board members.

2021-2022 Activities and Accomplishments

On July 1, 2021, in keeping with AB 1054 and AB 111, the WSAB relocated within State Government to the California Natural Resources Agency. Prior to the move, the WSAB, during the first half of 2021:

- Held four, public virtual Board meetings
- Developed three sets of recommendations to the CPUC Wildfire Safety Division (the precursor to Energy Safety), on large IOU WMPs; Small and Multi-Jurisdictional (and ITO) WMPs; and 2022 Wildfire Mitigation Plan Guidelines, Performance Metrics, and Safety Culture Assessments

Later in 2021, Energy Safety hired new staff to support the WSAB and help continue accomplishing its required duties. Subsequently, in the second half of 2021 and the first half of 2022, the WSAB:

- Held three public Board meetings, two of which were virtual and the last of which was a hybrid in-person plus virtual meeting in Sacramento[3].
- Developed and adopted an Advisory Guidance Opinion providing recommendations to the State's publicly owned utilities on their 2022 Wildfire Mitigation Plans[4].
- Developed and adopted Recommendations to Energy Safety on additional WMP requirements and performance metrics[5].

Acknowledgements

The Board recognizes California's investor-owned utilities' (IOU) dedication to continual improvement in wildfire suppression and mitigation actions pursuant to, in part, a vibrant and comprehensive improvement to safety culture. The Board also acknowledges that our work and this document would not be possible without the skill, creativity, and expertise of our advisor and staff, Timothy Tutt and Mary Ann Aguayo.

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[3] Wildfire Safety Advisory Board, Board Events and Meetings
https://energysafety.ca.gov/what-we-do/wildfire-safety-advisory-board/wsab-events-and-meetings/

[4] 2022 Advisory Guidance Opinion
https://energysafety.ca.gov/wp-content/uploads/docs/misc/wsab/recs-on-2023-wmp-additional-reqs-performance-metrics-4.26.22-final.pdf

[5] Wildfire Safety Advisory Board Guidance Advisory Opinion for the 2022 Wildfire Mitigation Plans
https://energysafety.ca.gov/wp-content/uploads/docs/misc/wsab/wsab-2022-wmp-pou-guidance-advisory-opinion-2.10.22.pdf

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Introduction

Pursuant to Public Utilities Code Section 326.2(b) and 8389(b)(3),[6] the Wildfire Safety Advisory Board provides these recommendations to the Office of Energy Infrastructure Safety (Energy Safety) for consideration in its review and update of safety culture assessment processes applicable to the Investor-Owned Utilities and Small and Multi-Jurisdictional Utilities (SMJU) (collectively "IOUs" or "utilities").

Safety Culture Background

In 2020, the Wildfire Safety Division (WSD) at the CPUC developed a Safety Culture Assessment process, which includes four components:

- A workforce survey, on the workers performing wildfire mitigation work.
- A management self-assessment, on organizational systems, structures, governance, and safety enabling systems.
- Supporting documentation to justify and validate the utility submissions, requested at the discretion of the WSD.
- Interviews to better understand survey and self-assessment results.

In 2021, the safety culture assessment task for wildfire safety was transferred from the WSD to Energy Safety (in the California Natural Resources Agency). Energy Safety developed and adopted Safety Culture Assessments for each of eight investor-owned utilities in the State. Four of these utilities – Southern California

[6] Public Utilities Code § 8389(b) states that the Board shall make recommendations to Energy Safety on the following:

> "(1) Appropriate performance metrics and processes for determining an electrical corporation's compliance with its approved wildfire mitigation plan.
> (2) Appropriate requirements in addition to the requirements set forth in Section 8386 for the wildfire mitigation plan [the Guidelines].
> (3) The appropriate scope and process for assessing the safety culture of an electrical corporation."

This current document provides the Board's recommendations on (3) above. The Board has previously commented on part (2) and has no current recommendations on the still nascent process of WMP compliance (part 1).

Edison, Pacific Gas and Electric, San Diego Gas and Electric, and Bear Valley Electric – filed formal letters agreeing to implement the recommendations[7].

In 2022, Energy Safety developed and posted Guidelines for the 2022 Safety Culture Assessment process[8], signaling an intent to follow much of the same processes and steps from the 2021 assessment. The 2021 Safety Culture Assessment establishes a baseline that can be used to evaluate progress over time and incorporate continuous improvements in safety culture among the State's investor-owned utilities.

The WSAB has reviewed the safety culture assessment process developed to date and the 2022 Safety Culture Assessment Guidelines and appreciates the care that Energy Safety has taken to avoid duplication with the California Public Utilities Commission's broader safety culture assessment work and mission, as well as not perceiving their assessment as an end in and of itself. These concepts are illustrated by the 2022 Safety Culture Assessment Guidelines, stating:

> "Energy Safety's assessment of safety culture is intended to be complementary to, and not a replacement for, ongoing work to improve safety culture at each electrical corporation. Each electrical corporation may additionally conduct internal safety culture assessments that measure elements specific to that electrical corporation[9]."

The Guidelines go on to suggest that the goal is to understand safety culture best practices, strengths and weaknesses and incorporate continuous learning so that the most robust safety culture feasible is attained and maintained.

Two entities provided public comment on the draft of this document – The Public Advocates Office and the Joint Utilities. Significant modifications were made to the draft in response and this revised document was adopted by the WSAB on August 30, 2022.

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[7] These documents can all be found at the following docket: https://efiling.energysafety.ca.gov/Lists/DocketLog.aspx?docketnumber=2021-SCAs

[8] 2022 Energy Safety Guidelines for the Safety Culture Assessment process: https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=52124&shareable=true

[9] IBID, page 3

General Enhancements to Safety Culture Assessment

"Beyond Compliance" Focus

The WSAB supports the IOU's approach to safety culture as defined in the industry and delineated by Energy Safety and the CPUC. We respect and appreciate the IOUs accomplishments and improvements under those criteria. The WSAB also would like to introduce other dimensions of safety that aim to enhance Energy Safety's' safety culture assessment process. Going forward, Energy Safety should initiate a dialogue with the IOUs to induce and assist the utilities to go beyond, where feasible, acceptance of recommendations that meet the statutory requirement necessary for them to achieve a "good standing" status under Public Utilities Code Section 8389(e)(2). While achieving this "compliance" is of clear importance, the WSAB believes stretch goals are necessary in addition to those traditionally considered and the assessment process should emphasize "beyond compliance" as the target. Specifically, the WSAB recommends that Energy Safety encourage the IOUs to discuss other actions the utility may take to enhance the robustness of their wildfire energy safety culture.

Broad Application of Safety Culture Assessment Surveys

The WSAB has previously recommended that utilities include contractor personnel in their surveys of workforce safety culture. Some utilities responded that they had no control over contractor management safety culture so they should not be held to a safety culture standard that includes these components. The 2022 Guidelines, however, continue to include vegetation management contractors and personnel in the safety culture assessment process. The WSAB supports this inclusion.

In general, the WSAB recommends that safety culture assessment surveys of the utility and contractor workforce include any workforce component that has prevention of and mitigation of electric faults (that could result in ignitions) in their responsibilities. This would include asset managers making decisions about general system design and specific system and project designers (are they designing to the appropriate safety metrics for the time), system installers (are they ensuring safety during installation and communicating issues back to the design process for consideration of correction), and the pantheon of inspectors, maintenance personnel, and troubleshooters, etc. that deal with faults during system operation, in relation to wildfire mitigation.

Safety Culture Consideration of Workforce Training and Expertise

The WSAB has previously recommended that utilities report in their Wildfire Mitigation Plans about the employment of Qualified Electrical Workers to safely perform appropriate work related to wildfires. It is important to consider as part of a safety culture assessment process whether utilities are properly training and assigning workers to best ensure community and worker safety during a wildfire or in the critical process of preventing or minimizing utility-caused wildfires.

WSAB RECOMMENDATIONS

1. **Energy Safety should initiate a discussion in the safety culture assessment process to emphasize a "going beyond compliance" culture.**
2. **Energy Safety should ensure that the surveys to assess safety culture at utilities include a broad workforce template, from system designers through troubleshooters and repairers – any workforce component (utility personnel or contractors) that may involve faults that could trigger a wildfire.**
3. **Safety culture assessment should include consideration of workforce training and expertise, so as to ensure the proper worker (e.g. a Qualified Electrical Worker) had the correct training to safely work on wildfire issues.**

Including Innovation and Change in Safety Culture

The WSAB understands safety culture as an ongoing set of practices at a utility that strives for improving safety over time through regular rethinking, constant innovation, and an eye for the long term rather than simply being safe today. With the first safety culture assessment, Energy Safety established a solid baseline; subsequent assessments should build on that baseline by considering not only how safety culture itself at each utility is changing, but also how changing circumstances, technologies, and climate should lead to changing safety practices. The WSAB is looking to establish innovation and change as a key part of ongoing annual safety culture assessments.

Safety Culture Imbedded in New Wildfire Products and Practices

The WSAB has previously recommended that utilities include in their Wildfire Mitigation Plans a description of their workforce safety protocols and how those may change when implementing new wildfire mitigation technologies, equipment, or work practices. As the utilities adopt new technologies and practices for wildfire mitigation, it is reasonable that they consider updates to their workforce safety protocols and incorporate appropriate revisions in their safety culture processes and workforce safety training. For example, covered conductor is significantly heavier than the previously installed standard conductor; hence, safety culture acknowledgement in some fashion of the impact of increased weight on utility line workers makes sense. Similarly, new and expanded undergrounding practices imply potentially altered utility workforce safety practices.

The WSAB recommends that Energy Safety incorporate consideration of such altered safety protocols and workforce training in the safety culture assessment structure. The WSAB leaves it to Energy Safety to determine exactly how this should be done, in general, but believes that it would be reasonable to consider a workforce survey question asking whether workers feel safety protocols have been altered appropriately with new technologies, whether safety training has been commensurately updated, and whether a focus on Qualified Electrical Workers is represented at the utility. Alternatively, a management self-assessment question eliciting opinions on whether these issues are sufficiently on management's agenda, or a follow-up Energy Safety interview assessment or information request may be appropriate.

WSAB RECOMMENDATIONS

4. **Innovation and change should be a key part of ongoing annual safety culture assessments.**
5. **Safety culture assessment should include consideration of revised workforce safety protocols and workforce training practices as wildfire safety technologies change.**

Including Customers and Community in Safety Culture

For purposes of assessing wildfire safety, the WSAB believes that a robust safety culture goes beyond consideration of workforce safety practices, in surveys and other assessment components, to include assessment of utility safety culture's consideration of safety issues in the communities and customers a utility serves (as well as neighboring communities that may be impacted). In the unfortunate event of a wildfire, community safety is enhanced by a safety culture that includes coordination and cooperation with community emergency operations. Utilities are a vital part of the picture for the affected communities, facilitating evacuations if necessary, coordinating on ingress and egress issues, providing power for essential water pumping and other wildfire mitigation needs, and volunteering assistance to neighboring and other communities outside their service territories as needed and available. In addition, power is a community essential service, and a robust utility safety culture recognizes the importance of safely restoring community power as quickly as possible after a wildfire related outage, whether planned (Public Safety Power Shutoffs or "PSPS") or unplanned.

Community Safety Practices

The WSAB understands that community engagement is already a component of utility WMPs and does not recommend that Energy Safety duplicate or complicate the treatment in WMPs or WMP guidelines of a utility's safety interactions with their communities. However, the WSAB believes that such engagement is also a component of a utility's wildfire safety culture and encourages Energy Safety to find a non-duplicative way to incorporate consideration of a utility's engagement with their communities in the safety culture assessment structure and surveys. Again, the WSAB leaves it to Energy Safety to determine exactly how this should be done, in general, but believes that it would be reasonable to consider either workforce survey questions asking about community engagement, including questions of egress and ingress during a wildfire emergency; a similar set of management self-assessment questions getting to whether community safety is sufficiently considered by management; or a follow-up Energy Safety interview assessment of the issues here – if not all three paths.

Public Safety Power Shutoffs and Safety Culture

Another aspect of customer safety that should be considered for a robust utility safety culture involves programs or protocols to address customer safety issues during wildfire-related outages. When the utility proactively shuts off customer

power due to wildfire concerns, either through a planned Public Safety Power Shutoff or a similar but less predicted shutoff due to utility line settings, customer safety can be impacted.

Utility practices to address power shutoff impacts on critical facilities such as hospitals, on questions of traffic safety, and on individual customers that have high power security needs should be considered in the safety culture assessment process. The question of the safe operation of customer backup power facilities should be assessed, as unsafe operation can backfire from a wildfire safety perspective. To the extent that PSPS safety considerations are already covered in the CPUC's proceedings, general safety culture assessments, or in Energy Safety's Wildfire Mitigation Plan work, the WSAB does suggest revisiting or duplicating that work. Since PSPS and similar events (EPSS) are inherently associated with wildfires and hence wildfire safety, however, the WSAB believes it is reasonable for a wildfire safety culture assessment to touch on a utility's consideration of these issues in their wildfire safety culture.

Again, the WSAB leaves it to Energy Safety to determine how best to handle overlaps with other proceedings to avoid duplication and confusion and how best to include these issues in a wildfire safety culture assessment. Similar survey questions, management assessments, or interviews and documentation could be considered by Energy Safety, as well as potential engagement of affected customers.

WSAB RECOMMENDATIONS

6. **Energy Safety should enhance where appropriate consideration of a utility's engagement with their communities in their safety culture assessment structure.**
7. **Utility practices to address power shutoff impacts on critical facilities such as hospitals, on traffic safety, on individual customers that have high power security needs, and on backup power generation should be considered.**

Future Safety Culture Considerations

The WSAB believes that over time, as wildfire safety culture evolves, it should eventually be capable of identifying the interactions between wildfire safety and risks such as cyberattacks during a wildfire and the impacts of climate change and be able to evaluate the associated wildfire safety issues to their communities, customers, and employees, so safety practices can be established to appropriately mitigate them. When evaluating safety culture, you want to see appropriate risk identification, evaluation, and mitigation practices being considered and implemented where appropriate.

The WSAB also believes that at some point it is reasonable to assess a utility's wildfire safety culture in part through the lens or point of view of those often most significantly affected by wildfires – a utility's customers and community partners. The WSAB recognizes the difficulty in establishing a nexus to utility wildfire safety culture based on customer and community perception of wildfire safety performance but believes that in some way engaging these points of view would be beneficial to enhancing a long-term safety performance.

Cybersecurity Safety Issues

One potential future aspect of wildfire safety culture assessment is the impact of cyberattacks and the whether the culture includes consideration of the risk of a cyberattack in relation to wildfire safety. The WSAB believes that some attention should, at some point, be paid to how and whether wildfire safety practices and protocols in place might be affected by a cyberattack on utility assets. A variety of wildfire mitigation measures involve communication and sensor technologies, innovative monitoring through these sensors, situational intelligence equipment, and satellite data. How would communication with appropriate stakeholders work during a wildfire emergency complicated by a cyberattack on utility assets? How would active grid intelligence through sensors, relays, etc. be impacted? How would the loss of critical satellite data be accommodated in a wildfire response?

The WSAB recommends that Energy Safety consider how and when to include the question of safety and operations during a cyberattack in their wildfire safety culture assessment structure.

Climate Change and Safety

The WSAB appreciates and supports the focus on learning and future safety culture targets found in the "Objectives and Lessons Learned" section in the

2022 Safety Culture Assessment Guidelines. The WSAB recommends that Energy Safety and utilities find a way to go beyond a 12 month and 3-year timeframe to include consideration of how the risks from a changing climate will cause changes in safety practices in the long run. The WSAB is not recommending explicit targets for safety culture 10, 20, or 50 years out, but rather an emphasis today in safety culture that reflects an understanding that climate change will have long term impacts. The utilities should be prepared far in advance by planning a path for success by delineating changes in safety culture and practices such as the considerations that follow.

As average and peak temperatures increase over time, with potentially more frequent prolonged droughts, wildfires could increase in frequency and intensity. If fire behavior becomes more dangerous, or vegetation management is constrained by more severe weather conditions, should there be changes in worker or community safety practices? Altered fire regimes in the state are already resulting in broad-scale vegetation type changes – from forests to shrublands and from shrublands to grasslands. How will vegetation management practices need to be altered to accommodate these shifts in plant communities? How will potential increases in wind speeds affect utility wildfire work? How should safety protocols change with potentially increased distributed generation and mini-grid solutions to address the joint goals of reducing wildfire risks and mitigating climate change impacts? How might other expected climate changes impact utility wildfire safety issues and how might safety culture reflect consideration of such questions, thereby best preparing for ahead of time to minimize adverse impacts?

The WSAB believes proactive planning to the extent feasible will better serve the cause of safety than reacting in real time when needed measures may be more extensive and the costs significantly higher. This penchant for proactive planning ahead should be part of a utility's wildfire safety culture.

Customer Safety Practices

The WSAB believes that a robust safety culture goes beyond workforce safety practices currently surveyed to include clear communications and protocols that assist customer as well as utility worker safety in relation to wildfires. Over time, the WSAB recognizes that the utility efforts in this area have greatly improved. Nonetheless, it is important to include the structure of these relationships as part of the overall safety culture. For example, the WSAB understands that utility vegetation management aimed at preventing utility-caused wildfires can be complicated as utility infrastructure abuts or crosses

customer property and interconnects with customer lines and equipment. Customers engaging in their own vegetation management actions on their property are at times adversely affected by unfortunate contacts with adjacent or overhanging utility infrastructure. Customers also at times may not fully understand the importance of utility vegetation management activities in wildfire prevention. A robust utility wildfire safety culture should address the partnership the utility inherently has with its customers for effective wire-to-wire vegetation management to address wildfire risks.

The WSAB encourages Energy Safety to consider incorporation of utility-customer interactions on vegetation management safety practices in a future wildfire safety culture assessment process. The WSAB leaves it to Energy Safety to determine exactly how this should be done, in general, but believes that it would be reasonable to consider either a workforce survey question asking whether workers feel that appropriate programs and practices clearly and safely address customer and utility vegetation management interactions, a management self-assessment question getting to whether this issue is sufficiently on the agenda for management, or a follow-up Energy Safety interview assessment – if not all three. Another path, perhaps not part of wildfire safety culture assessment per se would be to assess or understand a utility's customer education efforts to foster safe vegetation management actions by customers and assist customer understanding of the importance of appropriate utility vegetation management.

In addition, Energy Safety could consider expanding assessment of a utility's safety culture by engaging expected community partners to understand whether they have a robust belief or understanding that their utility is appropriately involved in community safety activities or could improve in this area. A statistically valid sample survey of community members could also inform the assessment of a utility's safety culture, eliciting community member understanding of the robustness of that culture from a community perspective.

Energy Safety might also consider a general customer survey regarding the utility/customer interface on vegetation management issues, or some degree of engagement with customer vegetation management practitioners to understand how they perceive utility safety culture practices in this area. Customers may experience the utility's wildfire safety culture indirectly through safety performance for the most part, but this is an important perspective on utility wildfire safety practices and by inference their wildfire safety culture overall.

WSAB RECOMMENDATIONS

8. **The WSAB encourages Energy Safety, in collaboration with the CPUC, the utilities, and other interested stakeholders, to, over time, develop a portfolio of wildfire safety culture performance metrics that aim to facilitate assessment of wildfire safety risks and engage alternative viewpoints that are not currently considered in safety culture assessments. As discussed in this document, examples of potential areas where performance metrics could be developed are:**

    a) **understanding the risks of cyberattacks during wildfires so that these risks can eventually be incorporated in wildfire safety culture assessment structures.**

    b) **understanding the risks that arise as changing climate and vegetation may imply changes in safety practices over a longer horizon.**

    c) **understanding how customer and community partners' perception of utility safety practices and performance can be incorporated in assessments of a utility's wildfire safety culture.**

    d) **understanding how a wildfire safety culture could best incorporate consideration of utility-customer interactions on vegetation management safety practices.**

Approval

The California Wildfire Safety Advisory Board's Recommendations on Safety Culture Assessments were approved on August 30, 2022 and are hereby executed.



Jessica Block, Chair



Diane Fellman, Vice Chair



Ralph M. Armstrong Jr., Board Member



John Mader, Board Member



Christopher Porter, Board Member

Alexandra Syphard, Board Member