OFFICE OF ENERGY INFRASTRUCTURE SAFETY'S

ANALYSIS AND RECOMMENDATIONS ON THE WILDFIRE SAFETY ADVISORY BOARD'S 2021 RECOMMENDATIONS REPORT

OCTOBER 29, 2021

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EXECUTIVE SUMMARY

This document fulfills the Office of Energy Infrastructure Safety's (Energy Safety's) statutory requirement relative to Pub. Util. Code § 8389 (c). Pub. Util. Code § 8389 (c) states: "By October 31, 2020, and annually thereafter, the division shall issue an analysis and recommendation to the commission on the recommendations provided by the board pursuant to subdivision (b)."[1] Pursuant to Pub. Util. Code § 8389 (b), the Wildfire Safety Advisory Board's (WSAB or Board)[2] issued its recommendations on appropriate performance metrics and compliance processes, appropriate additional Wildfire Mitigation Plan (WMP) requirements, and the appropriate scope and process for assessing safety culture to Energy Safety on June 30, 2021 ("WSAB Report"). This document contains Energy Safety's analysis and recommendations on the WSAB Report and will be issued to the California Public Utilities Commission (CPUC or Commission).

The WSAB Report contains forty recommendations to Energy Safety to consider regarding:

a) Appropriate performance metrics and processes for determining an electrical corporation's compliance with its approved wildfire mitigation plan.
b) Appropriate requirements in addition to the requirements set forth in Pub. Util. Code § 8386 for the wildfire mitigation plan.
c) The appropriate scope and process for assessing the safety culture of an electrical corporation.[3]

As detailed in this document, Energy Safety plans to consider fourteen of these recommendations for adoption in 2022, either as an update to the 2022 WMP Guidelines or through other programmatic/operational improvements. Of the remaining twenty-six recommendations, Energy Safety plans to consider twenty-one for adoption in 2023 or beyond. Energy Safety considers five of the WSAB recommendations to be outside of Energy Safety's mandate.

[1] https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=PUC&sectionNum=8389.
[2] Information about the Board and its members can be found on its website https://energysafety.ca.gov/who-we-are/wildfire-safety-advisory-board/
[3] https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=PUC&sectionNum=8389.

INTRODUCTION

Energy Safety provides this report as its analysis and recommendations on the recommendations provided by the Wildfire Safety Advisory Board in its "2022 Wildfire Mitigation Plan (WMP) Guidelines, Performance Metrics, and Safety Culture Assessment" report ("WSAB Report"). The WSAB is required to provide recommendations to Energy Safety, per Pub. Util. Code § 8389(b) which states: "by June 30, 2020, and annually thereafter, the board shall make recommendations to the division on all of the following:

a) Appropriate performance metrics and processes for determining each electrical corporation's compliance with its approved wildfire mitigation plan.
b) Appropriate requirements in addition to the requirements set forth in Pub. Util. Code § 8386 for the wildfire mitigation plan.
c) The appropriate scope and process for assessing the safety culture of an electrical corporation."[4]

Assembly Bill (AB) 1054 and AB 111 established the Wildfire Safety Advisory Board (WSAB or the Board) - an independent body consisting of seven members appointed by the Governor, Speaker of the Assembly, and Senate Committee on Rules – to develop and make recommendations related to the electric corporations' WMP reports. Energy Safety appreciates the thoughtful recommendations the WSAB provided and looks forward to continued valuable collaboration with the Board.

Energy Safety evaluated the recommendations in the WSAB Report primarily for their value in reducing wildfire risks to life-safety and/or property protection, and secondarily on other performance objectives such as environmental protection, regulatory function, technical feasibility, availability of resources, and scientific and/or engineering merit.[5] Figure 1 depicts a summary of Energy Safety's evaluation of WSAB recommendations, which are further listed below.

[4] https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=PUC&sectionNum=8389.
[5] The analysis and recommendations herein are based on established frameworks, industry guidelines, and best practices in regulating and enforcing fire safety in other analogous, high-consequence fire safety fields (e.g., building fire safety, nuclear fire safety, industrial process fire safety).

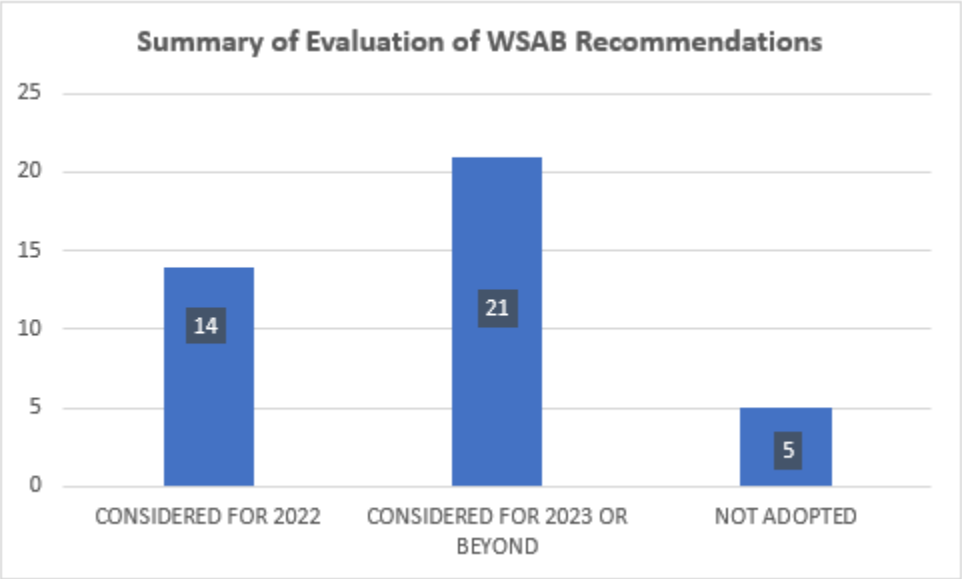

Figure 1 – Summary of Energy Safety Evaluation of WSAB Recommendations Report

Recommendations Energy Safety Plans to Consider Implementing in 2022

Energy Safety plans to consider fourteen of these recommendations for implementation in 2022, either for consideration in the 2022 WMP Update Guidelines or through other programmatic/operational improvements. Nine of these fourteen recommendations relate to additional reporting from the utilities on underlying methodologies, assumptions, and decision-making tools for wildfire risk assessments and associated mitigation initiatives. Five of these fourteen recommendations address programmatic/operational improvements regarding Energy Safety staffing and/or ongoing collaboration with the CPUC. The fourteen recommendations that Energy Safety plans to consider implementing in 2022 are summarized below. These include the recommendations in the WSAB report that Energy Safety should:

- Coordinate wildfire mitigation plan evaluation efforts with the CPUC;
- Track CPUC proceedings affecting the utilities' wildfire mitigation activities;
- Evaluate CPUC General Orders related to electric utility infrastructure;
- Continue to develop in-house expertise;
- Continue to provide sufficient support staff and resources to the WSAB;
- Require utilities to:
    - Incorporate visual illustrative examples in WMP submissions
    - Explain how each of the reporting elements fit together
    - Report modeling methods, assumptions, inputs, outputs
    - Report decision-making processes
    - Provide additional Risk Spend Efficiency (RSE) estimate analysis
    - Report on methodologies for determining acceptable levels of risk
    - Report on tree removal after fires
    - Report on vegetation management training programs

- Report in more detail on vegetation-related utility outages

Recommendations Energy Safety Plans to Consider Implementing in 2023 or Beyond

Energy Safety plans to consider twenty-one of the recommendations in the WSAB report for implementation in 2023 or beyond. For these recommendations, Energy Safety needs additional time to: 1) evaluate the life-safety and property-protection value of the recommendation; 2) develop appropriate guidelines, standard templates and/or processes upon which Energy Safety can regulate; and/or 3) identify the appropriate approach for addressing the recommendation. The WSAB recommendations that Energy Safety plans to consider implementing in 2023 or beyond include the following:

- Restructure 2023 WMP Guidelines by Mitigation Measures
- Separate Guideline for SMJUs and ITOs
- Peer Review Process
- Guidance on a common data system/platform
- Reducing Public Safety Power Shutoffs (PSPS)
- Consequence mapping to reduce risk
- Evaluation of mitigation efforts
- Evaluation of near misses and PSPS
- Tree replacement program
- Including notices of violation in the WMPs
- Utility defensible space initiatives
- Use of Tree Growth Regulators and Herbicides
- Use of emerging technology
- Workforce training electrical workers
- Quality controls for Electrical Systems Inspectors
- Qualified Electrical Workers (QEW)
- De-energizing idle lines
- G.O. 95 Exempt Equipment reporting
- PSPS Stakeholder Outreach Efforts
- Safety Culture Assessment survey to include contractors
- Safety Culture Assessment interview to include variety of stakeholders

Recommendations Energy Safety Plans is Not Currently Considering Implementing

There are five recommendations in the WSAB Report that Energy Safety is not currently considering adopting because the recommendations appear to be either: 1) not appropriate given Energy Safety's mandate; or 2) potentially in conflict with other State regulations. These five recommendations are:

- Interval of Inspections for SMJUs
- Workforce protection
- Measuring effectiveness of Outreach Efforts
- Internal Evaluation Methodology for Outreach
- Production-based Pricing

OVERVIEW OF WILDFIRE SAFETY ADVISORY BOARD RECOMMENDATIONS

Overview of WSAB Recommendations

The WSAB provided forty recommendations to Energy Safety for consideration in 2022, whether as an update to the WMP Guidelines or as programmatic/operational improvements, as documented in the "Recommendations on the 2022 Wildfire Mitigation Plan Guidelines, Performance Metrics, and Safety Culture Assessment, approved June 30, 2021." The recommendations are organized into eight thematic categories. Table 1 provides a high-level description of these categories and the total number of associated recommendations. Figure 2 depicts this information graphically.

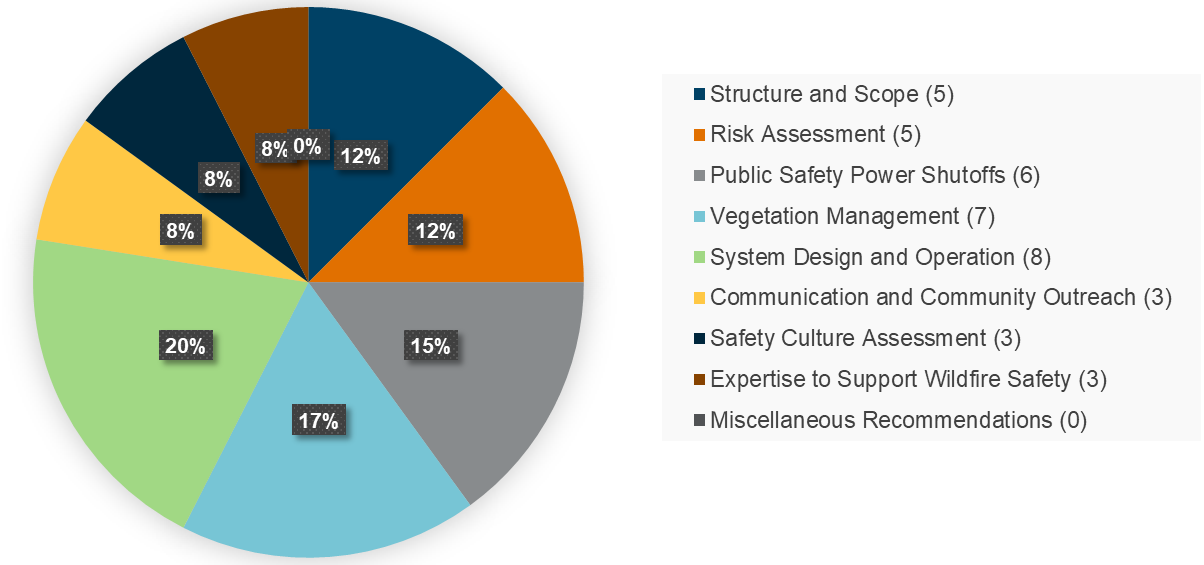

Figure 2 – Distribution of WSAB 2022 Recommendations by Theme

Table 1: Summary of 2022 WSAB Recommendations Report

Themes	*Overview of Recommendations*
1 Structure and Scope	There are five recommendations related to the organization, structure, and scope of the WMP Guidelines.
2 Risk Assessment: Risk Modeling, GIS Mapping and Resource Allocation	There are five recommendations related to risk assessments, risk modeling, mapping, and allocation of resources. Because a risk framework forms the foundation of the WMP Guidelines

Themes	*Overview of Recommendations*
	and development of the WMPs, the WSAB provided several recommendations to request additional details regarding several aspects of the underlying risk models and decision-making processes, as well as the need for increased involvement of the scientific community and public access to additional data.
3 Public Safety Power Shutoffs: Reducing Scale, Scope and Frequency	There are six recommendations related to the scale, scope, and frequency of Public Safety Power Shutoffs (PSPS). The majority of the WSAB recommendations in this category-emphasize the importance of treating PSPS as risk contributors, and not as primary solutions. The intent is to encourage the allocation of resources such that the number, scope, duration, and reenergization timeline of PSPS events is reduced and/or minimized.
4 Vegetation Management: Strategies and Environmental Stewardship	There are seven recommendations related to vegetation management practices. The WSAB has several recommendations targeting environmental stewardship and protection of environmental assets.
5 System Design and Operation: Grid Hardening, Workforce Management, Asset Inspections, and Emerging Technology	There are eight recommendations related to system design and operation of T&D infrastructure. These include recommendations for electrical system hardening and associated reporting, as well as workforce safety reporting.
6 Communication and Community Outreach: Performance Metrics and Improving Stakeholder Outreach Effort	There are three recommendations regarding the level of detail and approaches for community outreach efforts, reporting practices and substantiations for program effectiveness.
7 Safety Culture Assessment	There are three recommendations related to the safety culture assessment. The recommendations are related to the engagement of various stakeholder groups, both internal and external to the utilities.

Themes	*Overview of Recommendations*
8 Expertise to Support Wildfire Safety	There are three recommendations specific to qualifications and workforce levels of Energy Safety staff, particularly due to Energy Safety's and the WSAB's recent transition from the CPUC to the CNRA.

Evaluation Criteria

Energy Safety evaluated the 2022 WSAB recommendations with primary consideration of the regulatory role of Energy Safety in mitigating utility-related wildfire risks primarily for life-safety and property protection. Energy Safety also considered the regulatory relevance, environmental protection, availability of resources, technical feasibility, scientific and/or engineering basis, timeline limitations, and administrative improvements associated with each of the recommendations in the WSAB Report.

Table 2 describes the primary and secondary considerations that Energy Safety used to evaluate the recommendations in the WSAB Report. Energy Safety considered life safety and property protection "primary criteria" because they are universally prioritized in other fire safety regulatory environments.[6]

[6] Sources referenced include:
Bailey, Dan., "Wildland Fire Management", Chapter 7. Fire Protection Handbook, 20th Edition. National Fire Protection Association. 2008.
CAL FIRE. Office of the State Fire Marshall. Wildfire Prevention Engineering, https://osfm.fire.ca.gov/divisions/wildfire-planning-engineering/wildfire-prevention-engineering/
California Building Standards Commission. "2019 California Building Code, Chapter 7". California Code of Regulations Title 24, Part 2, Volume 1 of 2. Based on the 2018 International Building Code.
California Building Standards Commission. "2019 California Fire Code, Chapter 49". California Code of Regulations Title 24, Part 9, Based on the 2018 International Fire Code.
International Code Council. (2018). International Wildland-Urban Interface Code. Country Club Hills, IL: International Code Council.
NFPA 1, "Fire Code", Chapter 17. National Fire Protection Association, 2018.
NFPA 1141, "Standard for Fire Protection Infrastructure for Land Development in Suburban and Rural Areas," National Fire Protection Association, 2017.
NFPA 1143, "Standard for Wildland Fire Management" National Fire Protection Association, 2018.
NFPA (National Fire Protection Association). 2011. "Understanding Fire Behavior in the Wildland/Urban Interface." Accessed April 2020. https://youtu.be/pPQpgSXG1n0.
Simeoni, Albert., "Wildland Fires." SFPE Handbook of Fire Protection Engineering, 5th ed., Hurley. Quincy, MA, 2016.
California Building Standards Commission. "2019 California Building and Fire Code". California Code of Regulations Title 24, Part 2, Volume 1 of 2. Based on the 2018 International Building Code.
Society of Fire Protection Engineers (SFPE) Handbook of Fire Protection Engineering, 5th ed., Hurley. Quincy, MA, 2016.

Table 2 – Primary and Secondary Evaluation Criteria for 2022 WSAB Recommendations

Criteria		*Description*
Primary Criteria	1. Life Safety	The primary goal of wildfire risk mitigation is to protect life safety of the public and first responders. This is considered the foremost priority in other fire safety regulatory fields. Life safety consideration can include potential casualties and/or injuries of the public and/or first responders in a wildfire incident, or health and life-safety risks of extended periods of power loss during Public Safety Power Shutoffs (PSPS).
	2. Property Protection	Buildings and critical infrastructure are often vulnerable to wildfire, particularly in the Wildland Urban Interface. Preventing catastrophic wildfires is critical to limiting the loss and/or damage of structures and critical facilities. Property loss and/or damage can devastate communities by displacing residents, disrupting business continuity, and impairing local economies, subsequently resulting in significant recovery costs.
Secondary Criteria	3. Regulatory Relevance	Energy Safety's primary mandate is to ensure electrical utilities are taking effective actions to reduce utility-related wildfire risk. This includes ensuring the utilities' wildfire risk reduction efforts cause their systems to achieve the highest level of safety, reliability, and resiliency from utility-related wildfire threats. Recommendations were evaluated to determine if they served a regulatory purpose and were within the scope of Energy Safety's mandate.
	4. Environmental Protection	Environmental impacts due to implementation of wildfire risk mitigation features, such as vegetation management practices around utility infrastructure, are important to understand and minimize where they have disproportionate impact. However, these are considered secondary objectives, because preventing catastrophic wildfires provides significant environmental protection in the corresponding prevention of associated greenhouse gas emissions.

National Fire Protection Association (NFPA) Handbook, 20th Ed., Cote. Quincy, MA, 2008.
International Code Council. (2018). International Wildland-Urban Interface Code (IWUI). Country Club Hills, IL: International Code Council.
NFPA 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants", National Fire Protection Association, 2020.

Criteria		*Description*
5.	Resources	Recommendations were evaluated for the availability of resources.
6.	Technical Feasibility	Recommendations were evaluated against the availability of technologies, data and/or technical capacities of the utilities and/or industry at present.
7.	Scientific and/or Engineering Basis	Recommendations were evaluated for scientific and/or engineering merit in comparison to recognized consensus standards and/or industry-recognized peer-review processes.
8.	Timeline limitations	Recommendations were evaluated based on the time necessary to appropriately review, substantiate and develop regulatory language. Recommendations that may require a greater level of effort to evaluate, develop and implement were considered for 2023 and beyond.
9.	Administrative Improvement	Recommendations were evaluated for their merit in enhancing various administrative and/or process improvements. This included improvements to guideline structure and organization, the reporting process, clarity, consistency and understanding of the requirements, format and/or presentation of information.

Energy Safety adopted a simple priority ranking system to assist in the decision-making process. The ranking system, described below, centered around satisfying life safety and/or property protection objectives.

- **Essential:** Recommendation includes an improvement that prioritizes life safety and property protection from utility-related wildfire incidents.
- **Desirable:** Recommendation includes an improvement that will enhance secondary considerations (e.g., environmental protection, regulatory relevance, feasibility and time limitations, process improvements, administrative objectives).
- **Not Applicable, Not Recommended, Further Investigation or Discussion Required:** Recommendation does not appear to directly provide life-safety and property protection value, or provide value based on the range of secondary objectives described above. These recommendations may not be applicable given Energy Safety's statutory mandate or may require further discussion.

Evaluation and Recommended Actions

This section provides a detailed evaluation of the recommendations in the WSAB Report, as well as suggested actions for current and/or future consideration in the WMP Guidelines or other programmatic areas. Energy Safety evaluated each recommendation based upon the criteria described above. The results are presented in detail in this section and are summarized in Table 3.

For the recommendations that Energy Safety is not considering for implementation in 2022 but is considering for 2023 or beyond, Energy Safety determined that it needed additional time to evaluate and/or develop the associated reporting standards. The recommendations that Energy Safety is not considering adopting at all are either: 1) not appropriate given Energy Safety's mandate; or 2) potentially in conflict with other State regulations. The recommendations that are listed as "partial" for consideration are either: 1) multi-point recommendations that will partially be considered in the years listed, or 2) recommendations for which the intent will be considered, but the exact language is not appropriate given Energy Safety's mandate.

Table 3 – Evaluation and Recommended Actions

WSAB Recommendation[7]	*Considered for Inclusion*		*Program Area*	*Type of Update / Change*	*Ranking*	*Analysis and Action*
	For 2022	*For 2023 or Beyond*				
1. Structure and Scope						
1.1 Energy Safety and CPUC coordination after CNRA Transition "The WSAB recommends Energy Safety coordinate wildfire mitigation plan evaluation efforts following its transition from the CPUC to the CNRA."	Yes	Yes	Ops.	Process Fnctnl. purpose = Admin., Legal	**Desirable**	Energy Safety will continue coordinating with the CPUC on its WMP evaluation efforts. It intends to further develop the specifics of that coordination effort in 2023 and beyond.
1.2 Energy Safety staff liaison "The WSAB recommends Energy Safety create a team of staff to provide advice to other	P[8]	P	Ops.	N/A	**Further Investig. Required**	Energy Safety will continue to track CPUC proceedings affecting the utilities' wildfire mitigation activities in 2022 and beyond. If Energy Safety has

[7] All comments in Column 1 of Table 3 have been directly extracted from the WSAB report titled, "Recommendations on the 2022 Wildfire Mitigation Plan Guidelines, Performance Metrics, and Safety Culture Assessment, approved June 30, 2021." At the time of publication, the Office of Energy Infrastructure Safety ("Energy Safety") was still part of the CPUC as the Wildfire Safety Division (WSD). Thus, the WSAB comments still referred to Energy Safety as "WSD." The original comments were edited to reflect the current agency name, "Energy Safety." No other text from the original comments has been modified.

[8] Note: P = Partial. (The recommendations that are listed as "partial" for consideration are either: 1) multi-point recommendations that will partially be considered in the years listed, or 2) recommendations for which the intent will be considered, but the exact language is not appropriate given Energy Safety's mandate.)

internal Energy Safety staff and to CPUC decision-makers. As appropriate, Energy Safety should track the CPUC Proceedings affecting the utilities' wildfire mitigation activities, link those to its review efforts and engage directly in a meaningful way, if necessary."						available resources in 2023 and beyond, it will consider linking its review efforts to those proceedings and engage in those proceedings directly in a meaningful way (where appropriate).
1.3 Restructure 2023 WMP Guidelines by Mitigation Measures "Energy Safety should consider restructuring the WMP guidelines to be organized based on the different mitigation measures."	No	Yes	WMP Guidlns.	Process Fnctnl. purpose = Admin., Process Imprvmt.	**Desirable**	Energy Safety is evaluating restructuring the WMP Guidelines. The potential restructure would apply to the 2023 WMP Guidelines and beyond. Energy Safety will consider organizing the WMP guidelines based on the different mitigation measures, as recommended by the Board in this evaluation.
1.4 Incorporation of Visual Illustrative Examples "The 2022 WMP Guidelines should require the	Yes	Yes	WMP Guidlns.	Process Fnctnl. purpose = Admin.	**Desirable**	Energy Safety will consider requiring utilities to use visual aids for reporting key geospatial and non-geospatial information in its 2022 WMP

utilities to include visual illustrative examples, summary tables, and other visual aids to assess the objectives, inputs, outputs, and results of the different mitigation approaches."						Update Guidelines. Visual aids can assist in more efficient reviews and evaluations of the WMPs by Energy Safety staff and other interested parties.
1.5 Separate Guideline for SMJUs and ITOs "Energy Safety should consider creating separate Guidelines for the SMJUs and ITOs and consider relieving them of some of the reporting requirements."	No	P	WMP Guidlns.	Process Fnctnl. purpose = Admin.	**Desirable**	Energy Safety will consider creating differentiation of WMP Guidelines for the SMJUs and/or the ITOs as part of the 2023 WMP Guidelines or beyond.
2. Risk Assessment: Risk Modeling, GIS Mapping, and Resource Allocation						
2.1 Reporting Elements and GIS Data Reporting "The 2022 WMP Guidelines should require utilities to explain how each of the reporting elements fit together and how their departments coordinate data collection	P	Yes	WMP Guidlns.	Technical Fnctnl. purpose = Admin., Life Safety and Property Protect.	**Essential, in general**	Energy Safety already requires utilities to explain how each of the reporting elements fit together and how their departments coordinate data collection amongst each other as a part of WMP Data Governance. The existing data

amongst each other. The WSAB also recommends high resolution spatial detail for all GIS data reporting so that Energy Safety can assess the impact of the mitigation efforts."						schema is already geared toward high resolution spatial detail for GIS data reporting. The need for higher resolution GIS data requires further explanation and clarification from the WSAB to assess regulatory and/or life safety need. Energy Safety will consider if more detail is needed when developing the 2023 WMP Guidelines.
2.2 Reporting modeling methods, assumptions, inputs, outputs "The 2022 WMP Guidelines should require improved reporting on modeling methods and assumptions, as outlined in these recommendations, so that Energy Safety and the public can verify the accuracy of these critical tools. For example, Energy Safety may	Yes	Yes	WMP Guidlns. and Wildfire Risk Modeling Working Group	Technical Fnctnl. purpose = Admin., Life Safety and Property Protect.	**Essential**	Energy Safety will consider requiring utilities to report on their modeling methods, assumptions, inputs, outputs, and how model outputs are used in decision-making as a part of its 2022 WMP Update Guidelines. Energy Safety will evaluate WSAB's proposed reporting metrics (including input data, data sources, and detailed descriptions) and determine which to consider for inclusion

need the utilities to provide maps that visualize modeling outcomes and additional descriptions about how those outcomes resulted in the utilities' specific mitigation decisions. The WSAB provides a detailed outline with recommended reporting elements, an expanded list similar to PG&E 2021 WMP Revision Notice requirements for reporting modeling methods, assumptions, inputs, outputs, and decision making."						in the 2022 WMP Update Guidelines and/or future WMP Guidelines. Additionally, Energy Safety is leading a working group on wildfire risk modeling that will also address many of these proposed metrics. Board members will be participating as members of the wildfire risk modeling working group.
2.3 Reporting decision-making process "The 2022 WMP Guidelines should require improved reporting on modeling outcomes and how these	P	Yes	WMP Guidlns.	Technical Fnctnl. purpose = Life Safety and Admin.	**Essential**	Energy Safety will consider requiring the utilities to provide detailed reporting of how decision-making is undertaken throughout the risk modeling workflow process and ultimate selection of mitigation measures in 2022.

outcomes affect decision-making. This includes more detail about the utilities' prioritization criteria and how risk modeling outputs are used to make decisions, including specific examples of how mitigation measures were prioritized based on these models. This should include, for example, how the utilities evaluate errors, such as line strikes, that occur during vegetation removal or repair and maintenance, and how these errors are factored into their risk assessment."						For 2023 and beyond, Energy Safety will consider requiring improved reporting on modeling outcomes and how these outcomes affect decision-making, including detail about the utilities' prioritization criteria.
2.4 Peer Review Process "The 2022 WMP Guidelines should establish a peer review process from the scientific community to evaluate the accuracy of the data, assumptions,	No	Yes	WMP Guidlns. and Ops.	Process and/or Prgrm. change Fnctnl. purpose = Advancing Science, Techn., and Best Practices	**Desirable**	Input from the science, research and academic community is a key component for advancing fire safety and wildfire risk mitigation codes, standards, guidelines, and practices. This is common to other regulated public safety sectors.

methods, results, and interpretations for the different models. Alternatively, Energy Safety could direct the utilities to establish a peer review process that Energy Safety could monitor as part of its compliance activities. The WSAB is available for collaboration on how this recommendation can be implemented to safely ensure that confidential data remain confidential. In addition, Energy Safety can recruit field experts to advise on emerging best practices for machine learning and atmospheric and fire science that utilities may be interested to incorporate."						Energy Safety welcomes further collaboration with the Board to determine if and how to integrate input and review from the science, research, and academic community when evaluating the accuracy of data, assumptions, methods, results, and interpretations for the utilities' wildfire risk models. The outcomes of this collaboration with the Board would likely not be available until the 2023 WMP cycle, at the earliest. This collaboration may lead Energy Safety to consider the proposed peer review processes.
2.5 Guidance on a common data	No	Yes	Ops.	Process Fnctnl.	**Desirable**	Standardized risk modeling framework

system/platform "Energy Safety should continue to explore its options working with the utilities to develop a data access portal for interconnected data repositories and permission hierarchy. Energy Safety has indicated it will incorporate this recommendation following the standardization of data metrics, processing, and analysis, however, it may be necessary to begin work on a platform now, especially if a CPUC rulemaking or utility application proceeding is required. A data system should be ingesting all utility open data and also be able to manage sematic tagging of datasets for easy discoverability and				purpose = Admin. and Advancing Science		and guidance is essential to consistently regulating and evaluating the effectiveness of models and proposed risk mitigation strategies. Energy Safety has hired a consultant to help provide additional structure and standardization as part of the 2023 WMP Guidelines. Energy Safety is also exploring the concept of a utility-related fire data lake to enable cross-industry, cross-agency collaboration for operational, regulatory and research purposes.

evaluation. If such a data system already exists, Energy Safety should consider partnering with the organizations already managing such data and modeling."						
3. Public Safety Power Shutoffs: Reducing Scale, Scope and Frequency						
Risk Spend Efficiency (RSE) "The 2022 WMP Guidelines must require that the utilities complete a Risk-Spend Efficiency (RSE) analysis for each mitigation measure, at the circuit level, so that each measure can be considered individually, in aggregate, and against each other, to determine the most appropriate wildfire mitigation effort for each circuit section. The utilities must identify each mitigation and their associated risk reductions of PSPS, probability	P	Yes	WMP Guidlns.	Technical Fnctnl. purpose = Life Safety	**Essential**	Standardized, holistic RSE values are considered an essential tool to inform wildfire risk mitigation initiative selection. Including and standardizing the risk of PSPS events into initiative selection is also critical. However, developing a standard RSE methodology will require additional time, evaluation, and coordination with various stakeholders that Energy Safety will undertake as part of the 2023 WMP Guidelines. Energy Safety will consider requiring the utilities to provide component and circuit level RSE values in the 2023

of ignition, wildfire suppression, or PSPS mitigation. At minimum, the utilities should identify each mitigation and designates (sic) whether the mitigation reduces the probability of ignition and/or PSPS, and whether it reduces the consequences of ignition and/or PSPS, similar to SCE's Table 4-8.25."						WMP Guidelines. A working group, facilitated by Energy Safety, will begin in late 2021 to explore a more standardized approach to the inputs and assumptions used for RSE calculations. The working group's discussions will inform the utilities' 2022 WMP Update submissions. The WSAB proposed this recommendation in 2021.[9] For 2021, Energy Safety partially incorporated this recommendation by: ○ Improving the RSE analysis for each mitigation measure. The 2021 WMP is more direct in requiring risk-spend efficiency calculations for initiatives, both for individual initiatives and for aggregated categories of initiatives. In their 2021 WMPS, utilities were

[9] WSAB Recommendations on the 2021 Wildfire Mitigation Plan Guidelines, Performance Metrics, and Safety Culture (report dated 6/24/2020), Section 2.1.

						required to report, along with RSE calculations, their methodology behind RSE numbers, including data used and calculations conducted to determine RSE values; ○ Requiring RSEs at the HFTD tier level; ○ Increasing efforts for PGE, SDG&E and SCE to have standard RSE values, impact, and risk for vegetation management; and ○ Requiring PSPS to be treated as a risk with associated consequences. Energy Safety does not yet require utilities to report RSE values at the circuit level, and will consider this recommendation in developing the 2023 WMP Guidelines.
3.2 Reducing PSPS "The 2022 WMP Guidelines must	No	Yes	WMP Guidlns.	Technical Fnctnl. purpose =	**Essential**	WSAB proposed this recommendation in 2021.[10] For 2021, Energy Safety

[10] WSAB Recommendations on the 2021 Wildfire Mitigation Plan Guidelines, Performance Metrics, and Safety Culture (report dated 6/24/2020), Section 2.1.

require PSPS to be treated as a risk for the purposes of the RSE calculations in order to encourage utilities to allocate resources in a way that prioritizes reducing the number, scope, duration, and reenergization timeline of PSPS events."				Life Safety		incorporated the recommendation by requiring PSPS to be treated as a risk with associated consequences. Utilities are not currently required to include PSPS risk in RSE calculations. Energy Safety will consider including this requirement in the 2023 WMP Guidelines.
3.3 Studying the effects of risk toleration above zero "The 2022 WMP Guidelines must require that the utilities share the methodologies used to determine the level of risk and consequences reduction of PSPS and/or wildfire for each mitigation measure. The CPUC can use this information to start the discussion about an acceptable level of risk that utilities could design their	P	Yes	WMP Guidlns.	Technical Fnctnl. purpose = Life Safety	**Essential**	In the 2022 WMP Update Guidelines, Energy Safety will consider requiring utilities to report: ○ Details on the models and methodologies used to determine ignition probability, wildfire risk, and PSPS risk; and ○ How the relative consequences of PSPS and wildfire are compared and evaluated. Energy Safety will require additional time to evaluate the concept of developing a normative standard for acceptable risk

systems around."						and establishing a ranking of societal values/assets (e.g., life safety, property protection, environment). Energy Safety may collaborate with a broad range of Stakeholders to consider if and how to implement this recommendation for 2023 and beyond.
3.4 Consequence mapping to reduce risk "The 2022 WMP Guidelines should require that the utilities use geographical consequence mapping to identify the areas of lower risk to avoid building new overhead lines in highest risk areas within HFTD."	No	P	WMP Guidlns.	Technical and Prgrm. Fnctnl. purpose = Life Safety, Property Protect., Environ. Protect	**Partially Desirable**	Energy Safety considers geospatial hazard and risk mapping to be a useful component of utilities' decision-making processes for locating potential future transmission and distribution infrastructure. However, the utilities are ultimately responsible for deciding where to locate such infrastructure. Utilities are already required to report areas of highest risk within their HFTDs. Energy Safety will consider requiring utilities to report on planned construction

						of new overhead lines within their HFTDs in future WMP guidelines and/or in other program areas.
3.5 Evaluation of mitigation efforts "The 2022 WMP Guidelines should require that the utilities evaluate their wind threshold and risk tolerance for lines that have been hardened."	No	Yes	WMP Guidlns.	Technical Fnctnl. purpose = Life Safety, Property Protect.	**Essential**	It is essential that utilities quantify each mitigation measure's efficacy in reducing their need to implement PSPS events. The existing WMP Guidelines require utilities to provide an outline of their tactical and strategic decision-making protocols for initiating a PSPS event. While these protocols may include differing parameters for previously hardened lines, Energy Safety does not currently explicitly request that the utilities evaluate their wind threshold and risk tolerance for lines that have been hardened. Energy Safety will consider implementing this recommendation in its 2023 WMP Guidelines.
3.6 Evaluation of Near Misses and PSPS	No	P	WMP Guidlns.	Fnctnl. purpose = Life-	**Further Evaluation Required**	It is unclear if and how utilities will be able to credibly quantify the

"The 2022 WMP Guidelines should require the utilities to conduct independent short and long-term studies that focus specifically on areas where mitigation efforts have taken place and evaluate the data collected during patrols after a PSPS event. The utilities must evaluate data collected after PSPS events to assess measures such as enhanced vegetation management and grid hardening, and their effectiveness in mitigating wildfires and reducing PSPS events."				Safety, Property Protect.		effectiveness of implemented mitigation measures in near misses during PSPS events. Utilities may not have data on what would have happened if the mitigations were not in place, particularly if there are no physical artifacts (e.g., downed wires, impact from vegetation) that correlate to potential wildfire ignitions. The WSAB Report recommends that the 2022 WMP Update Guidelines require the utilities undertake a range of short and long-term research and/or pilot studies to assess the effectiveness of using various mitigation measures. Conceptually, this is could be of value if these studies directly contributed to utilities' understanding of their utility-related wildfire risks, and if the utilities have a way to credibly assess the effectiveness of various mitigation activities in reducing

						wildfires and PSPS events. Energy Safety plans to collaborate with the WSAB to assess if and how utilities can credibly quantify the effectiveness of implemented mitigation measures in near misses. If this is possible to quantify, Energy Safety may assess the appropriate method to incorporate this recommendation for 2023 or beyond.
4. Vegetation Management: Strategies and Environmental Stewardship						
4.1 Tree replacement program "The 2022 WMP Guidelines should require the utilities create tree replacement programs that are larger with a broader scope. The Guidelines should require that utilities hire or contract with ecologists or fire scientists to provide expert consultation."	No	P	WMP Guidlns.	Fnctnl. purpose = Environ.	**Further Evaluation Required**	Energy Safety will consider whether to require the utilities to report on 1) tree-replacement programs and 2) the inclusion of ecologists and fire scientists for expert consultation in utility vegetation management in the 2023 WMP Guidelines.
4.2 Tree removal	P	P	WMP	Fnctnl.	**Partially**	Various state

after fires "The 2022 WMP Guidelines must prohibit the practice of removing healthy trees following wildfire events without some kind of environmental review by an independent ecologist. Singed and even burned native species or old growth trees may still be healthy, and if they are not prone to eventual failure and do not pose a risk to utility infrastructure, these trees can be valuable assets to their environment."			Guidlns.	purpose = Environ.	**Desirable**	agencies regulate the utilities' vegetation management practices. Prohibiting specific vegetation management practices is generally the purview of other state agencies. However, in the 2022 Guidelines, Energy Safety will require utilities to report on post-fire vegetation management practices.
4.3 Including notices of violation in the WMPs "The 2022 WMP Guidelines must require the utilities report notices of violation issued by other state agencies as they relate to utility	No	P	Complnc.	Fnctnl. purpose = Environ. and Complnc.	**Further Evaluation Required** **(Already addressed by CALFIRE and/or other State agencies)**	Energy Safety is actively developing and maturing its compliance processes and is already engaging with multiple state agency partners (including Cal Fire) that issue notices of violation related to utility wildfire mitigation programs. Energy Safety plans to

wildfire mitigation programs like vegetation management. Energy Safety should coordinate with other state agencies and experts to review these notices of violations and recommend changes to wildfire mitigation practices."						continue to engage with these agencies and develop additional state agency relationships. Energy Safety is in regular contact with state agencies with which it has active Memorandums of Understanding and discusses issues pertinent to wildfire mitigation programs with these agencies. While Energy Safety may in the future evolve to have the capacity to engage in the specific actions recommended by the WSAB, tracking and reviewing notices of violation is not the current focus of the WMP Guidelines. Reporting, monitoring, and evaluating the resolutions of these violations/non-compliances is a process that is already managed by CALFIRE and other state agencies, as noted by the WSAB.
4.4 Vegetation Management Training Programs "The 2022 WMP	P	P	TBD	Fnctnl. purpose = Environ. and Complnc.	**Further Evaluation Required**	WMP Guidelines already require utilities to report on recruiting and training of vegetation

Guidelines should require utilities to improve training programs for vegetation management contractors and increase the auditing and monitoring of vegetation contractors, especially where a utility has multiple notices of violations related to their vegetation management practices."						management personnel and quality assurance/quality control of vegetation management. In 2022, Energy Safety will consider additionally requiring utilities to report on continuous improvement of training programs and personnel qualifications. Energy Safety will collaborate with the WSAB in 2023 and beyond to determine whether additional requirements related to vegetation management contractors would provide added value, and if so, the appropriate method of incorporating this recommendation.
4.5 Database of vegetation-caused outages "The 2022 WMP Guidelines should require the utilities to create a statewide database of vegetation-related utility outages, tree species,	P	P	Data schema and utilities' joint study on enhanced clearncs.	Fnctnl. purpose = Environ.	**Partially Desirable**	Energy Safety's 2021 WMP Action Statements require that in their 2022 WMPs, utilities: ○ Use scientific names (as opposed to common names) in their reporting. This change will be reflected in

traits, growth rates, morphological characteristics, modes of failure, and locations along environmental gradients. The Guidelines must require utilities to refer to plants by their genus and species."						Version 2.2 of the Energy Safety GIS Data Reporting Standard. ○ Add genus and species designation input capabilities into their systems which track vegetation and vegetation-caused outage reports. ○ Identify the genus and species of a tree that has caused an outage or ignition in Quarterly Data Reports. Additionally, an objective of the utilities' joint study on effectiveness of enhanced clearances is to create a cross-utility database of tree-caused risk events. Energy Safety does not currently envision that it will maintain a separate and distinct vegetation outage database. However, it will consider including vegetation outages in the utilty-related fire data lake concept under consideration.

4.6 Utility Defensible Space Programs "The 2022 WMP Guidelines should require the utilities to do pilot programs and plant low growing shrubs as Utility Defensible Space under utility right of ways or in other areas near utility lines where the shrubs could replace dry grasses that create a high risk of wildfire."	No	P	WMP Guidlns.	Fnctnl. purpose = Environ.	**Further Evaluation Required**	The existing WMP Guidelines require utilities to report all utility-sponsored research proposals, findings from ongoing studies, and findings from studies completed in 2020 and 2021 relevant to wildfire and Public Safety Power Shutoff (PSPS) mitigations. At this time, Energy Safety will not require the specific pilot programs recommended by the WSAB related to utility defensible space. Energy Safety may consult with the WSAB and collaborate with stakeholders in 2023 and beyond to determine if and how it may be appropriate to address utility defensible space.
4.7 Use of Tree Growth Regulators and Herbicides "The 2022 WMP Guidelines must require the utilities report the use of herbicides,	No	Yes	WMP Guidlns.	Fnctnl. purpose = Life Safety and Environ.	**Further Evaluation Required**	The improper use of herbicides, pesticides, tree growth regulators or other chemicals can be an environmental and life safety concern. Energy Safety will evaluate

pesticides, tree growth regulators or other chemicals. The Guidelines should require reporting on 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. Energy Safety should also direct the utilities to perform a cost-benefit analysis to compare the benefits of planting low-growing shrubs versus the cost of vegetation clearance and chemicals."						whether to include these recommended additional reporting requirements and the recommended cost/benefit analysis in the development of its 2023 WMP Guidelines.
5. System Design and Operation: Grid Hardening, Workforce Management, Asset Inspections, and Emerging Technology						
5.1 Emerging technology "The 2022 WMP Guidelines should require all utilities increase the scope of pilots of different technologies that reduce the risk of	No	P	WMP Guidlns.	Process Fnctnl. purpose = Life Safety and Property Protect.	**Partially Desirable**	Energy Safety concurs that it is important for utilities to reduce their risks of ignition, recognize faults more quickly, and reduce the intensity of arcs. Pilot programs can provide important insights into how to

ignition, recognize faults more quickly, and reduce the intensity of arcs. The Guidelines should request information about whether the utilities have considered lessons learned about grid hardening from other regions like the Southeastern United States, where hurricanes and high-wind events are frequent."						effectively accomplish these goals. The existing WMP Guidelines require utilities to report on pilot programs that the utilities already have in place. The existing Maturity Model survey contains questions about the extent to which utilities are piloting technologies that may reduce ignition-risk of ignitions, and each utility's answer to these questions impacts its maturity score. Energy Safety currently requires utilities to report lessons learned. It will consider requesting information on lessons learned specifically about grid hardening from other regions when developing its 2023 WMP Guidelines.
5.2 Workforce protection "The 2022 WMP Guidelines should require the utilities explain their protocols to ensure the safety	No	No	WMP Guidlns.	Process Fnctnl. purpose = Life Safety	**Not Applicable**	It is important that utilities follow appropriate workforce safety protocols, procedures, codes and standards during the removal, installation, and repair of

of its workforce during the removal, installation, and repair of equipment, especially when introducing new technologies or equipment, and implementing new work practices."						equipment. However, this recommendation is best addressed by the California Division of Occupational Safety and Health and/or CPUC health & safety standards.
5.3 Workforce training electrical workers "The 2022 WMP Guidelines should require the utilities provide more detail about how they will ensure the workforce will become qualified, their training plans, including start, length of the training, etc."	No	Yes	WMP Guidlns.	Process Fnctnl. purpose = Ops., General Safety, and Reliability	**Essential**	Energy Safety will consider this recommendation when developing its 2023 WMP Guidelines. At that time, Energy Safety will also consider requiring utilities to provide additional detail on how they are ensuring that they have qualified workers.
5.4 Quality controls for Electrical Systems Inspectors "The 2022 WMP Guidelines should require all utilities, including SCE, to perform increased quality control for inspections that	No	P	WMP Guidlns.	Process Fnctnl. purpose = Ops., General Safety, and Reliability	**Further Evaluation Required**	The existing WMP Guidelines require utilities to report on quality assurance and quality control of inspections, including confirming work completed by employees and subcontractors. The utilities are ultimately

are completed by any worker with fewer qualifications than Qualified Electrical Workers, such as the Electric System Inspectors."						responsible for implementing particular quality control requirements for workers with differing qualifications. Energy Safety will consider requiring the utilities to report on varying protocols for quality control for inspections completed by workers with different levels of qualifications in the 2023 WMP Guidelines.
5.5 Qualified Electrical Workers (QEW) "The 2022 WMP Guidelines should require that the utilities require the minimum qualifications of a Qualified Electrical Worker, or its equivalent, for inspections and mitigation efforts concerning utility infrastructure. Requiring a minimum qualification to inspect and interpret wildfire	No	P	WMP Guidlns.	Process Fnctnl. purpose = Ops., General Safety, and Reliability	**Further Evaluation Required**	The existing WMP Guidelines require utilities to explain minimum qualifications by worker title with an emphasis on qualifications relevant to wildfire and PSPS mitigation, report plans to improve qualifications of workers, and describe how they are developing more robust outreach and onboarding training programs. As part of the 2023 WMP Guidelines, Energy Safety will

mitigation data sets a definable standard that will allow the utilities to identify well qualified support classifications, which will deepen their resource pool for other efforts."						consider requiring utilities that are not using QEWs for inspections and mitigation efforts concerning utility infrastructure to provide justification for why they are not doing so, and why the qualifications of the workers performing this work is sufficient.
5.6 De-energizing idle lines "The 2022 WMP Guidelines should require the utilities to evaluate the risk involved in keeping idle lines or equipment energized versus disconnecting completely when not in use. The Guidelines should require the utilities to identify any equipment or lines that may still be energized and not in service. The Guidelines should require the utilities remove or de-energize lines and equipment from service, which	No	P	WMP Guidlns.	Technical Fnctnl. purpose = Life Safety and Property Protect.	**Further Evaluation Required**	In developing its 2023 WMP Guidelines, Energy Safety will evaluate incorporating the WSAB recommendations regarding: 1) evaluating the risk involved in keeping idle lines or equipment energized versus disconnecting completely when not in use, and 2) requiring the utilities to identify any equipment or lines that may still be energized and not in service.

would lower the risk of those assets failing and causing a fire. The Guidelines should require the utilities to explain in their WMPs whether the utilities have adopted the practice of de-energizing idle lines."						
5.7 G.O. 95 Exempt Equipment reporting "The 2022 WMP Guidelines should require reporting on G.O. 95 exempt equipment so that Energy Safety can track and monitor this equipment. Energy Safety should evaluate the sufficiency of the utilities plans or lack thereof to mitigate the increased risk this equipment poses, especially any equipment located in the high fire threat districts."	No	P	WMP Guidlns.	Technical Fnctnl. purpose = N/A	**Further Evaluation Required**	Energy Safety's existing data standard requires utilities to report Pub. Resources Code § 4292/4293 exemption status for electrical equipment. Energy Safety also requires utilities to report age information that can be used to track equipment installed before G.O. 95 and other safety standards were adopted. Any equipment installed after G.O. 95 was adopted is not exempt. Energy Safety plans to seek further clarification from the WSAB on this recommendation.
5.8 Interval of	No	No	WMP	Technical	**Not**	While it may be

Inspections for SMJUs "The 2022 WMP Guidelines 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 2022 WMP Guidelines should require that all Tier 3 lines be 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 2022 WMP Guidelines should require that the SMJUs follow the POUs and IOUs' best practices for visual and detailed inspections."			Guidlns.	Fnctnl. purpose = Life Safety and Property Protect.	**Applicable**	prudent for the SMJUs follow the POUs' and IOUs' best practices for detailed and visual inspections, the CPUC General Order requirements define the pace for inspections. The existing Maturity Model survey contains questions for the utilities about the frequency of their detailed inspections, asset inspections, all types of vegetation inspections, and "other" inspections. For each type of inspection, the survey asks if the utilities inspections are less frequent than, consistent with, or more frequent than the minimum regulatory requirements, and includes a question related to highest risk areas or equipment. Each utility's answer to these questions impacts its maturity score.
6. Communication and Community Outreach: Performance Metrics and Improving Stakeholder Outreach Efforts						
6.1 PSPS Stakeholder	No	Yes	Perf. Metrics	Process	**Further Evaluation**	The WSAB recommends

Outreach Efforts "The 2022 WMP Guidelines should utilize the PSPS reporting framework established in the most recent decision in I.19-11-013."				Fnctnl. purpose = Life Safety	**Required**	incorporating the outcomes of Investigation (I.)19-11-013[11] and Rulemaking (R.)18-12-005[12] (the PSPS proceedings) into the 2022 WMP Guidelines. Decision (D.)21-06-014[13] in I.19-11-013 does not establish a specific PSPS reporting framework, but rather directs utilities to undertake actions, including corrective actions, to "address the failures of PG&E, SCE, and SDG&E to reasonably protect the public and adhere to state law and the Commission's rules and regulations pertaining to proactive power shutoffs used as a wildfire mitigation measure."[14] The WSAB recommends that these outcomes be incorporated "in a manner that reveals the extensive range of activities already in

[11] Investigation 19-11-013: Order Instituting Investigation on the Commission's Own Motion on the Late 2019 Public Safety Power Shutoff Events, November 13, 2019.
[12] Rulemaking 18-12-005: Decision Adopting Phase 3 Revised and Additional Guidelines and Rules for Public Safety Power Shutoffs (Proactive De-Energizations) of Electric Facilities to Mitigate Wildfire Risk Caused by Utility Infrastructure, May 21, 2021.
[13] Decision 21-06-014: Decision Addressing the Late 2019 Public Safety Power Shutoffs by Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company to Mitigate the Risk of Wildfire Caused by Utility Infrastructure (2021) https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M387/K099/387099293.PDF
[14] Decision (D.)21-06-014, pp. 2-3.

						place but does not force the utilities to replicate the level of detail in other compliance findings."[15] Energy Safety is not considering incorporating these changes in its 2022 WMP Update Guidelines. Energy Safety needs more time to effectively collaborate with the Commission to determine whether any outcomes or required actions specified in D.21-06-014 or in other PSPS-related proceedings will be useful performance metrics to include in future WMP Guidelines. Energy Safety also plans to collaborate with the Commission to determine the appropriate level of detail for any additional performance metrics related to the PSPS reporting framework that would reveal the extensive range of activities already in place without replicating the level of

[15] The WSAB Revised Draft Recommendations on the 2022 Wildfire Mitigation Plan (WMP) Guidelines, Performance Metrics, and Safety Culture Assessment, p. 22.

						detail in other compliance filings.
6.2 Measuring effectiveness of outreach efforts "The 2022 WMP Guidelines should require the utilities to include an analysis of the correlation between the quantity of contacts and effectiveness of the outreach methods."	No	No	WMP Guidlns.	Process Fnctnl. purpose = Life Safety	**Not Applicable**	The primary purpose and authority of Energy Safety is to ensure electrical utilities are taking effective actions to reduce utility-related wildfire risk and to prevent catastrophic utility-ignited wildfires. A utility's stakeholder outreach, including providing proper and adequate PSPS notification to affected populations, is an important component of public safety. However, such outreach is already regulated by other state entities, including the Commission's separate PSPS authority.
6.3 Internal Evaluation methodology for Outreach "Energy Safety should request the utilities submit their internal evaluation methodology for their outreach efforts. Based on this information the 2022 WMP Guidelines should	No	No	WMP Guidlns.	Process Fnctnl. purpose = Life Safety	**Not Applicable**	As discussed for recommendation 6.2, this WSAB recommendation relates to the effectiveness of utility outreach methods. A utility's stakeholder outreach, including providing proper and adequate PSPS notification to affected populations, is an important component of public safety. However, such outreach is already regulated by other

include additional performance metrics to measure the success of community outreach efforts."						state entities, including the Commission's separate PSPS authority. The Commission is currently examining utility PSPS procedures in R.18-12-005 (Order Instituting Rulemaking to Examine Electric Utility De-Energization of Power Lines in Dangerous Conditions) and related proceedings.
7. Safety Culture Assessment						
7.1 Safety Culture Assessment to include Contractors "In the 2022 Safety Culture Assessments, Energy Safety should request that contractor managers, in addition to utility managers, complete the self-assessment. Their assessment of the safety culture is critical given that the majority of the mitigation work is being completed by contractors."	No	Yes	Safety Culture	Process Fnctnl. purpose = Life Safety	**Essential**	Energy Safety's Safety Culture Assessment currently employs a workforce survey that reaches contractor employees. The assessment additionally includes a management self-assessment and the reporting of a summary plan for the coming year, safety culture objectives, and lessons learned. Energy Safety conducts follow-up interviews as it deems necessary. Since the management self-assessment is geared toward utility employees, additional time and coordination would be required to develop a separate

						process for contractor managers. Energy Safety will consider this recommendation when developing its 2023 Safety Culture Assessment process.
7.2 Safety Culture Assessment to include variety of stakeholders "In the 2022 Safety Culture Assessments, Energy Safety should interview a variety of stakeholders including utility managers, contractor managers, utility employees, and contractor workers. This will create a full picture of the safety culture at the utility for Energy Safety."	No	Yes	Safety Culture	Process Fnctnl. purpose = Life Safety	**Essential**	Energy Safety's Safety Culture Assessment currently employs a workforce survey that reaches contractor employees. The assessment additionally includes a management self-assessment and the reporting of a summary plan for the coming year, safety culture objectives, and lessons learned. Energy Safety conducts follow-up interviews as it deems necessary, which may include interviews with utility managers and employees. In 2021, these interviews included frontline workers and frontline supervisors (including those managing contractors), but not contractor employees (either frontline workers or managers). Per the current Safety Culture Assessment requirements, Energy Safety may request

						follow-up interviews with contractor employees working on behalf of the utilities on wildfire mitigation. Energy Safety will consider this recommendation when developing its 2023 Safety Culture Assessment process.
7.3 Production-based Pricing "In the 2022 Safety Culture Assessments, Energy Safety should evaluate whether production-based pricing structures leads to more accidents compared to hourly pricing structures."	No	No	Safety Culture	Process Fnctnl. purpose = Quality of Work	**Not Applicable**	At this time Energy Safety is not considering including pricing structure as part of assessing a utility's safety culture.
8. Expertise to Support Wildfire Safety						
8.1 CPUC General Orders "The WSAB recommends Energy Safety expand its expertise and begin evaluating the CPUC General Orders and the requirements for the equipment	P	P	Ops.	Fnctnl. purpose = Admin.	**Desirable / Further Evaluation Required**	Energy Safety plans to evaluate CPUC General Orders and the requirements for the equipment attached to the electric transmission and distribution infrastructure as described by Pub. Util. Code § 326 (a) (7) and will continue to

attached to the electric transmission and distribution infrastructure. Energy Safety should also consider evaluating the greenhouse gas impact of wildfire mitigation activities to reduce the impacts of climate change."						coordinate with the CPUC and the WSAB regarding regulations developed by the CPUC. Energy Safety will consider if and how to evaluate greenhouse gas impacts of wildfire mitigation activities in 2023 and beyond.
8.2 Energy Safety Internal Expertise "As part of its transition to Energy Safety, the WSD should continue to develop in-house expertise to perform critical analysis and review of the WMPs, as well as to conduct safety culture assessments, and ensure compliance with the WMPs."	Yes	Yes	Ops.	Fnctnl. purpose = Admin.	**Desirable**	Appropriate internal expertise in a broad range of relevant subject matters (e.g., fire safety engineering, vegetation management, electrical T&D, risk modeling, safety culture) is an essential functional need for Energy Safety. All positions from the Wildfire Safety Division transferred over to Energy Safety as of July 1, 2021. Energy Safety will consider additional support needs through the State's budget change proposal process.

8.3 WSAB Support "The WSAB should continue to have adequate staff support to execute its statutory responsibilities."	Yes	Yes	Ops.	Fnctnl. purpose = Admin.	**Desirable (Further Evaluation Required)**	Energy Safety received budget authorization to maintain the same staffing support for the WSAB as provided by the CPUC and is in the process of hiring those resources. If additional resources are needed in the future for the WSAB to have sufficient support staff, additional support will be considered through the State's budget change proposal process.

Summary of recommendations

Table 4 provides a summary of Energy Safety's analysis and recommendations for each of the forty recommendations in the WSAB report.

Table 4 – Summary of Evaluation of 2022 WSAB Recommendations

2022 WSAB Recommendation	*Considered for Inclusion*		*Program Area*
	For 2022	*For 2023 or Beyond*	
1. Structure and Scope			
1.1 Energy Safety and CPUC coordination after CNRA Transition	Yes	Yes	Operations
1.2 Energy Safety staff liaison	Partial	Partial	Operations
1.3 Restructure 2023 WMP Update Guidelines by Mitigation Measures	No	Yes	WMP Guidelines
1.4 Incorporation of Visual Illustrative Examples	Yes	Yes	WMP Guidelines
1.5 Separate Guideline for SMJUs and ITOs	No	Partial	WMP Guidelines
2. Risk Assessment: Risk Modeling, GIS Mapping, and Resource Allocation			
2.1 Reporting Elements and GIS Data Reporting	Partial	Yes	WMP Guidelines
2.2 Reporting modeling methods, assumptions, inputs, outputs	Yes	Yes	WMP Guidelines
2.3 Reporting decision-making process	Partial	Yes	WMP Guidelines
2.4 Peer Review Process	No	Yes	WMP Guidelines and Operations
2.5 Guidance on a common data system/platform	No	Yes	Operations
3. Public Safety Power Shutoffs: Reducing Scale, Scope and Frequency			
3.1 Risk spend efficiency (RSE)	Partial	Yes	WMP Guidelines
3.2 Reducing PSPS	No	Yes	WMP Guidelines
3.3 Studying the effects of risk toleration above zero	Partial	Yes	WMP Guidelines
3.4 Consequence mapping to reduce risk	No	Partial	WMP Guidelines
3.5 Evaluation of mitigation efforts	No	Yes	WMP Guidelines
3.6 Evaluation of Near misses and PSPS	No	Partial	WMP Guidelines
4. Vegetation Management: Strategies and Environmental Stewardship			
4.1 Tree replacement program	No	Partial	WMP Guidelines
4.2 Tree removal after fires	Partial	Partial	WMP Guidelines
4.3 Including notices of violation in the WMPs	No	Partial	WMP Guidelines
4.4 Vegetation Management Training Programs	Partial	Partial	WMP Guidelines
4.5 Database of vegetation-caused outages	Partial	Partial	WMP Guidelines
4.6 Utility Defensible Space Programs	No	Partial	WMP Guidelines
4.7 Use of Tree Growth Regulators and Herbicides	No	Yes	WMP Guidelines
5. System Design and Operation: Grid Hardening, Workforce Management, Asset Inspections, and Emerging Technology			

2022 WSAB Recommendation	*Considered for Inclusion*		*Program Area*
	For 2022	*For 2023 or Beyond*	
5.1 Emerging technology	No	Partial	WMP Guidelines
5.2 Workforce protection	No	No	WMP Guidelines
5.3 Workforce training electrical workers	No	Yes	WMP Guidelines
5.4 Quality controls for Electrical Systems Inspectors	No	Partial	WMP Guidelines
5.5 Qualified Electrical Workers (QEW)	No	Partial	WMP Guidelines
5.6 De-energizing idle lines	No	Partial	WMP Guidelines
5.7 G.O. 95 Exempt Equipment reporting	No	Partial	WMP Guidelines
5.8 Interval of Inspections for SMJUs	No	No	WMP Guidelines
6. Communication and Community Outreach: Performance Metrics and Improving Stakeholder Outreach Efforts			
6.1 PSPS Stakeholder Outreach Efforts	No	Yes	WMP Guidelines
6.2 Measuring effectiveness of outreach efforts	No	No	WMP Guidelines
6.3 Internal Evaluation methodology for Outreach	No	No	WMP Guidelines
7. Safety Culture Assessment			
7.1 Safety Culture Assessment to include Contractors	No	Yes	Safety Culture
7.2 Safety Culture Assessment to include variety of stakeholders	No	Yes	Safety Culture
7.3 Production-based Pricing	No	No	Safety Culture
8. Expertise to Support Wildfire Safety			
8.1 CPUC General Orders	Partial	Partial	Operations
8.2 Energy Safety Internal Expertise	Yes	Yes	Operations
8.3 WSAB Support	Yes	Yes	Operations

Conclusion

This document contains the Office of Energy Infrastructure Safety's (Energy Safety's) analysis and recommendations on the WSAB Report and will be issued to the California Public Utilities Commission (CPUC or Commission). This document therefore fulfills Energy Safety's statutory requirement relative to Pub. Util. Code § 8389 (c).

Energy Safety evaluated the recommendations in the WSAB Report primarily for their value in reducing wildfire risks to life-safety and/or property protection, and secondarily on other performance objectives such as environmental protection, regulatory function, technical feasibility, availability of resources, and scientific and/or engineering merit.

The WSAB Report contains forty recommendations to Energy Safety to consider. As a result of this evaluation, Energy Safety plans to consider fourteen of these recommendations for adoption in 2022, either as an update to the 2022 WMP Guidelines or through other programmatic/operational improvements. Of the remaining twenty-six recommendations, Energy Safety plans to consider twenty-one for adoption in 2023 or beyond and does not plan to consider five of the WSAB recommendations at this time.

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715 P Street, 20th Floor
Sacramento, CA 95814
916.902.6000