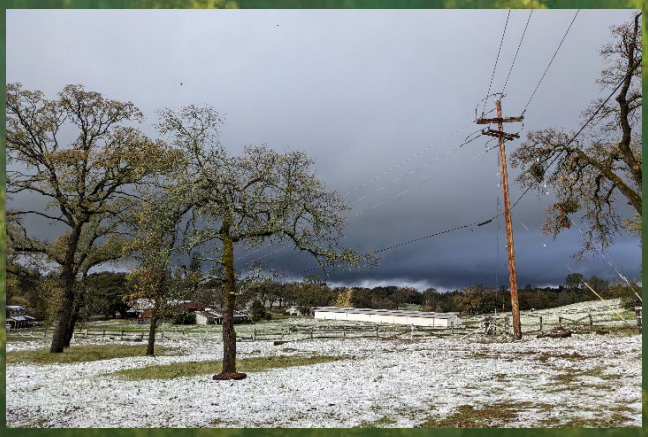
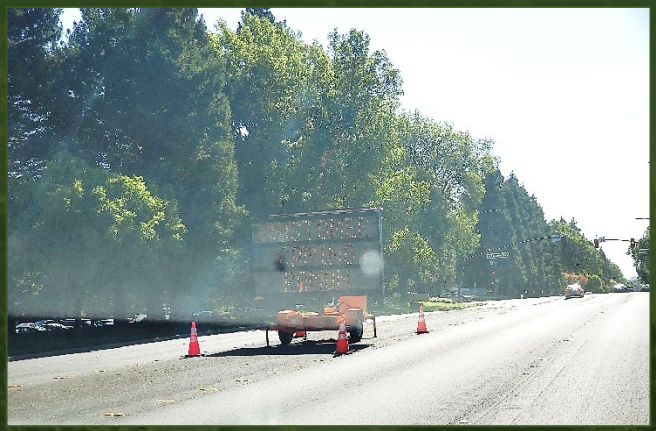
California Wildfire Safety Advisory Board

Recommendations to the Office of Energy Infrastructure Safety on Additional Wildfire Mitigation Plan Requirements and Performance Metrics, and Safety Culture Assessment





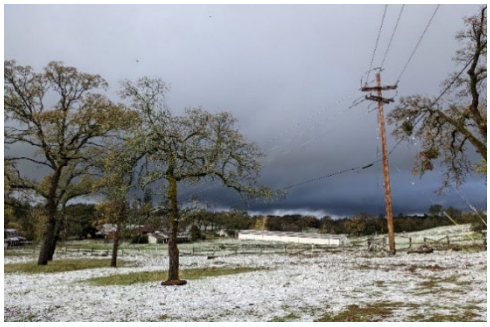
June 13, 2023

California Wildfire Safety Advisory Board

Cover Photos

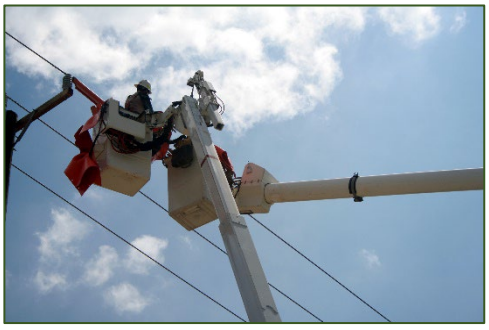
Shown: **Shrubs Under Utility Lines, Palm Springs**

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



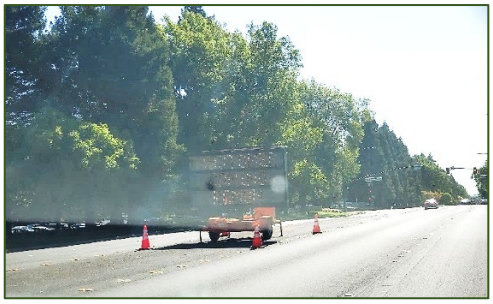
Shown: **Oak Trees in Snow Near Lines**

The Board has previously recommended 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).

Table of Contents

Background

Following catastrophic wildfires in California, Senate Bill (SB) 901 (2018) established requirements that utilities file Wildfire Mitigation Plans (WMPs) on an annual basis with the California Public Utilities Commission (CPUC) beginning in 2020. Assembly Bill (AB) 1054 (2019) and AB 111 (2019) established the Wildfire Safety Advisory Board (WSAB or the Board), a seven-member body of wildfire and utility policy experts appointed by the Governor, Speaker of the Assembly, and Senate Committee on Rules.[i] These bills further established the Office of Energy Infrastructure Safety (Energy Safety)[ii] as a department under the California Natural Resources Agency (CNRA). The legislation mandates that the WSAB develop and make recommendations to Energy Safety related to the electric corporations' WMPs and safety culture assessments. 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 Safety on wildfire safety issues.

Each member of the Board brings a unique perspective and expertise to their review of WMP requirements and performance metrics. Additional information about the Board and its members can be found on its website: https://energysafety.ca.gov/what-we-do/wildfire-safety-advisory-board/[iii].

The current Board members are:

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

2022-2023 Activities and Accomplishments

The Board, during 2022:

- Held five public Board meetings
- Developed two sets of recommendations to Energy Safety, on 2023 Wildfire Mitigation Plan Additional Requirements and Performance Metrics, and Safety Culture Assessments
- Developed and adopted an Advisory Guidance Opinion providing recommendations to the State's publicly owned utilities on their 2023 Wildfire Mitigation Plans
- Hired new advisors

Subsequently, in the first half of 2023, the Board:

- Held two public Board meetings
    - February 22: Safety Culture: Presentations from global experts and from California's three large investor-owned utilities (IOUs on safety culture practices)[iv]
    - April 19: Board Member Syphard, a national expert in vegetation management and wildfire ecology, presented her work in the field as the kick-off to the Board's policy paper initiative.
- Informed and participated in Energy Safety scoping meetings on emerging issues in vegetation management and community vulnerability. This included discussing the approach for each of the scoping meetings with Energy Safety in their planning phase, providing valuable input to shape the agenda, identifying relevant participants and panelists, and providing input to next steps.

For the second half of 2023, the Board will develop and adopt recommendations to the State's publicly owned utilities (POUs) on their 2024 WMPs. The Board will continue to engage in Energy Safety's scoping meetings, including one anticipated for the third quarter of 2023 focused on climate change. In addition, the Board expects to issue recommendations in policy papers on emerging topics and policy gaps in utility wildfire risk mitigation and hold and participate in Board-sponsored public workshops.

Acknowledgements

The Board recognizes that the IOUs have pushed significant boundaries and have pioneered and adopted world class technologies for the prediction and mitigation of wildfires on their electric systems. Their commitment to eliminating catastrophic utility wildfires is further evinced by their efforts detailed in their 2023-2025 WMPs.

Additionally, we would like to commend Energy Safety in its creation of new 2023 guidelines to improve the efficacy and accountability of the IOUs wildfire mitigation programs and in turn improve the safety of communities across California. We want to acknowledge the collaboration and engagement between the Board and Energy Safety and express excitement about its expanding depth and breadth particularly as we turn towards emerging topics like longer-term climate change. We look forward to continued collaboration with the IOUs, the publicly owned utilities, relevant government agencies and interested stakeholders.

The Board acknowledges that our work would not be possible without the skill, creativity, and expertise of our advisor and staff, Jonathan Frost and Mary Ann Aguayo. These two staff keep the Board on track to meet both statutory requirements and self-determined goals. Furthermore, they help translate Board members' wealth of knowledge into actionable policy recommendations and best practices for further reducing utility wildfire ignition risk and for the utilities to adapt to rapidly changing climate, weather and landscape.

Introduction

Pursuant to Public Utilities Code Section 326.2(b) and 8389(b) (1-3),[v] the Wildfire Safety Advisory Board provides these recommendations to the Office of Energy Infrastructure Safety (Energy Safety) as it updates its 2025 Wildfire Mitigation Plan (WMP) Guidelines applicable to the Investor-Owned Utilities (IOUs), Independent Transmission Owners (ITOs) and Small and Multi-Jurisdictional Utilities (SMJUs) (collectively "utilities").

The Board acknowledges and appreciates Energy Safety's review, consideration, and incorporation of many of the Board's recommendations in the 2023-2025 WMP Guidelines.[vi] The Board also acknowledges Energy Safety's efforts to hone the utilities' requirements since its first recommendations in 2021.[vii] The large IOU's 2023 WMP filings are organized to be more accessible and transparent to the reviewer. Energy Safety's efforts have focused the utilities' mitigation efforts to the benefit of all Californians. The Board adopts these recommendations for consideration by Energy Safety to transmit to the CPUC.

1 Wildfire Mitigation Plan Recommendations

Through its review of the WMPs, the Board aims to provide meaningful recommendations on the WMPs from a holistic perspective looking at broad considerations. Additionally, the Board takes a narrower focus on areas that we can advise upon based on our different areas of expertise. Through Energy Safety's efforts, the WMPs have considerably evolved and improved since the first cycle in 2020. To continue this trajectory, the Board makes the following recommendations for Energy Safety's future WMP Guidelines.

Per Public Utilities Code §8389(b)(1), the Board recommends that Energy Safety requires the IOUs to characterize their WMP mitigations in discernable spending categories and to score their performance over the last three years on annual basis by filed WMP. The basis of this scoring should be based on high consequence wildfire avoidance and PSPS avoidance. Energy Safety should further consider requiring the utilities to segregate high consequence wildfire avoidance by red flag warning days and non-red flag warning days. The Board is interested in identifying performance metrics that are able to distinguish between a given mitigation's wildfire risk reduction and accurately attribute the amount of contribution to the avoidance of high consequence wildfire on the reliance of PSPS events. Since most high consequence wildfires have occurred during Red Flag Warning events and if PSPS is initiated, PSPS may be the primary

contribution to the avoidance of high-consequence wildfires over the category of the wildfire risk mitigation being scored.

In terms of Public Utilities Code §8389(b)(2), the Board offers the following recommendations detailed in Table 1 below.

Table 1: WSAB Recommendations on the WMPs

No.	Topic	Recommendation	Justification
1	WMP Structure and Scope	The executive summary should serve as a standalone document, precede the table of contents, and include all of the key targets and cost estimates for the reporting period by program categories (e.g., grid design and system hardening, community outreach and engagement). The utilities should include this information in a table similar to that of the example shown in Appendix A.	Right now, the executive summary follows the table of contents which for the WMPs is approximately 30 pages into the text. It should be moved to the front of the document and be available to the general reader. Furthermore, the reader often is unable to properly understand what the programs and the targets are without having to review the entire document.
2	WMP Structure and Scope	Statutory or specific guidelines included in the relevant sections should be placed in the footnotes or endnotes. See the before and after example in Appendix B.	Converting the requirements text for a given section to footnotes or endnotes can help minimize the space taken up on the page,
3	WMP Structure and Scope	The table of contents should have hot links for ease of access. Also, the list of tables/figures should be put in an appendix.	Not all utilities use hot links, which makes it more difficult to navigate through the document.[viii] Removing the list of tables/figures would downsize the table of contents, which are, in

No.	Topic	Recommendation	Justification
			some cases, up to 30 pages.
4	WMP Structure and Scope	The utilities should develop an interactive webpage to accompany the WMP submission that includes a map showing targeted projects, where known. The utilities should also include summary materials showing the targets by program over the WMP planning period and what goals have been accomplished to date. Additionally, they should describe their mitigation operations and technologies for the average customer.	Interactive online resources for the customers can help them learn about where and when wildfire mitigation projects will occur. Such information will create a better understanding of how the utilities are enhancing wildfire safety and where funds are being spent.
5	System Design and Operation	Where known and feasible, the utilities should incorporate local public works plans or trenching efforts from partner agencies such as communications or sewage providers into the prioritization and planning of their undergrounding efforts.	For example, when local governments plan to construct a new road, costs of burying conduit would likely be more economical than a standalone utility projects as they can share costs.
6	System Design and Operation	The utilities need to provide their assumptions and essential information in their WMPs that are used to estimate the benefits of PSPS avoidance and/or outage avoidance for each program.	This background information would allow readers to better understand and determine the utilities' risk-spend efficiency or how utilities conduct cost-benefit analysis
7	System Design and Operation	The utilities need to clearly communicate how they estimate the effectiveness of their mitigations and how	This would allow readers to better understand program effectiveness and the effect of

No.	Topic	Recommendation	Justification
		they control for factors such as weather and the effects of other wildfire mitigation programs to explain how ignition reductions can reasonably be attributed to specific mitigation efforts.	specific mitigation effort on ignition reduction.
8	Communication and Community Outreach	When the utilities are aware of conditions that may either trigger enhanced powerline safety settings (EPSS)/fast curve[ix] outages or have already triggered such outages, they should communicate this information where feasible on their website to the same stakeholders and partners that they would communicate with for PSPS events. This includes but is not limited to public safety partners and local governments, as well as stakeholders and customers.	Even if the EPSS/fast curve outage events are short-lived, they may still have consequences that can impact the safety and well-being of local residents and the operations of businesses, including critical industry sectors. The utilities should communicate how customers may be affected including the likely duration of the impacts.
9	Communication and Community Outreach	The utilities should expand on the already recognized communication platforms and services for HFTD customers affected by EPSS and PSPS outages. This notification may occur, for example, via an outage app unique to the HFTD areas and communities. Additionally, the utilities should each create a readily available website with information pared down to be easily understood yet informative	The utilities have at their disposal a myriad of resources that predict whether an EPSS event is most likely to occur, or the conditions of a PSPS will be implemented. Within those critical and most likely effected communities, the utilities have an opportunity to create a method of communication in real time.

No.	Topic	Recommendation	Justification
		enough to the customer and stakeholders, to assist in their response to elevated wildfire risk in HFTD areas.	The business of managing wildfire ignitions and possible damage, while providing reliable electric service, is opaque to members of the public. The amount of information available can be overwhelming and the ability to understand how it applies to any one customer's expectation of reliable electric service is still a difficult subject to bridge. With a more understandable overview of the mitigation strategies and triggers, coupled with clear information about the programs to mitigate the burdens of unintended outages, customers can gain greater levels of awareness of the utilities' wildfire mitigation efforts.

2 Safety Culture Assessment Recommendations

The utilities have made considerable efforts over the years to improve overall safety and hazard reduction, which can impact the utility workforce. Currently, the Safety Culture Assessment (SCA) process evaluates whether the utilities are building and improving a wildfire safety culture focusing both on foundational components of safety culture and components specific to wildfire risk. We recognize that this is the narrow intent of the existing statutory requirement. However, the Board would like to introduce the concept of moving to a broader view.

Changing the culture at any organization is a process that goes beyond lowering accidents and developing new safety procedures. As Dr. Mark Fleming of Saint Mary's University notes, safety culture is the shared values, attitudes and behaviors that underlie a company and ultimately determine the success of their safety management.[x] Values, attitudes and behaviors do not simply change overnight and will take much effort both within and beyond the context of the SCA process that Energy Safety is responsible for.

To better help Energy Safety assess the utilities' safety culture, the Board offers the following recommendations.

Table 2: WSAB Recommendations on the SCA process

No.	Recommendation	Justification
1	In the workforce survey, Energy Safety should consider adding a question regarding employees' confidence of the ability to quickly alert decisionmakers and management about issues/safety hazards when detected.	This would help assess how quickly potentially life-saving information can flow from employees on the ground or monitoring for issues that occur in remote or isolated areas.
2	Energy Safety should add a statement to the workforce survey such as the following: "I am empowered to make independent decisions concerning safety in the absence of decisionmakers or my management, if needed."	Employees may need to react to emergency situations and make quick, potentially life-saving decisions on their own in the event that they cannot reach the decisionmakers. This question will help assess if employees require additional training to do so.

No.	Recommendation	Justification
3	In the workforce survey, Energy Safety should consider adding a question about whether workers are comfortable reporting issues, even if they turn out to be false alarms, without fear of retaliation.	This will help determine if employees feel safe to report on perceived issues even if they are unable to directly assess whether they are hazardous.
4	Energy Safety should consider adding a question/statement to the workforce survey about the degree that workers feel safe and empowered to point out issues with their managers not following protocols directly or pressuring employees to do so.	This statement would help gauge whether there are current or ongoing issues with employees being pressured to cut corners, and if employees fear retaliation should they speak up.
5	Energy Safety should also add a statement to the workforce survey similar to the following: "We have regular/open channels of communication with other teams and/or contractors that are responsible for wildfire mitigation work."	This statement would help measure the degree to which the utility's teams are communicating with other wildfire mitigation teams within the utility or contractors as opposed to working in silos or operating in isolation from each other.
6	Energy Safety should include the following question in the management self-assessment: "To what extent do you coordinate on safety matters with communication providers who you share pole space with, or who attach their equipment to the same poles?"	This would encourage utility management to evaluate their safety coordination efforts with communications companies. Without proper coordination with the utilities, communications providers may be unaware of safety hazards that the utilities know of and could place their personnel in harm's way.
7	The management self-assessment should include a question about the degree to which the utility shares information with other utilities and partner agencies about their safety programs and initiatives to address safety culture as part of sharing best practices. This should include metrics	This will expose leading indicators to safety concerns that can be proactively addressed, also will expose best practices to other IOUs. Robust dialogue in safety can be better achieved through a sharing of the mechanisms

No.	Recommendation	Justification
	that examine how successful their efforts are in addressing areas of concerns.	used by each utility to reach safety culture goals.
8	Energy Safety should consider partnering with safety experts from the Occupational Safety and Health Administration (OSHA), California's Division of Occupational Safety and Health (Cal/OSHA), or independent monitors that could meet with and/or sporadically observe utility and contractor crews.	In addition to the interviews that take place as part of the SCA, meeting and/or observing the wildfire mitigation crews would help ensure that safety protocols are being followed and improvements realized.

Approval

The California Wildfire Safety Advisory Board's Recommendations on additional Wildfire Mitigation Plan Guidelines and Performance Metrics, and Safety Culture Assessment were approved on June 13, 2023, 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

Endnotes

[i] Currently the Board consists of six members and there is one vacancy.

[ii] Formerly known as the Wildfire Safety Division at the CPUC.

[iii] The Board approves the recommendations found here but individual recommendations may not reflect the views of individual Board members.

[iv] The three large IOUs are Pacific Gas and Electric (PG&E), Southern California Edison (SCE) and San Diego Gas & Electric (SDG&E).

[v] 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.
> (3) The appropriate scope and process for assessing the safety culture of an electrical corporation."

[vi] WSAB, *Recommendations on* the 2022 annual *Recommendations to Office of Energy Infrastructure Safety on Additional Wildfire Mitigation Plan Requirements and Performance Metrics,* available at: https://energysafety.ca.gov/wp-content/uploads/docs/misc/wsab/recs-on-2023-wmp-additional-reqs-performance-metrics-4.26.22-final.pdf and *Recommendations of the Wildfire Safety Advisory Board on Safety Culture Assessment*, available at: https://energysafety.ca.gov/wp-content/uploads/wsab-recommendations-on-safety-culture-assessment-final.pdf. See also Energy Safety's adopted 2023-2025 WMP Guidelines at: https://energysafety.ca.gov/what-we-do/electrical-infrastructure-safety/wildfire-mitigation-and-safety/wildfire-mitigation-plans/2023-wildfire-mitigation-plans/

[vii] WSAB, Recommendations on the 2021 Wildfire Mitigation Plan Updates for Large Investor-Owned Utilities, available at: https://energysafety.ca.gov/wp-content/uploads/docs/misc/wsd/wsab-recommendations-on-2021-large-iou-wmp-updates-issued-4.16.2021.pdf.

[viii] For instance, the 2023 Liberty and PacifiCorp WMPs do not include hot links to the sections in their text.

[ix] EPSS and fast curve refer to the increased sensitivity in settings for fault-sensing devices on the electric distribution grid, such as a circuit breaker and/or a line recloser, that causes the line segment to automatically de-energize when contacted by a foreign object such as a tree limb that could otherwise potentially lead to an ignition.

[x] Dr. Mark Fleming, "Safety Culture," presentation, California Wildfire Safety Advisory Board First Quarter Meeting, Sacramento, CA, February 22, 2023, https://www.youtube.com/watch?v=xOHZ66WeDFc.

Appendix A – Format for Summary Table

Sample Summary Table	
Grid Design, Operations and Maintenance	<u>Current Reporting Period Goals:</u> • 50 miles of undergrounding - $XX million • 300 wood-to-steel pole replacement - $X million • 80 miles of covered conductor - $X million <u>Prior Reporting Period Accomplishments:</u> • 35 miles of undergrounding - $XX million • 100 miles of covered conductor - $X million <u>Totals projected by end of reporting period:</u> • 1000 underground circuit miles (700 pre-WMP efforts ($XXX million, if known), 250 undergrounded since 2019 - $XXX million, 50 forecasted 2026-2028 - $XX million) • 2000 miles of covered conductor (1920 installed 2019-2022 - $XX million, 100 miles forecasted 2026-2028 - $XX million)
Vegetation Management and Inspections	…
Situational Awareness and Forecasting	<u>Current Reporting Period Goals:</u> • 50 weather stations - $XXXXX • 40 cameras - $XXXXX • 20 new inspection drones - $XXXXX <u>Prior Reporting Period Accomplishments:</u> • 80 weather stations added - $XXXXX • 30 cameras installed - $XXXXX <u>Totals projected by end of reporting period:</u> • 300 weather stations (30 pre-WMP efforts ($XXXXX, if known), 110 added since 2019 - $XXXXX, 50 forecasted 2026-2028 - $XXXXX) • 50 cameras (30 2019-2022 - $XXXXX, 20 forecast 2026-2028 - $XXXXX)
Emergency Preparedness	…
Community Outreach and Engagement	…
Public Safety Power Shutoff	…

Appendix B – Footnoting Statutory Guidelines

Revised excerpt with statutory guidelines in footnote.

7.2 Wildfire Mitigation Strategy

~~*Each electrical corporation must provide an overview of its proposed wildfire mitigation strategies based on the evaluation process identified in Section 7.1.*~~

7.2.1 Overview of Mitigation Initiatives and Activities

~~*The electrical corporation must provide a high-level summary of the portfolio of mitigation initiatives across its service territory. In addition, the electrical corporation must describe its reasoning for the proposed portfolio of mitigation initiatives and why it did not select other potential mitigation initiatives.*~~

~~*Additionally, for each mitigation initiative category, the electrical corporation must provide the following:*~~

~~• *A high-level overview of the selected mitigation initiatives;*~~

~~• An implementation plan, including its schedule and how progress will be monitored; and~~

~~• *How the need for any interim mitigation initiatives was determined and how interim mitigation initiatives were selected (see Section 7.2.3).*~~

~~*Table 7-3 provides an example of a summary list of mitigation initiative.*~~

In this section we provide a brief overview of our wildfire mitigation initiatives by category included in our WMP. We also provide a reference to the section in this WMP where they are described in more detail. We described how we determine the need for the mitigations included in the portfolio in Section 7.1.4, and how we monitor the mitigations more specifically in Section 7.1.4.3 above.[1][2]

XXX's mitigations are generally divided into three categories—Comprehensive Monitoring and Data Collection, Operational Mitigations, and System Resilience—that are broadly defined as:

• Comprehensive Monitoring and Data Collection: Programs designed to provide insight into the condition of XXX's equipment and the environment;

• Operational Mitigations: Programs designed to manage system risk; and

• System Resilience: Mitigations designed to reduce ignition risk by changing how XXX's grid is constructed and operated.

Below is a brief overview of the mitigation initiatives contained in our plan that fall into each of these three categories, as well as mitigation initiatives considered but ultimately not chosen for implementation as part of this Plan. In the overview, we also identify which mitigation initiatives are related to specific targets and objectives that we will be reporting throughout the year to Energy Safety.

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[1] *Each electrical corporation must provide an overview of its proposed wildfire mitigation strategies based on the evaluation process identified in Section 7.1.*

[2] *The electrical corporation must provide a high-level summary of the portfolio of mitigation initiatives across its service territory. In addition, the electrical corporation must describe its reasoning for the proposed portfolio of mitigation initiatives and why it did not select other potential mitigation initiatives.*
Additionally, for each mitigation initiative category, the electrical corporation must provide the following:
• *A high-level overview of the selected mitigation initiatives;*
• An implementation plan, including its schedule and how progress will be monitored; and
• *How the need for any interim mitigation initiatives was determined and how interim mitigation initiatives were selected (see Section 7.2.3).*
Table 7-3 provides an example of a summary list of mitigation initiative.