



December 22, 2023

To: Liberty Utilities Wildfire Mitigation Plan Stakeholders

Enclosed is the Draft Decision of the Office of Energy Infrastructure Safety (Energy Safety) presenting its evaluation of Liberty Utilities' 2023-2025 Wildfire Mitigation Plan.

This Draft Decision is published for public review and comment. Opening comments must be submitted no later than January 11, 2024. Reply comments must be submitted no later than January 22, 2024.¹

Comments must be submitted to Energy Safety's e-filing system in the 2023-2025 Wildfire Mitigation Plans docket (2023-2025-WMPs).²

Sincerely,

Shannon O'Rourke
Deputy Director | Electrical Infrastructure Directorate
Office of Energy Infrastructure Safety

¹ Dates falling on a Saturday or holiday as defined in Government Code Section 6700 have been adjusted to the next business day in accordance with Government Code Section 6707.

² Submit comments via the [2023-2025-WMPs docket](https://efiling.energysafety.ca.gov/EFiling/DocketInformation.aspx?docketnumber=2023-2025-WMPs) on Energy Safety's e-filing system (<https://efiling.energysafety.ca.gov/EFiling/DocketInformation.aspx?docketnumber=2023-2025-WMPs>, accessed December 15, 2023).



OFFICE OF ENERGY INFRASTRUCTURE SAFETY
DRAFT DECISION ON 2023-2025
WILDFIRE MITIGATION PLAN
LIBERTY UTILITIES

December 2023

TABLE OF CONTENTS

1.	Executive Summary	1
2.	Introduction and Background	2
2.1	Consultation with California Department of Forestry and Fire Protection	2
2.2	Stakeholder Comments	2
3.	Energy Safety's 2023 Evaluation Process.....	4
3.1	WMP Completeness.....	5
3.2	Maturity Model and Survey	5
3.3	Areas for Continued Improvement	6
3.4	Revision Notice	6
3.5	Decision.....	7
3.6	Change Order Requests.....	8
4.	Introductory Sections of the WMP.....	9
4.1	Liberty's Wildfire Mitigation Expenditures	9
5.	Overview of the Service Territory	11
5.1	Service Territory	11
5.2	Electrical Infrastructure	13
5.3	Environmental Settings.....	15
5.3.1	Fire Ecology	15
5.3.2	Catastrophic Wildfire History.....	15
5.4	Community Values at Risk.....	17
5.4.1	Environmental Compliance and Permitting	18
5.5	Areas for Continued Improvement	18
6.	Risk Methodology and Assessment.....	19
6.1	Methodology.....	19
6.2	Risk Analysis Framework.....	19
6.3	Maturity Survey Results.....	20
6.4	Liberty's WMP Strengths	22
6.4.1	2022 Areas for Continued Improvement	22

6.5	Revision Notice Critical Issues	23
6.5.1	RN-LU-23-01: Procedures for independent review of risk modeling	23
6.6	Areas for Continued Improvement	24
6.6.1	Cross-Utility Collaboration on Risk Model Development.....	24
6.6.2	PSPS and Wildfire Risk Trade-Off Transparency.....	24
6.6.3	Collaboration Between Vendor and Utility Risk Teams	25
7.	Wildfire Mitigation Strategy Development.....	26
7.1	Risk Evaluation	26
7.1.1	Liberty's WMP Strengths.....	27
7.1.2	Areas for Continued Improvement.....	27
7.2	Risk-Informed Framework	28
7.2.1	Liberty's WMP Strengths.....	28
7.2.2	Areas for Continued Improvement.....	29
7.3	Wildfire Mitigation Strategy	29
7.3.1	Maturity Survey Results	30
7.3.2	Liberty's WMP Strengths.....	31
7.3.3	Revision Notice Critical Issues.....	31
7.3.4	Areas for Continued Improvement.....	31
8.	Wildfire Mitigation Initiatives.....	32
8.1	Grid Design, Operations, Maintenance.....	32
8.1.1	Objectives and Targets	32
8.1.2	Grid Design and System Hardening.....	33
8.1.3	Asset Inspections.....	39
8.1.4	Equipment Maintenance and Repair.....	44
8.1.5	Grid Operations and Procedures.....	49
8.2	Vegetation Management and Inspections.....	52
8.2.1	Objectives and Targets	53
8.2.2	Maturity Survey Results	53
8.2.3	Liberty's WMP Strengths.....	56

8.2.4	Areas for Continued Improvement.....	57
8.3	Situational Awareness and Forecasting.....	57
8.3.1	Objectives and Targets	58
8.3.2	Maturity Survey Results	58
8.3.3	Liberty's WMP Strengths.....	61
8.3.4	Areas for Continued Improvement.....	61
8.4	Emergency Preparedness	62
8.4.1	Objectives and Targets	62
8.4.2	Maturity Survey Results	63
8.4.3	Liberty's WMP Strengths.....	65
8.4.4	Areas for Continued Improvement.....	65
8.5	Community Outreach and Engagement.....	65
8.5.1	Objectives and Targets	66
8.5.2	Maturity Survey Results	66
8.5.3	Liberty's WMP Strengths.....	68
8.5.4	Areas for Continued Improvement.....	68
9.	Public Safety Power Shutoffs	69
9.1	Objectives and Targets.....	69
9.2	Maturity Survey Results.....	69
9.3	Liberty's WMP Strengths	70
9.3.1	2022 Areas for Continued Improvement.....	70
9.4	Areas for Continued Improvement	70
10.	Liberty's Process for Continuous Improvement.....	71
10.1	Lessons Learned	71
10.2	Corrective Action Program.....	72
10.3	Areas for Continued Improvement	72
11.	Required Areas for Continued Improvement.....	73
11.1	Risk Methodology and Assessment	73
11.2	Wildfire Mitigation Strategy Development.....	74

11.3 Grid Design, Operations, and Maintenance..... 75

11.4 Vegetation Management and Inspections..... 81

11.5 Situational Awareness and Forecasting..... 81

12. Conclusion..... 84

DRAFT

LIST OF FIGURES

Figure 4.1-1. Liberty Grid Design, Operations, and Maintenance Projected Expenditures

Figure 4.1-2. Liberty Vegetation Management Projected Expenditures

Figure 5.1-1. Cross-Utility Square Miles Served

Figure 5.1-2. Cross-Utility Number of Customers Served

Figure 5.2-1. Cross-Utility Miles of Overhead Distribution Lines

Figure 5.2-2. Cross-Utility Miles of Overhead Transmission Lines

Figure 5.2-3. Cross-Utility Miles of Underground Distribution and Transmission Lines

Figure 5.3-1. Cross-Utility Number of Catastrophic Wildfires

Figure 5.3-2. Cross-Utility Acres Burned by Catastrophic Wildfires

Figure 5.3-3. Cross-Utility Number of Fatalities Caused by Catastrophic Wildfires

Figure 6.3-1. Cross-Utility Maturity for Risk Assessment and Mitigation Strategy

Figure 6.3-2. Cross-Utility Maturity for Risk Assessment and Mitigation Strategy

Figure 7.3-1. Cross-Utility Maturity for Risk Prioritization

Figure 8.1-1. Liberty Grid Design, Operations, and Maintenance – Selected Targets

Figure 8.1-2. Cross-Utility Maturity for Grid Design and Resiliency

Figure 8.1-3. Cross-Utility Maturity for Asset Inspections

Figure 8.1-4. Cross-Utility Maturity for Asset Inspections

Figure 8.1-5. Cross-Utility Maturity for Asset Maintenance and Repair

Figure 8.1-6. Cross-Utility Maturity for Asset Maintenance and Repair

Figure 8.1-7. Cross-Utility Maturity for Grid Operations and Protocols

Figure 8.1-8. Cross-Utility Maturity for Grid Operations and Protocols

Figure 8.2-1. Cross-Utility Maturity for Vegetation Management and Inspections

Figure 8.2-2. Cross-Utility Maturity for Vegetation Management and Inspections

Figure 8.3-1. Cross-Utility Maturity for Situational Awareness and Forecasting

Figure 8.3-2. Cross-Utility Maturity for Situational Awareness and Forecasting

Figure 8.4-1. Cross-Utility Maturity for Emergency Preparedness

Figure 8.4-2. Cross-Utility Maturity for Emergency Preparedness

Figure 8.5-1. Cross-Utility Maturity for Community Outreach and Engagement

Figure 8.5-2. Cross-Utility Maturity for Community Outreach and Engagement

LIST OF TABLES

- Table 4.1-1. SMJU Territory-Wide Expenditures per Initiative Category
- Table 4.1-2. SMJU Expenditures per Initiative Category, HFTD vs non-HFTD
- Table 8.1-1. Liberty Grid Design, Operations, and Maintenance – Selected Targets
- Table 8.2-1. Liberty Vegetation Management – Selected Targets
- Table 8.3-1. Liberty Situational Awareness and Forecasting – Selected Targets
- Table 8.4-1. Liberty Emergency Preparedness – Selected Targets
- Table 8.5-1. Liberty Community Outreach and Engagement – Selected Target
- Table 9.1-1. Liberty Public Safety Power Shutoffs – Selected Targets

LIST OF APPENDICES

- Appendix A Glossary of Terms..... A-2
- Appendix B Status of 2022 Areas for Continued Improvement A-7
- Appendix C Liberty 2023 Revision Notice Critical Issues..... A-10
- Appendix D Stakeholder Comments on the 2023-2025 Wildfire Mitigation Plans A-19
- Appendix E Stakeholder Comments on the Revision Notice Response A-21
- Appendix F Stakeholder Comments on the Draft Decision A-22
- Appendix G Maturity Survey Results A-23

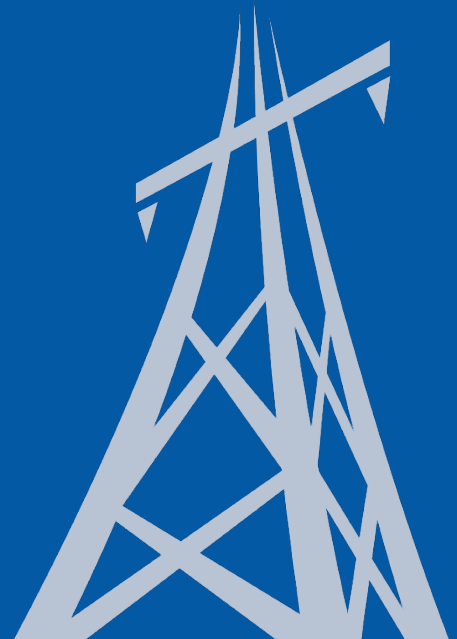
1. Executive Summary

The Office of Energy Infrastructure Safety (Energy Safety) works to ensure electrical corporations take effective actions to reduce utility-related wildfire risk. Pursuant to Public Utilities Code section 8386.3(a), this Decision serves as Energy Safety's assessment and approval of Liberty Utilities' (Liberty's) 2023-2025 Wildfire Mitigation Plan, submitted on May 5, 2023. Energy Safety's Decision considers comments from the public and other stakeholders.

Liberty's Wildfire Mitigation Plan is comparable to, and at times exceeds, the plans of the other small and multi-jurisdictional utilities. For example, Liberty plans to offer wood removal and disposal services to all residential customers to reduce fuel generated from vegetation management activities. Liberty is also continuing the development of its Integrated Vegetation Management Program with the goal of promoting the stable growth of utility-compatible species along its rights-of-way.

There are some areas of Liberty's Wildfire Mitigation Plan that can be further developed and improved. For example, Liberty does not adequately compare the effectiveness of different mitigations for addressing the same ignition risk in describing its decision to implement sensitive relay profiles and other traditional hardening rather than additional covered conductor. In addition, Liberty has not demonstrated a full understanding of the reliability impacts of sensitive relay profiles. Energy Safety expects Liberty to calculate ignition reduction effectiveness for covered conductor, sensitive relay profiles, and traditional hardening to demonstrate that it is deploying the most effective mitigation or combination of mitigations.

Liberty, along with the other electrical corporations, is expected to continue participating in Energy Safety-sponsored risk modeling working groups to ensure cross-collaboration on best practices and approaches to complex modeling issues.



2. Introduction and Background

Liberty Utilities (Liberty) submitted its 2023-2025 Wildfire Mitigation Plan (Base WMP or WMP) covering a three-year term from 2023 through the end of 2025 (the current WMP cycle) on May 5, 2023, in response to the reporting requirements set forth in Energy Safety's 2023-2025 WMP Technical Guidelines (Technical Guidelines)¹ and the processes set forth in Energy Safety's WMP Process and Evaluation Guidelines (Process Guidelines).²

Pursuant to Public Utilities Code section 8386.3(a), this Decision is Energy Safety's assessment of Liberty's 2023-2025 WMP.

Energy Safety approves Liberty's 2023-2025 WMP. In 2024, Liberty must submit a 2025 Update consistent with the 2025 WMP Guidelines. Energy Safety will approve or deny Liberty's 2025 Update to its Base Plan.

2.1 Consultation with California Department of Forestry and Fire Protection

The Office of the State Fire Marshal is part of the California Department of Forestry and Fire Protection (CAL FIRE). Public Utilities Code section 8386.3(a) requires Energy Safety to consult with the Office of the State Fire Marshal in reviewing electrical corporations'³ WMPs and WMP Updates. The Office of the State Fire Marshal provided meaningful consultation and input on the evaluation, but this Decision is solely an action of Energy Safety and not the Office of the State Fire Marshal or CAL FIRE.

2.2 Stakeholder Comments

Energy Safety invited stakeholders, including members of the public, to provide comments on the utilities' 2023-2025 WMPs and Revision Notices. Opening comments on Liberty's Base WMP were due on June 29, 2023, and reply comments were due on July 10, 2023. Opening comments on Liberty's Revision Notice were due October 23, 2023, and reply comments were due November 2, 2023. See Appendices C and D for lists of stakeholders that submitted

¹ [Energy Safety's 2023-2025 Wildfire Mitigation Plan Technical Guidelines \(Dec. 2022\) \(hereafter Technical Guidelines\)](https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true) (https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true, accessed May 5, 2023).

² [Energy Safety's 2023-2025 Wildfire Mitigation Plan Process and Evaluation Guidelines \(Dec. 2022\) \(hereafter Process Guidelines\)](https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53287&shareable=true) (https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53287&shareable=true, accessed May 5, 2023).

³ In this document, "utility" should be understood to mean "electrical corporation."

comments, including comments that Energy Safety concurred with and incorporated into its evaluation.

DRAFT

3. Energy Safety's 2023 Evaluation Process

Energy Safety issued the following guidelines for electrical corporations' 2023-2025 WMPs:

- **2023-2025 WMP Technical Guidelines**, which sets forth substantive and procedural requirements for electrical corporations to prepare and submit their WMPs.⁴
- **ITO Supplement to the 2023-2025 WMP Technical Guidelines**, which establishes the modified reporting requirements for independent transmission operators (ITOs).⁵
- **2023-2025 WMP Process and Evaluation Guidelines**, which outlines the process for Energy Safety's evaluation of WMPs, details the public participation process, and establishes submission requirements for the electrical corporations.⁶
- **2023-2025 Maturity Model and Survey**, which provides a quantitative method for assessing electrical corporation wildfire risk mitigation capabilities and examining how electrical corporations propose to continuously improve in key areas of their WMPs.^{7, 8}

The WMP evaluation process includes some or all the following steps for each utility, which are described in more detail in the remainder of this section:

⁴ [Technical Guidelines](https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true) (https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true, accessed May 5, 2023).

⁵ [Energy Safety's Independent Transmission Operator Supplement to the 2023-2025 Wildfire Mitigation Plan Technical Guidelines \(Dec. 2022\)](https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53290&shareable=true) (https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53290&shareable=true, accessed May 5, 2023).

⁶ [Process Guidelines](https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53287&shareable=true) (https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53287&shareable=true, accessed May 5, 2023).

⁷ [Second Revised Final Maturity Model and Maturity Survey Letter \(Feb. 2023\)](https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53393&shareable=true) (https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53393&shareable=true, accessed May 5, 2023);

[2023-2025 Electrical Corporation Wildfire Mitigation Maturity Model \(Second Revised Final, Feb. 2023\)](https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53394&shareable=true) (https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53394&shareable=true, accessed May 5, 2023);

[2023 Electrical Corporation Wildfire Mitigation Maturity Survey \(Second Revised Final, Feb. 2023\)](https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53395&shareable=true) (https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53395&shareable=true, accessed May 5, 2023). This is the version that electrical corporations saw when filling out the survey.

⁸ [2023 Electrical Corporation Wildfire Mitigation Maturity Survey \(Revised Final, April 2023\)](https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53708&shareable=true) (https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53708&shareable=true, accessed May 5, 2023). This is the version used by Energy Safety when scoring the survey.

- Completeness check of the utilities' WMP pre-submissions.
- Energy Safety's evaluation of utilities' WMPs, including consideration of Maturity Survey results, areas where the utility has progressed, and areas where the utility must improve.
- Issuance of a Revision Notice if Energy Safety identifies critical issues associated with a utility's WMP.
- Publication of Energy Safety draft Decision.
- Publication of Energy Safety's Decision approving or denying a utility's WMP.
- Various forms of public participation throughout the process.

3.1 WMP Completeness

The first step in Energy Safety's WMP evaluation is a completeness check.⁹ Liberty provided its WMP pre-submission to Energy Safety on March 6, 2023.

Energy Safety determined that Liberty's WMP pre-submission did not satisfy the completeness check and notified Liberty on March 27, 2023, of what information was required to make its WMP complete.

Liberty submitted its revised Base WMP on May 5, 2023.

3.2 Maturity Model and Survey

Energy Safety used the 2023-2025 Electrical Corporation Wildfire Mitigation Maturity Model¹⁰ (Maturity Model) and 2023 Electrical Corporation Wildfire Mitigation Maturity Survey¹¹ (Maturity Survey), which together provided a quantitative method to assess the maturity of each utility's wildfire risk mitigation program. The current version of the Maturity Model is an update to the original version that Energy Safety used to assess utility maturity during the first WMP cycle (2020-2022).

The Maturity Model consists of 37 individual capabilities describing the ability of electrical corporations to mitigate wildfire risk and Public Safety Power Shutoff (PSPS) risk within their service territory. The 37 capabilities are aggregated into seven categories. Maturity levels range from 0 (below minimum requirements) to 4 (beyond best practice). For each utility,

⁹ [Process Guidelines](https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53287&shareable=true), Section 4.1, pages 3-5 (https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53287&shareable=true, accessed May 5, 2023).

¹⁰ [2023-2025 Electrical Corporation Wildfire Mitigation Maturity Model \(Second Revised Final, Feb. 2023\)](https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53394&shareable=true) (https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53394&shareable=true, accessed May 5, 2023).

¹¹ [2023 Electrical Corporation Wildfire Mitigation Maturity Survey \(Revised Final, April 2023\)](https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53708&shareable=true) (https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53708&shareable=true, accessed May 5, 2023). This is the version used by Energy Safety when scoring the survey.

Energy Safety calculated maturity levels for each capability, each category, five cross-category themes, and the overall WMP, based on the utility's answers to Maturity Survey questions and the scoring system described in the Maturity Model.

Energy Safety evaluated each utility's reported and projected wildfire mitigation maturity in the context of the utility's corresponding current and planned initiatives described in its WMP.

The results from the 2023 Maturity Survey establish a baseline for maturity as well as the utility's anticipated progress over this three-year plan period.

Energy Safety assessed the results of each utility's Maturity Survey and discussed how the utility is progressing—or not—in maturity relative to each mitigation initiative. Liberty's results specific to each initiative are discussed in Sections 6 through 9 of this Decision, and overall results for Liberty can be found in Appendix G.

3.3 Areas for Continued Improvement

Energy Safety's evaluation of the 2023-2025 WMPs focused on each utility's strategies for reducing the risk of utility-related ignitions. Energy Safety assessed the electrical corporation's progress on areas for improvement resulting from 2022 WMP evaluations, evaluating the feasibility of its strategies, and measuring year-to-year trends. As a result of this evaluation, Energy Safety identified areas where the utility must continue to improve its wildfire mitigation capabilities in future plans.¹²

Areas for continued improvement relative to each mitigation initiative are discussed in Sections 6 through 9 of this Decision. Specific areas for continued improvement prescribed by Energy Safety in 2023, including specific required progress, are listed in Section 11.

3.4 Revision Notice

Public Utilities Code section 8386.3(a) states, "Before approval, [Energy Safety] may require modifications of the [WMP]." If Energy Safety requires modifications to a WMP, it does so by issuing a Revision Notice to a utility.¹³

¹² [Process Guidelines](https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53287&shareable=true), Section 4.7 (https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53287&shareable=true, accessed May 5, 2023).

¹³ [Process Guidelines](https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53287&shareable=true), Section 4.4, page 6 (https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53287&shareable=true, accessed May 5, 2023).

Energy Safety issued a Revision Notice to Liberty on September 6, 2023.¹⁴ Liberty submitted its Revision Notice Response on October 6, 2023.¹⁵ Appendix C lists the critical issues contained in the Revision Notice, a brief overview of the utility's response, and Energy Safety's assessment of the utility's response. Energy Safety considered Liberty's Revision Notice Response in its comprehensive WMP evaluation and this Decision includes Energy Safety's evaluation of both Liberty's Revision Notice Response and its 2023-2025 WMP.

3.5 Decision

In its evaluation of an electrical corporation's 2023-2025 WMP, Energy Safety considers the areas where the electrical corporation must improve, as well as the progress it plans to achieve in its areas of strength. As a result of its evaluation, Energy Safety determines whether the 2023-2025 WMP is approved or denied.¹⁶

If the WMP is approved, Energy Safety finds the electrical corporation's WMP is sufficient and expects it to complete mitigation initiatives as described in its WMP. An approved WMP demonstrates adequate progress toward wildfire mitigation, while still showing areas where the electrical corporation must improve.

If the WMP is denied, Energy Safety finds the electrical corporation's WMP is not satisfactory or does not include sufficient detail within a section or sub-section of the WMP. There may still be areas of strength within a denied WMP, but the issues are critical enough to warrant denial.

Energy Safety recognizes that planning for wildfire risk is a maturing capability and expects that electrical corporations will continue to improve year over year. Therefore, Energy Safety's Decision includes areas for continued improvement, identifying areas where the utility must continue to mature in its capabilities.

Energy Safety also highlights in its Decision areas of strength where the electrical corporation plans noteworthy improvements to its wildfire mitigation programs, sets ambitious and feasible targets for its programs, and/or sets out to achieve more than what is required.

Pursuant to Public Utilities Code section 8386.3(a), this Decision is the totality of Energy Safety's review of Liberty's 2023-2025 WMP. Liberty's 2023-2025 WMP is approved.

¹⁴ [Revision Notice on Liberty's 2023- 2025 Base WMP](https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=55572&shareable=true)

(<https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=55572&shareable=true>, accessed November 2, 2023).

¹⁵ [Liberty's Revised 20223-2025 Base WMP](https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=55765&shareable=true) (October 6, 2023)

(<https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=55765&shareable=true>, accessed November 2, 2023)

¹⁶ [Process Guidelines](#), Section 5.3, page 10

(<https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53287&shareable=true>, accessed May 5, 2023).

3.6 Change Order Requests

For information regarding Energy Safety's change order process, refer to Section 12 of the Process Guidelines.

DRAFT

4. Introductory Sections of the WMP

In response to Sections 1 through 4 of the Technical Guidelines, Liberty provided basic information regarding persons responsible for executing the plan and adherence to statutory requirements.¹⁷

Liberty provided the required information for these sections:

- Section 1: Executive Summary (Summary of the 2020–2022 WMP Cycle, Summary of the 2023–2025 Base WMP)
- Section 2: Responsible Persons (titles and credentials for: executive-level owner with overall responsibility; program owners with responsibility for each of the main components of the plan; as applicable, general ownership for questions related to or activities described in the WMP)
- Section 3: Statutory Requirements Checklist
 - This section provides a checklist of the statutory requirements for a WMP as detailed in Public Utilities Code section 8386(c).¹⁸ By completing the checklist, the electrical corporation affirms that its WMP addresses each requirement. Liberty completed this checklist.
- Section 4: Overview of WMP (Primary Goal; WMP Objectives; Proposed Expenditures; Risk-Informed Framework)

4.1 Liberty's Wildfire Mitigation Expenditures

Section 4.3 of the Technical Guidelines requires electrical corporations to summarize projected expenditures for the current WMP cycle, as well as planned and actual expenditures from the previous WMP cycle (i.e., 2020–2022).¹⁹

Liberty provided all required information regarding expenditures. A summary of this information is presented below. Table 4.1-1 presents a comparison of territory-wide projected expenditures by wildfire mitigation initiative category across the small and multi-

¹⁷ [Technical Guidelines](#), Sections 1 through 4, pages 6-14 (<https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true>, accessed May 5, 2023).

¹⁸ [Public Utilities Code section 8386](#) (https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=8386.&lawCode=PUC, accessed May 9, 2023).

¹⁹ Energy Safety's WMP evaluation and decision on a WMP is not an approval of, or agreement with, costs listed in the WMP.

jurisdictional utilities (SMJUs). Table 4.1-2 provides the same information but divided by planned expenditures within and outside the California Public Utilities Commission's (CPUC's) high fire threat district (HFTD). These tables present total projected expenditure for the current 2023-2025 WMP cycle.

Since all electrical corporations spend a considerably higher percentage of their wildfire mitigation expenditures within the grid design and vegetation management categories, Figures 4.1-1 and 4.1-2 provide a more detailed breakdown of how expenditures within these categories are divided across major activity types.

DRAFT

Table 4.1-1. SMJU Territory-Wide Expenditures per Initiative Category²⁰

WMP Initiative Category	PacifiCorp	%	Liberty	%	Bear Valley	%	Grand Total	%
Grid Design, Operations, and Maintenance	\$242.6 M	79%	\$97.9 M	66%	\$68.4 M	86%	\$408.9 M	76%
Vegetation Management and Inspection	\$55.5 M	18%	\$41.8 M	28%	\$9.5 M	12%	\$106.8 M	20%
Emergency Preparedness	\$500.0 K	0%	\$4.6 M	3%	\$121.8 K	0%	\$5.3 M	1%
Situational Awareness and Forecasting	\$3.6 M	1%	\$3.0 M	2%	\$797.2 K	1%	\$7.4 M	1%
Community Outreach and Engagement	\$270.0 K	0%	\$270.0 K	0%	\$764.7 K	1%	\$1.3 M	0%
Risk Methodology and Assessment	\$938.0 K	0%	\$0	0%	\$187.6 K	0%	\$1.1 M	0%
Wildfire Mitigation Strategy Development	\$1.9 M	1%	\$0	0%	\$91.5 K	0%	\$2.0 M	0%
Overview of the Service Territory	\$0	0%	\$0	0%	\$76.2 K	0%	\$76.2 K	0%
PSPS	\$2.4 M	1%				0%	\$2.4 M	0%
Grand Total	\$307.7 M	100%	\$147.6 M	100%	\$79.9 M	100%	\$535.3 M	100%

Table 4.1-2. SMJU Expenditures per Initiative Category, HFTD vs non-HFTD

WMP Initiative Category	PacifiCorp				Liberty				Bear Valley			
	Total Territory	HFTD	Non-HFTD	% Spend in HFTD	Total Territory	HFTD	Non-HFTD	% Spend in HFTD	Total Territory	HFTD	Non-HFTD	% Spend in HFTD
Grid Design, Operations, and Maintenance	\$242.6 M	\$207.9 M	\$34.7 M	86%	\$97.9 M	\$97.9 M	-	100%	\$68.4 M	\$68.4 M	-	100%
Vegetation Management and Inspection	\$55.5 M	\$1.8 M	\$53.6 M	3%	\$41.8 M	\$41.8 M	-	100%	\$9.5 M	\$9.5 M	-	100%
Emergency Preparedness	\$500.0 K	-	\$500.0 K	0%	\$4.6 M	\$4.6 M	-	100%	\$121.8 K	\$121.8 K	-	100%
Situational Awareness and Forecasting	\$3.6 M	-	\$3.6 M	0%	\$3.0 M	\$3.0 M	-	100%	\$797.2 K	\$797.2 K	-	100%
Community Outreach and Engagement	\$270.0 K	-	\$270.0 K	0%	\$270.0 K	\$270.0 K	-	100%	\$764.7 K	\$764.7 K	-	100%
Overview of the Service Territory	-	-	-	0%	-	-	-	0%	\$76.2 K	\$76.2 K	-	100%
Wildfire Mitigation Strategy Development	\$1.9 M	-	\$1.9 M	0%	-	-	-	0%	\$91.5 K	\$91.5 K	-	100%
Risk Methodology and Assessment	\$938.0 K	-	\$938.0 K	0%	-	-	-	0%	\$187.6 K	\$187.6 K	-	100%
PSPS	\$2.4 M	-	\$2.4 M	0%				0%				0%

²⁰ The “Environmental Compliance and Permitting” initiative category above correlates to the “Overview of the Service Territory” initiative in WMPs.

Figure 4.1-1. Liberty Grid Design, Operations, and Maintenance Projected Expenditures (HFTD)

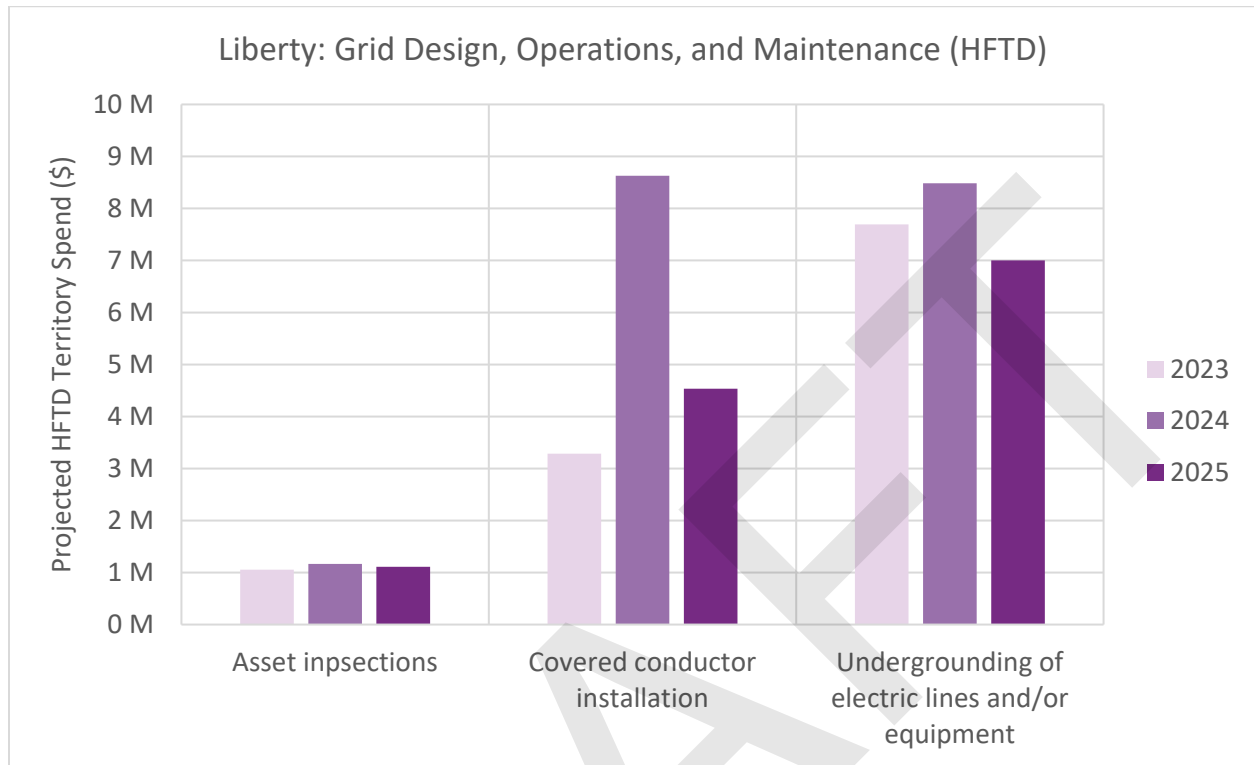
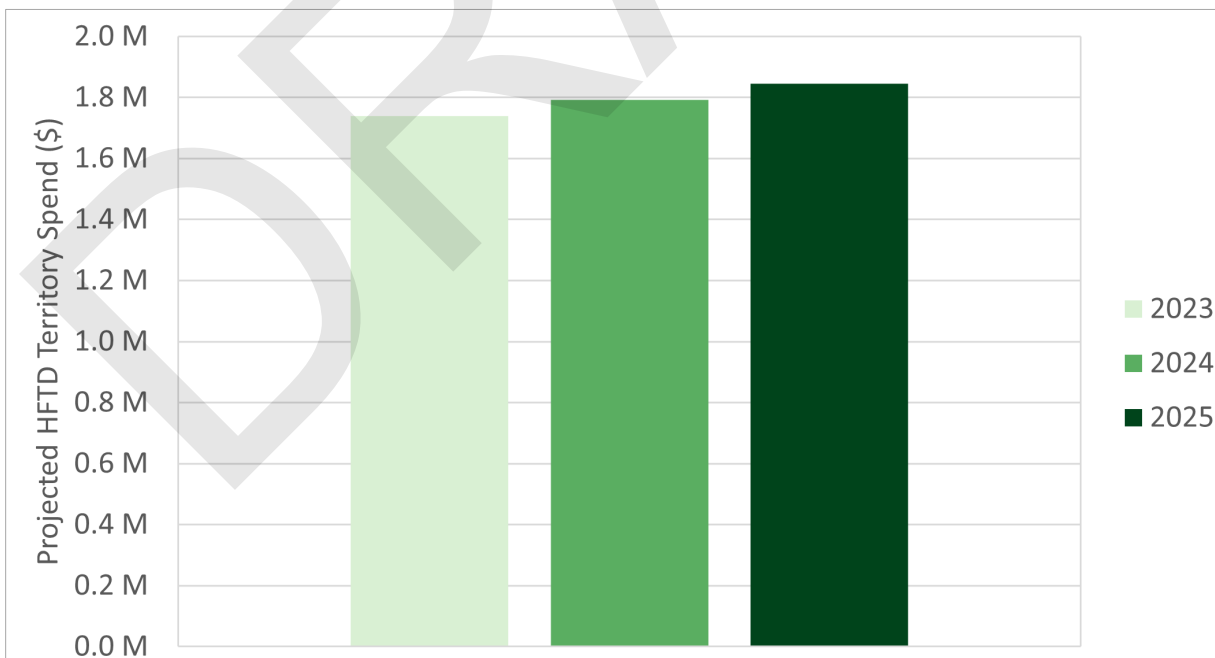


Figure 4.1-2. Liberty Vegetation Management Projected Expenditures (HFTD)



5. Overview of the Service Territory

In response to Section 5 of the Technical Guidelines, Liberty provided a high-level overview of its service territory that includes key characteristics of its electrical infrastructure, environmental settings, and community values at risk.²¹

Below are Energy Safety's summary and findings regarding Liberty's reporting on its service territory.

5.1 Service Territory

Section 5.1 of the Technical Guidelines requires Liberty to provide a high-level description of its service territory, including areas served, number of customers served, and geospatial maps.²²

Liberty reported that its service territory includes 1,482 square miles and serves roughly 47,954 customers. Liberty also stated that 936 square miles of its territory are in the CPUC's HFTD Tier 2 and 3 lands, which is 93 percent of its territory. Compared to the peer utilities of PacifiCorp and Bear Valley Electric Service, Inc. (Bear Valley), Liberty's service territory is the second largest in size, serves the most customers, and encompasses the second largest number of square miles of HFTD in its territory. Figures 5.1-1 and 5.1-2 below summarize the square miles served, including square miles of HFTD Tier 2 and 3 lands, and customers served in Liberty, PacifiCorp, and Bear Valley service territories.

²¹ [Technical Guidelines](#), Section 5, "Overview of the Service Territory," pages 15-29 (<https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true>, accessed May 5, 2023).

²² [Technical Guidelines](#), Section 5.4, "Service Territory," pages 15-16 (<https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true>, accessed May 5, 2023).

Figure 5.1-1. Cross-Utility Square Miles Served

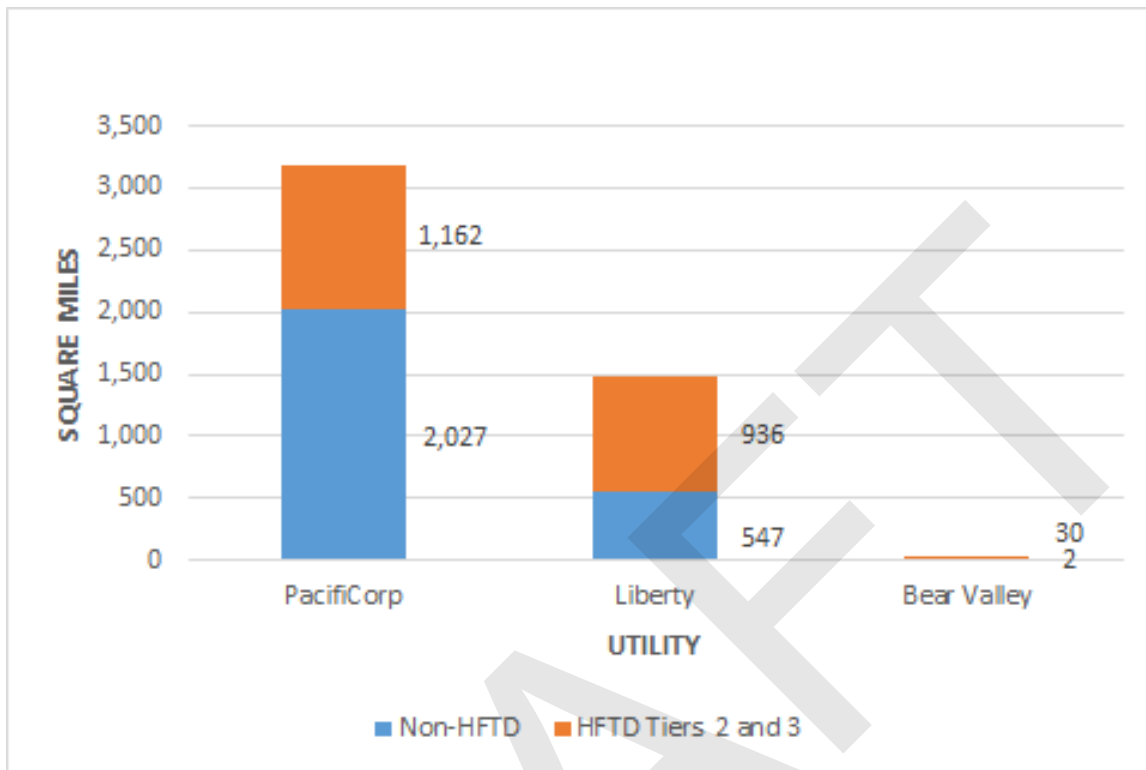
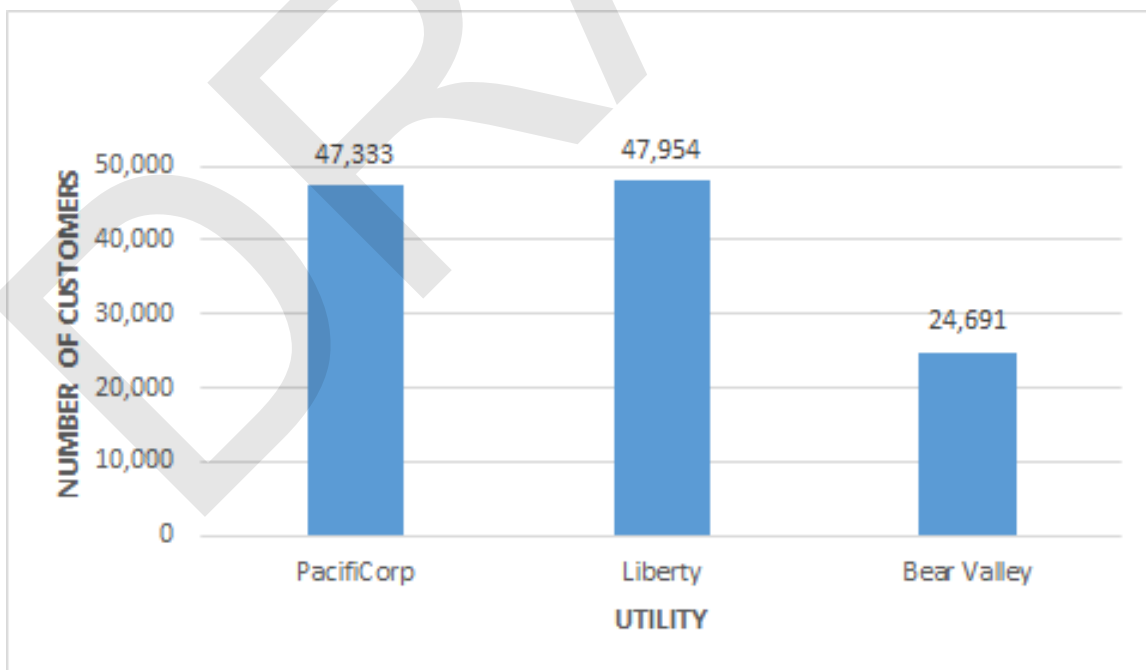


Figure 5.1-2. Cross-Utility Number of Customers Served

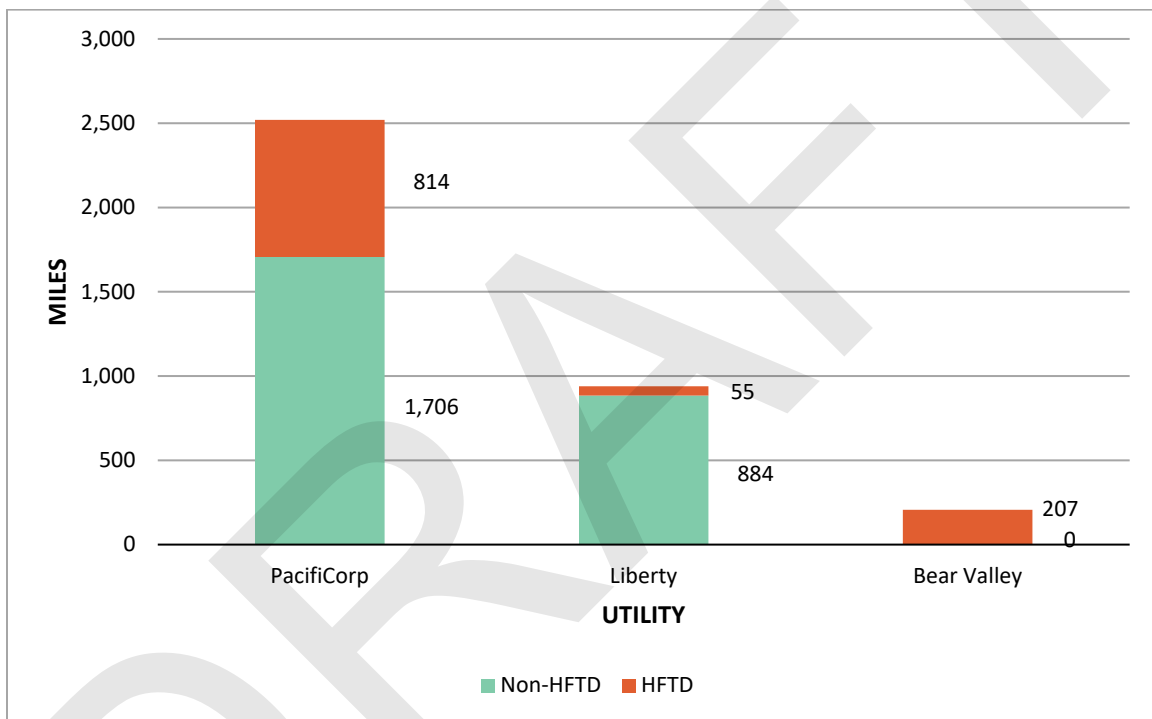


5.2 Electrical Infrastructure

Section 5.2 of the Technical Guidelines requires Liberty to provide a high-level description of its infrastructure, including all power generation facilities, transmission and distribution lines and associated equipment, substations, and other major equipment.²³

Liberty provided a table showing the breakdown of conductor line miles of overhead and underground lines in and outside of its HFTD. Figures 5.2-1, 5.2-2, and 5.2-3 below summarize conductor line miles presented by Liberty in comparison to its peer utilities.

Figure 5.2-1. Cross-Utility Miles of Overhead Distribution Lines



²³ [Technical Guidelines](#), Section 5.2, “Electrical Infrastructure,” pages 16-17 (<https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true>, accessed May 5, 2023).

Figure 5.2-2. Cross-Utility Miles of Overhead Transmission Lines

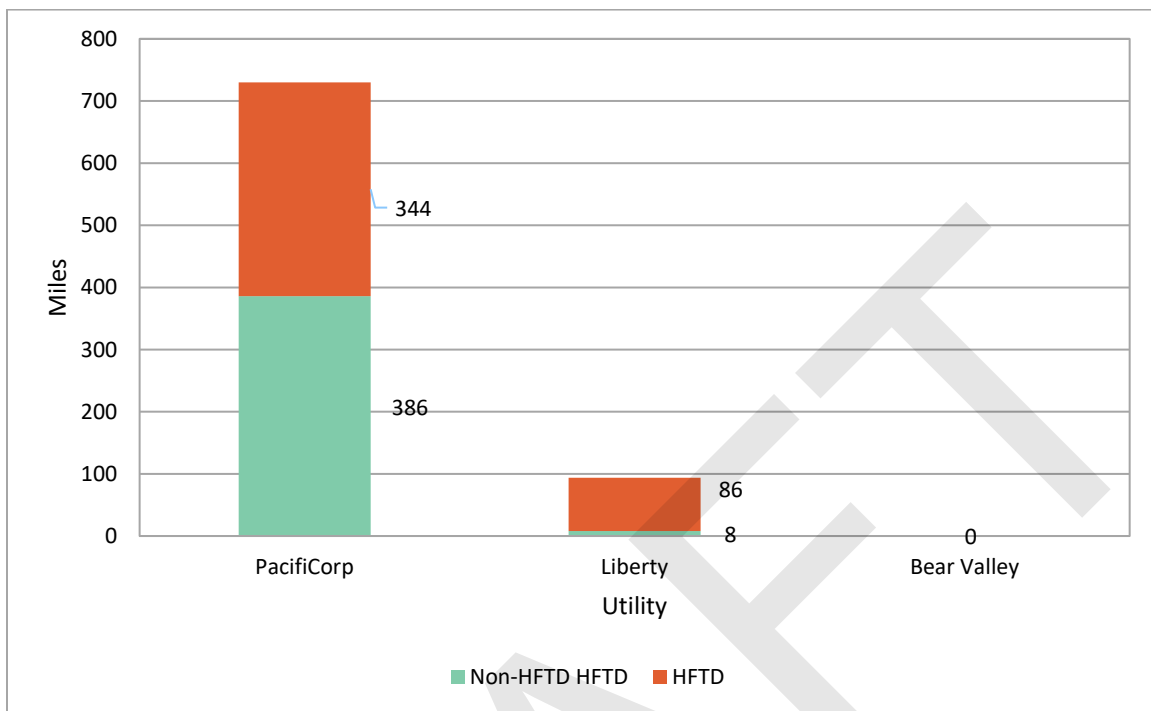
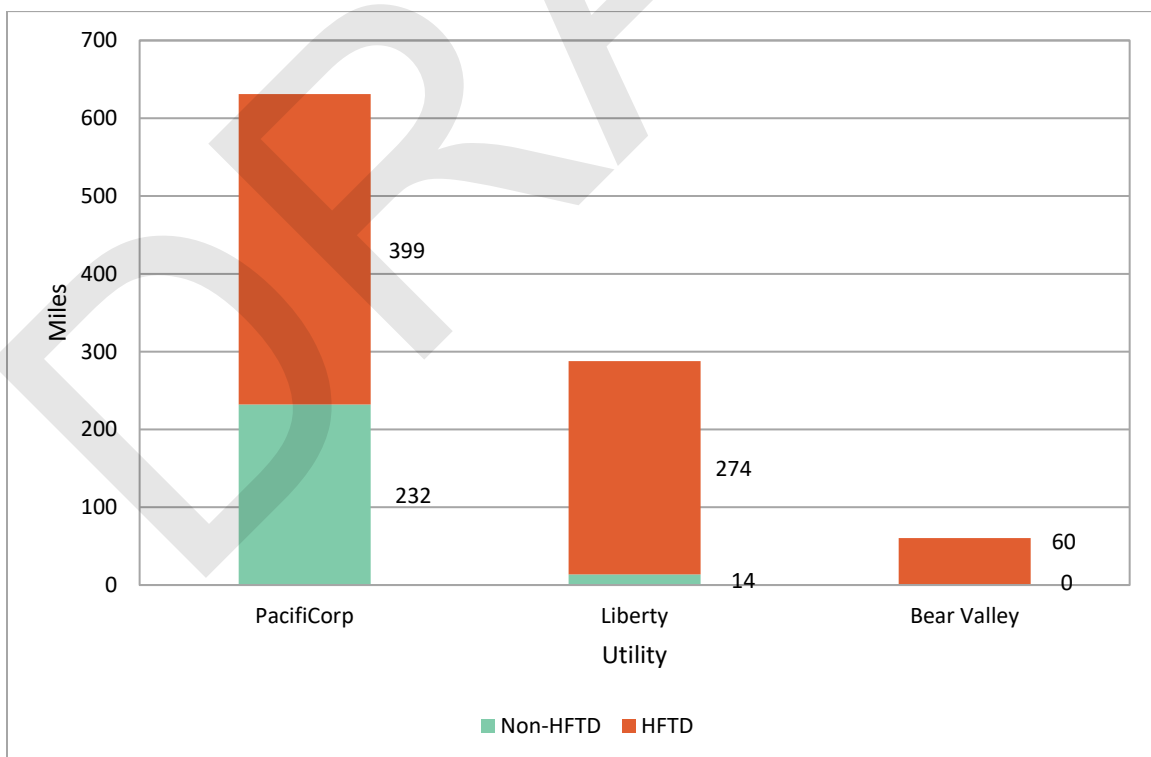


Figure 5.2-3. Cross-Utility Miles of Underground Distribution and Transmission Lines



5.3 Environmental Settings

Section 5.3 of the Technical Guidelines requires Liberty to provide a high-level overview of the environmental settings within its service territory.²⁴

5.3.1 Fire Ecology

Section 5.3.1 of the Technical Guidelines requires Liberty to provide a brief narrative of the fire ecologies across its service territory, including how ecological features influence the propensity of the electrical corporation's service territory to experience wildfires. The Technical Guidelines also require tabulated statistics.²⁵

Liberty provided a narrative describing the vegetative coverage across its service territory. Liberty additionally provided a table describing the existing vegetation types in Liberty's service territory and/or pie chart showing a breakdown of the vegetation types in its service territory in percentages.

5.3.2 Catastrophic Wildfire History

Section 5.3.2 of the Technical Guidelines requires Liberty to provide a brief narrative summarizing its wildfire history for the past 20 years as recorded by the electrical corporation, CAL FIRE, or another authoritative source.²⁶

Liberty reported one catastrophic wildfire that was attributed to its facilities or equipment from 2015-2022. Energy Safety defines catastrophic wildfires as those that resulted in at least one death, damaged over 500 structures, or burned over 5,000 acres. Figures 5.3-1, 5.3-2, and 5.3-3 below summarize the reported information on catastrophic wildfires for Liberty, PacifiCorp, and Bear Valley.

²⁴ [Technical Guidelines](#), Section 5.3, "Environmental Settings," pages 17-26 (https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true, accessed May 5, 2023).

²⁵ [Technical Guidelines](#), Section 5.3.1, "Fire Ecology," pages 17-18 (https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true, accessed May 5, 2023).

²⁶ [Technical Guidelines](#), Section 5.3.2, "Catastrophic Wildfire History," pages 18-20 (https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true, accessed May 5, 2023).

Figure 5.3-1. Cross-Utility Number of Catastrophic Wildfires (2015-2022)

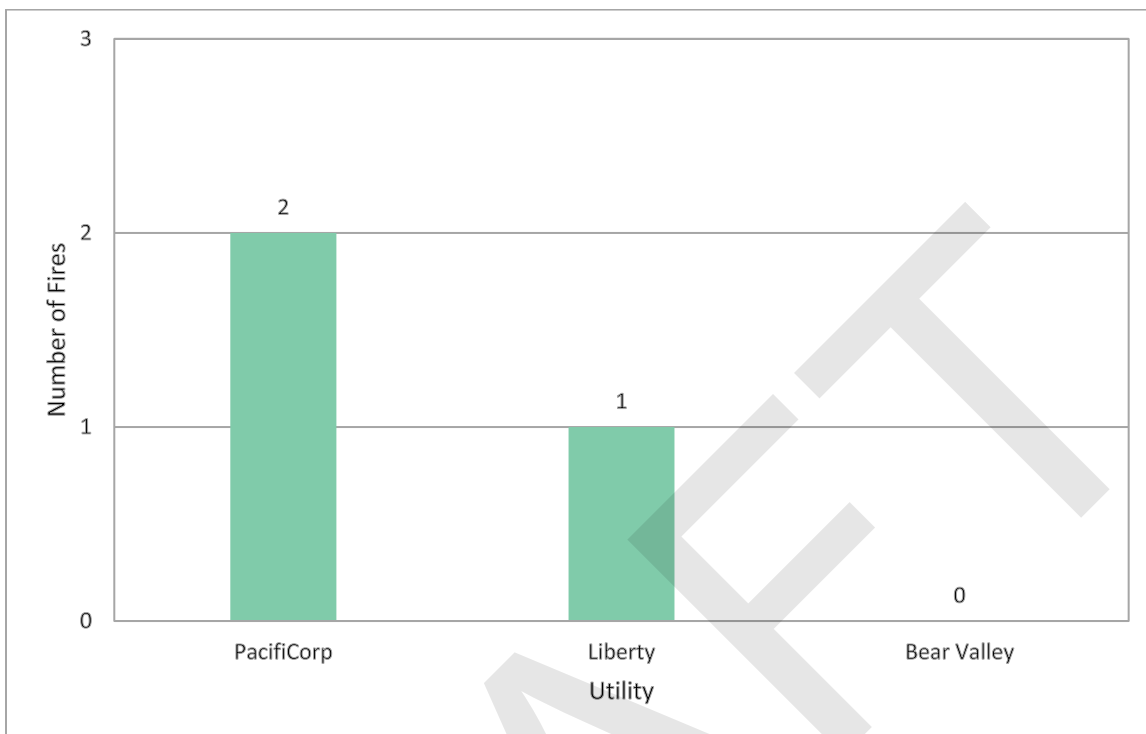


Figure 5.3-2. Cross-Utility Acres Burned by Catastrophic Wildfires (2015-2022)

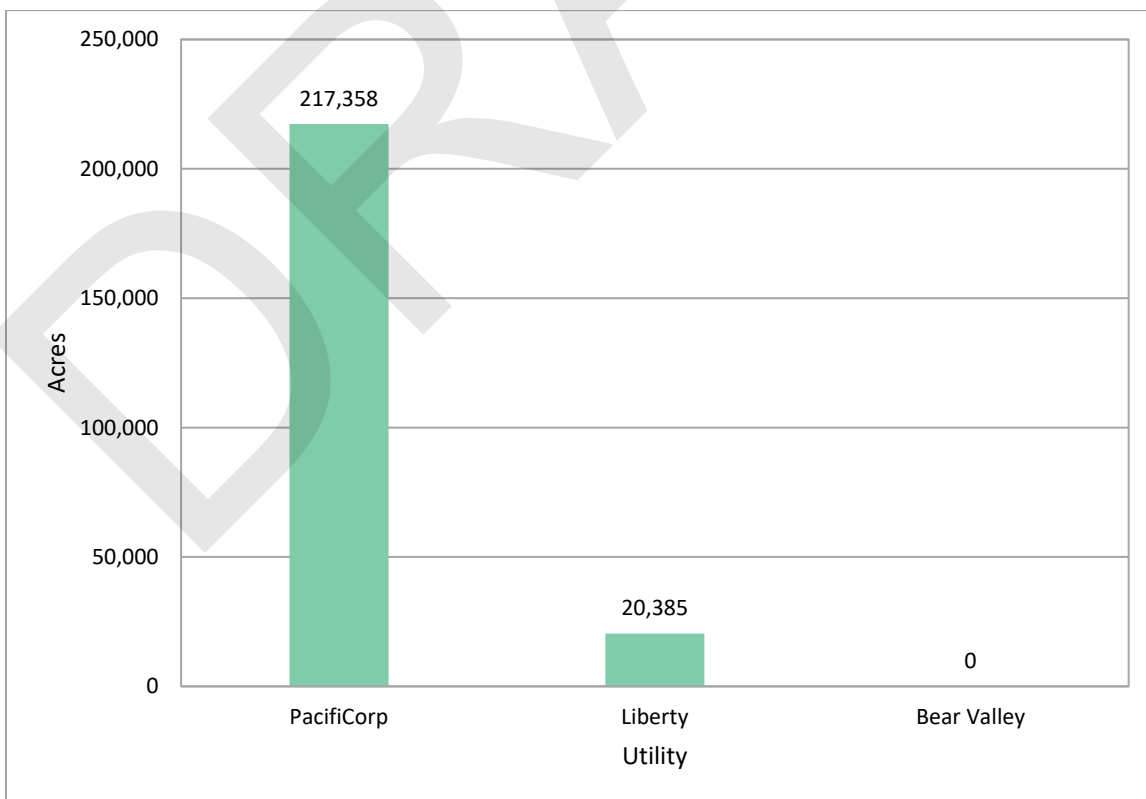
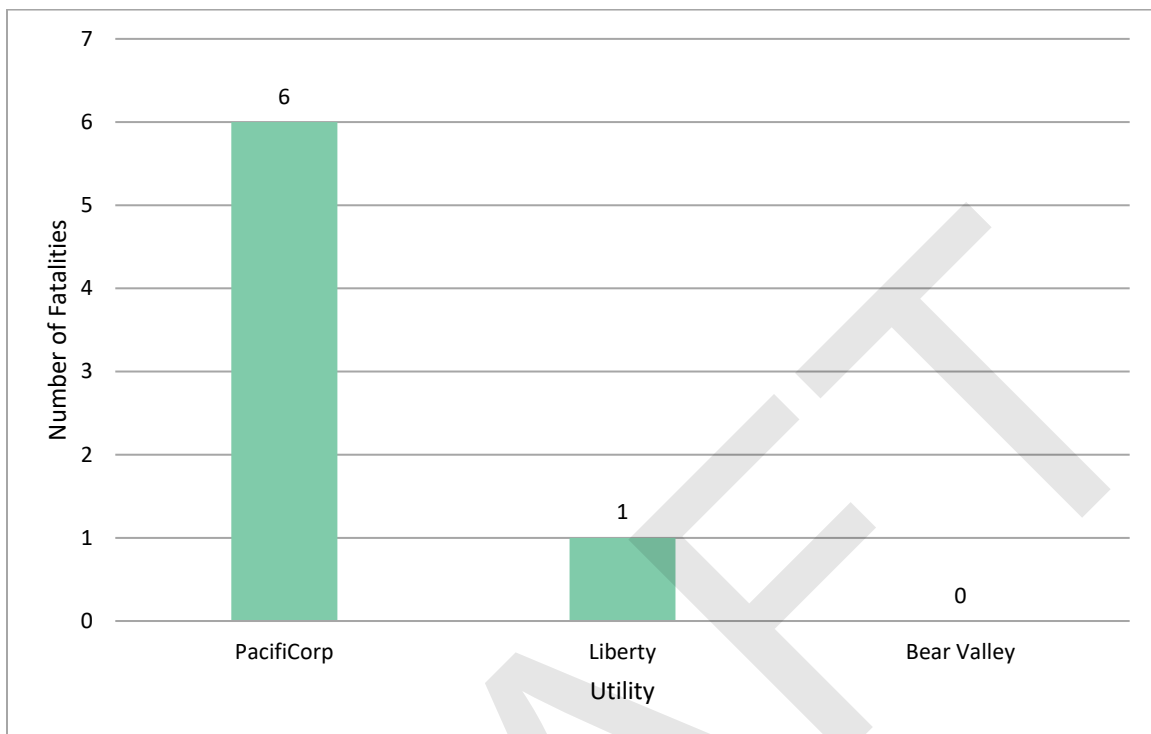


Figure 5.3-3. Cross-Utility Number of Fatalities Caused by Catastrophic Wildfires (2015-2022)



5.4 Community Values at Risk

Section 5.4 of the Technical Guidelines requires Liberty to identify the community values at risk across its service territory, including the distribution of urban, rural, and highly rural customers; the wildland-urban interface (WUI) in its territory; the community values at risk from wildfire as defined by the electrical corporation; the distribution of critical facilities within its territory; and a summary of how the utility complies with environmental laws.²⁷

Liberty listed the percentages and number of people in its territory that are located in urban, rural, and highly rural areas and briefly summarized where these areas occur in its territory. Liberty provided a brief description of where the WUI occurs in its territory.²⁸

Liberty summarized the critical facilities in the HFTD within its territory by providing a brief narrative.²⁹

²⁷ [Technical Guidelines](https://efiling.energy.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true), Section 5.4, “Community Values at Risk,” pages 26-29 (https://efiling.energy.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true, accessed May 5, 2023).

²⁸ Liberty’s 2023-2025 WMP R2, page 52.

²⁹ Liberty’s 2023-2025 WMP R2, page 57.

5.4.1 Environmental Compliance and Permitting

Section 5.4.5 of the Technical Guidelines requires Liberty to summarize how it ensures it complies with applicable environmental laws and permits related to the implementation of its WMP, including its procedures/processes to ensure compliance, roadblocks it has encountered, and any notable changes to its environmental compliance and permitting procedures since the last WMP submission.³⁰

New construction and/or large maintenance projects must comply, as necessary, with the California Environmental Quality Act, the Clean Water Act (sections 401 and 404), California Fish and Game Code (section 1602), the National Environmental Policy Act, the National Historic Preservation Act, Forest Practice Act and Rules, among other federal, state, and local requirements. Utilities must also obtain permits from land management agencies such as the National Forest Service, Bureau of Land Management, National Park Service, California Coastal Commission, among others.

The linear nature of utility infrastructure often warrants several permits for one project, including different permit conditions, environmental requirements, and post-work reporting requirements. Compliance with permitting requirements add time and complexity to project planning, cost and mitigations related to environmental analysis and impact, and sometimes result in long-term monitoring or restoration projects. These are all considerations factoring into a utility's project planning and execution.

Liberty summarized how it plans to ensure compliance with applicable environmental laws, regulations, and permitting requirements in planning wildfire mitigation projects.

5.5 Areas for Continued Improvement

Energy Safety has no areas for continued improvement for Liberty under the service territory overview section of its Base WMP.

³⁰ [Technical Guidelines](https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true), Section 5.4.5, "Environmental Compliance and Permitting," pages 28-29 (https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true, accessed May 5, 2023).

6. Risk Methodology and Assessment

In response to Section 6 of the Technical Guidelines, Liberty provided information on how it operates its grid to reduce wildfire risk, including in relation to equipment settings, grid response procedures and notifications, and personnel work procedures and training.³¹

Below is Energy Safety's evaluation regarding Liberty's objectives and targets, maturity levels, and strengths in this area. In addition, Energy Safety has identified areas where Liberty must improve, described at the end of this section.

6.1 Methodology

Section 6.1 of the Technical Guidelines requires Liberty to provide an overview of its risk calculation approach, including graphs showing the calculation process, a concise narrative explaining key elements, and definitions of risks and risk components.³²

Liberty conducts its overall risk assessment processes using the International Organization for Standardization (ISO) 31000 Risk Management Framework.³³ Liberty's risk analysis framework is supported by a vendor risk model, which generates data for calculations of overall risk, wildfire risk, PSPS risk, and risk subcomponents.³⁴

This section includes an overview of Liberty's risk calculation approach.

6.2 Risk Analysis Framework

Section 6.2 of the Technical Guidelines requires Liberty to provide a high-level overview of its risk analysis framework, including a summary of key modeling assumptions, input data, and modeling tools used.³⁵

This section includes an overview of Liberty's risk analysis framework.

³¹ [Technical Guidelines](https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true), Section 6, "Risk Methodology and Assessment," pages 30-58 (https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true, accessed May 5, 2023).

³² [Technical Guidelines](https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true), Section 6.1, "Methodology," pages 30-35 (https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true, accessed May 5, 2023).

³³ Liberty's 2023-2025 WMP R2, page 65.

³⁴ Liberty's 2023-2025 WMP R2, page 67.

³⁵ [Technical Guidelines](https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true), Section 6.2, "Risk Analysis Framework," pages 36-44 (https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true, accessed May 5, 2023).

Liberty’s risk analysis framework has four general steps:³⁶

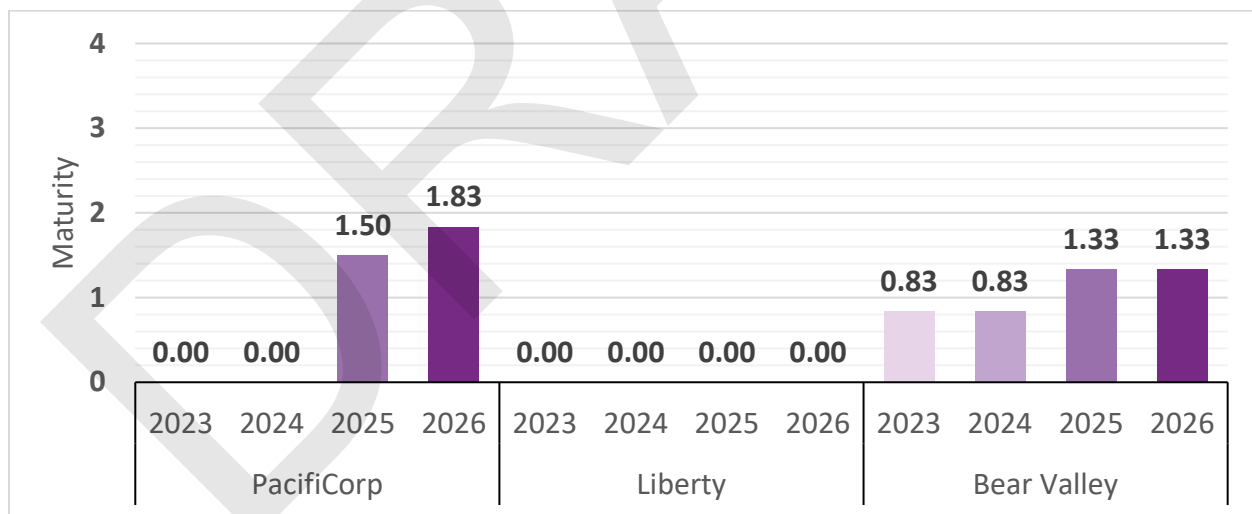
1. Liberty estimates the number of ignitions per year, by circuit, using a framework that incorporates the likelihood of a risk event (LoRe) and consequence of a risk of event (CoRe).
2. Liberty models ignitions in terms of fire progression.
3. Liberty computes safety impacts using fire spread model results, for example:
 - a. Equivalent fatalities are estimated from impacted structures.
 - b. Financial impacts are related to acres burned.
4. Liberty combines equivalent fatalities and financial impacts into a single dimensionless CoRE score for each circuit using a multi-attribute value function (MAVF).

6.3 Maturity Survey Results

According to its responses to the 2023 Maturity Survey, Liberty has a 2023 maturity level of 0 for risk assessment and mitigation strategy.

Liberty projects no maturity level change for 2024 or 2025.

Figure 6-1. Cross-Utility Maturity for Risk Assessment and Mitigation Strategy (Minimum Values)



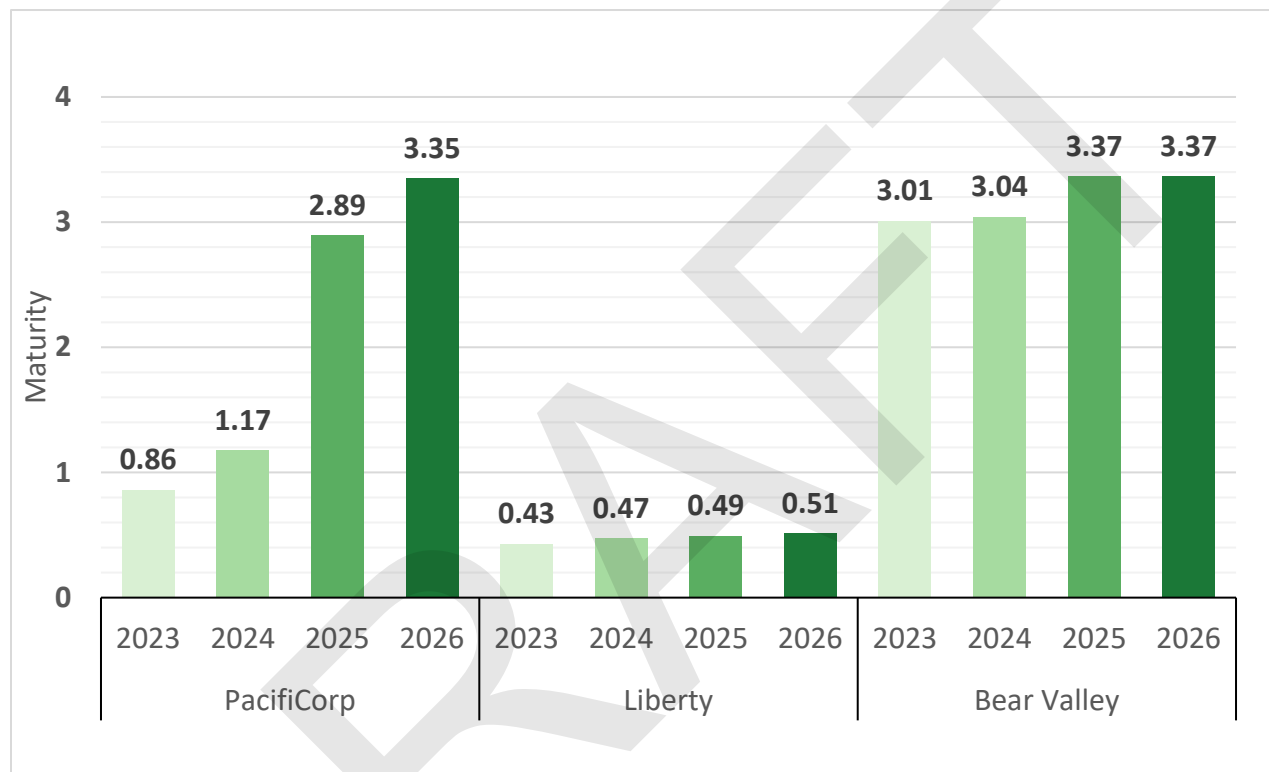
The utility’s maturity level for the risk assessment and mitigation strategy category described above is calculated using the minimum value sub-capability of each capability. Using the capability average is another way to look at Liberty’s performance in risk assessment and

³⁶ Liberty’s 2023-2025 WMP, page 67.

mitigation strategy. The capability average is determined from the average of all component sub-capabilities and is an additional tool to evaluate the utilities' maturity.³⁷

When the category maturity is calculated using the capability average (rather than the minimum), Liberty has a maturity level for risk assessment and mitigation strategy of 0.43 for 2023, and projects a slight increase to 0.47 in 2024 and 0.49 in 2025 (Figure 6-2).

Figure 6-2. Cross-Utility Maturity for Risk Assessment and Mitigation Strategy (Average Values)



The rest of this section reports on maturity levels considering the minimum values.

Liberty's maturity level in this category is limited by its response to the following question:

- Liberty reports that it does not evaluate the impacts of population growth in the WUI.³⁸ To increase maturity level, Liberty would need to evaluate the impacts of population growth in the WUI.

³⁷ For further information on maturity level determinations, see Section 4 of the 2023-2025 Electrical Corporation Wildfire Mitigation Maturity Model (second revision), published February 21, 2023.

³⁸ Liberty's 2023 Maturity Survey, response to 1.1.1.Q1.

Liberty's current maturity level in this category is approximately the same as its peers, with PacifiCorp and Bear Valley reporting at levels 0 and 0.83, respectively. See Figure 6-1.

Based on its responses to the 2023 Maturity Survey, Liberty reported its highest levels of projected maturity in the following capability for 2023 and 2024:

- Comprehensiveness³⁹

Based on its responses to the 2023 Maturity Survey, Liberty reported its lowest levels of projected maturity in the following capability for 2023 and 2024:

- Climate change⁴⁰

Energy Safety finds that Liberty does not project sufficient growth in its maturity. Energy Safety expects Liberty to improve its maturity in the following capability: transparency. This is further discussed in Section 6.5 "Areas for Continued Improvement" below.

6.4 Liberty's WMP Strengths

Liberty projects improvement in risk methodology and assessment over the WMP cycle in the following areas: risk analysis results and presentation.

Liberty's risk analysis uses a probabilistic approach, which allows it to observe both likely events⁴¹ as well as tail risk (low probability, high impact) events. Specifically, Liberty applies Monte Carlo simulation techniques,⁴² which is a multiple probability simulation used to estimate possible outcomes of an event, to increase the accuracy of scenario analysis and its reliability as a decision-making tool. Moreover, Liberty's simulations use a gridded hourly climatology to model spatiotemporal patterns of power line fire occurrence over its service territory. The resulting analysis is particularly impactful in situations where fire occurrences are a low probability but have high consequence.

6.4.1 2022 Areas for Continued Improvement

Liberty adequately addressed the 2022 areas for continued improvement for this topic. See Appendix B for the status of each 2022 area for continued improvement.

³⁹ Liberty's 2023 Maturity Survey, response to 1.1.2.Q1.

⁴⁰ Liberty's 2023 Maturity Survey, response to 1.1.1.Q1.

⁴¹ Liberty's 2023-2025 WMP R2, page 103.

⁴² Liberty's 2023-2025 WMP R2, page 76.

6.5 Revision Notice Critical Issues

As described in Section 3.4; Energy Safety issued Liberty a Revision Notice in response to its WMP submitted on May 5, 2023. Liberty submitted its Revision Notice Response on October 6, 2023. This section evaluates that response as it relates to risk methodology and assessment.⁴³

6.5.1 RN-LU-23-01: Procedures for independent review of risk modeling

Energy Safety required Liberty to revise Section 6.6.1 of its WMP with information explaining:

1. Liberty's current processes for performing internal review of data used in risk modeling and that are provided to vendors as risk modeling inputs.
2. An estimated completion date for the risk model transition.
3. Once the model implementation is complete, the procedures Liberty will apply for the following model validation activities:
 - a. Independent review.
 - b. Additional review triggers.
 - c. Routine review schedule.
4. When Liberty expects to begin conducting the validation activities described in item three above.

RN-LU-23-01: Liberty Response Summary

In Liberty's response to the Revision Notice, it provided a detailed description outlining its current independent review approach, expected changes, and progress in implementing those changes.⁴⁴

RN-LU-23-01: Energy Safety Evaluation

Liberty's response provided sufficient detail to complete the evaluation of Section 6.6.1. It provided explanations for instances where it previously did not provide complete responses. Liberty's response included:

1. An explanation of five data types used in its risk modeling and a description of the current review process per data type (independent or internal) and the status of implementing independent review where applicable.
2. A status update on internal and external review procedures for data collected and generated. Liberty also provided its current status and considerations such as third-

⁴³ Liberty's 2023-2025 WMP R2, pages 101-105.

⁴⁴ Liberty's 2023-2025 WMP R2, page 101.

party review initiation and procedures, review triggers, accessing and incorporating results from review, and routine review schedules.

3. An explanation of model validation procedures it expects to implement once its initial risk model implementation is complete. This also includes an explanation of third-party vendor roles and internal review procedures.

Liberty has resolved the critical issue described in RN-LU-23-01 because it provided a satisfactory response overall. Liberty identified issues it could not fully address, explained why, and provided a status update on when it expects to fully address the issues.

Energy Safety sets forth specific areas for improvement and associated required progress in Section 11.

6.6 Areas for Continued Improvement

Liberty must continue to improve in the following areas.

6.6.1 Cross-Utility Collaboration on Risk Model Development

Liberty and the other IOUs have participated in past Energy Safety-sponsored risk model working group meetings. The risk model working group meetings facilitate collaboration among the IOUs on complex technical issues related to risk modeling. The risk model working group meetings are ongoing. Liberty and the other IOUs must continue to participate in all Energy Safety-organized risk model working group meetings.

6.6.2 PSPS and Wildfire Risk Trade-Off Transparency

Liberty must be more transparent and further describe how it determines PSPS and wildfire risk trade-offs. Section 6 of the Technical Guidelines requires discussion of calculation processes that together inform utility PSPS and wildfire risk trade-offs, or how it uses risk ranking and risk buy-down to determine risk mitigation selection.⁴⁵ Liberty must provide transparency to ensure it is properly balancing the safety, reliability, and cost impacts of its planned mitigations. Liberty must provide further transparency regarding PSPS and wildfire risk trade-offs, or how it uses risk ranking and risk buy-down to determine risk mitigation selection.

Liberty is implementing a new risk model that was not complete at the time of its 2023-2025 WMP submission. Liberty identified many aspects of its risk modeling approach that will be impacted by the new vendor risk model.⁴⁶ In its 2025 Update, Liberty must describe how it

⁴⁵ [Technical Guidelines](#), Section 6, "Risk Methodology and Assessment," pages 39-67 (<https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true>, accessed August 15, 2023).

⁴⁶ Liberty's 2023-2025 WMP R2, page 117.

prioritizes PSPS risk in its risk-based decisions, along with any trade-offs between wildfire risk and PSPS risk.

6.6.3 Collaboration Between Vendor and Utility Risk Teams

Liberty is adopting new risk modeling capabilities, many through a vendor,⁴⁷ but Liberty has not shown how its internal team and the risk model vendor will share risk modeling and mitigation-related duties. Liberty contracted with the vendor due to Liberty's limited internal risk modeling capabilities and difficulty in assembling an internal team with these capabilities. Further transparency and more detail regarding what tasks are completed by its internal risk team versus the vendor are needed to better explain how Liberty is conducting its risk analysis and decision-making.

The vendor risk model introduces advanced analysis and reports⁴⁸ and may significantly change how Liberty identifies, evaluates, and mitigates risks. Using the model, Liberty expects to provide its risk and risk component calculations in the 2025 Update and improve its risk model maturity.

Liberty must follow the Technical Guidelines requirements, even when responsibilities fall under its vendor. To improve transparency, Liberty must provide information in its 2025 Update that demonstrates how Liberty will integrate its vendor into its risk modeling capabilities.

Energy Safety sets forth specific areas for improvement and associated required progress in Section 11.

⁴⁷ Liberty's 2023-2025 WMP R2, page 105

⁴⁸ Liberty's 2023-2025 WMP R2, page 117

7. Wildfire Mitigation Strategy Development

In response to Section 7 of the Technical Guidelines, Liberty provided a high-level overview of its risk evaluation and process for deciding on a portfolio of mitigation initiatives to achieve the maximum feasible risk reduction while meeting WMP goals and objectives.⁴⁹

Below is Energy Safety's evaluation regarding Liberty's objectives and targets, maturity levels, and strengths in this area. In addition, Energy Safety has identified areas where Liberty must improve, described at the end of this section.

7.1 Risk Evaluation

Section 7.1 of the Technical Guidelines requires Liberty to describe its approach to risk evaluation based on risk analysis outcomes.⁵⁰ The approach should inform the development of a wildfire mitigation strategy that meets WMP goals and objectives.

Liberty prioritizes mitigation and compliance projects using wildfire risk and consequence mapping capabilities available through a vendor model.⁵¹ The vendor generates wildfire risk scores using subject matter experts and Liberty-defined MAVFs,⁵² adjusted using a circuit level PSPS risk assessment. Liberty has not assessed the risk drivers impacting the overall risk scores within the vendor models.

PSPS-related risk is determined at the circuit level based on a combination of likelihood and consequence.⁵³ Likelihood is based on historical climate and weather conditions for each circuit,⁵⁴ and consequence is determined based on the estimated number of Customer Minutes Interrupted (CMI).⁵⁵ A risk score is calculated for each circuit and the PPS risk is

⁴⁹ [Technical Guidelines](#), Section 7, "Wildfire Mitigation Strategy Development," pages 59-74 (<https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true>, accessed May 5, 2023).

⁵⁰ [Technical Guidelines](#), Section 7.1, "Risk Evaluation," pages 59-66 (<https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true>, accessed May 5, 2023).

⁵¹ Liberty's 2023-2025 WMP R2, page 117.

⁵² Liberty's 2023-2025 WMP R2, page 116.

⁵³ Liberty's 2023-2025 WMP R2, page 81.

⁵⁴ Liberty's 2023-2025 WMP R2, page 83.

⁵⁵ Liberty's 2023-2025 WMP R2, page 83.

combined with the wildfire-related risk using a weighted average, with wildfire risk weighted at 80 percent and PSPS risk weighted at 20 percent.⁵⁶

7.1.1 Liberty's WMP Strengths

Liberty projects improvement in its wildfire mitigation strategy development over the WMP cycle in the following areas: mitigation selection process.

Accurate information about outages and risk events is a key component of evaluating the effectiveness of risk mitigation. Liberty has reduced the use of "Other" and "Unknown" as outage categories, thereby improving traceability in this area.⁵⁷

7.1.1.1 2022 Areas for Continued Improvement

Liberty adequately addressed the 2022 areas for continued improvement for this topic. See Appendix B for the status of each 2022 area for continued improvement.

7.1.2 Areas for Continued Improvement

Liberty must continue to improve in the following areas.

7.1.2.1 PSPS and Wildfire Risk Trade-Off Transparency

Liberty's explanation of how it makes mitigation selection decisions needs further transparency. As noted above in Section 6.6.1, Liberty is implementing a new risk model, which was not complete at the time of its Base WMP submission. Liberty provided limited details about its mitigation selection strategy due to its risk model implementation being incomplete as of the time of its WMP submission.

Liberty must improve its explanation for how it uses risk ranking and risk buy-down to determine mitigation selection.⁵⁸ In its 2025 Update, Liberty must describe how its prioritization of mitigation initiatives in practice compares to the list of mitigation initiatives ranked by its risk-buy-down estimate. Furthermore, Liberty must provide an explanation for any instances where a mitigation initiative with a lower risk-buy-down estimate is prioritized over an initiative with a higher risk-buy-down estimate.

7.1.2.2 Vendor Fire Risk Model Implementation Milestones and Dates

Liberty did not provide a schedule for its transition to a new risk modeling platform. The new risk model will have new capabilities that will enable risk modeling at a finer level of

⁵⁶ Liberty's 2023-2025 WMP R2, page 67.

⁵⁷ Liberty's 2023-2025 WMP R2, page 388.

⁵⁸ [Technical Guidelines](https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true), Section 7.1.4.1, "Identifying and Evaluating Mitigation Initiatives," pages 72 (https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true, accessed August 15, 2023).

granularity⁵⁹ and will integrate more frequent updates to fire threat maps. These new capabilities may significantly change Liberty's approach to identifying, evaluating, and prioritizing risks, which Liberty expects will improve its risk evaluation process.⁶⁰

Liberty must improve transparency regarding its model maturity by providing a list of improvements it expects to make in its operational and planning modeling after the transition, along with expected milestones and dates for those improvements.

In its 2025 Update, Liberty must describe how it will use the new risk modeling software to improve operational and/or planning risk analysis and provide a plan with milestones and dates for achieving those improvements.

Energy Safety sets forth specific areas for improvement and associated required progress in Section 11.

7.2 Risk-Informed Framework

Section 4.4 of the Technical Guidelines requires Liberty to adopt and describe its framework for making risk-informed decisions.⁶¹

Liberty follows a four-step process to develop and maintain mitigation portfolios:⁶²

1. First, circuit-level risk scores are used to develop prioritized mitigation portfolios.
2. Mitigation portfolios are adjusted based on cost and implementation difficulty.
3. Mitigation projects are managed using a combination of GIS data and Quarterly Data Report (QDR) data.
4. Finally, Liberty monitors an outage database for any correlations with the mitigation portfolio and uses it as a feedback loop to inform any further adjustments.

7.2.1 Liberty's WMP Strengths

Liberty projects improvement in its risk-informed decision making over the WMP cycle in the following area: risk scenario identification.

When modeling wind events, Liberty performs the modeling using one in 30-year, 60-year, and 300-year scenarios. This analysis provides insight into wind driven events that may have been historically unlikely but increasingly likely with the impacts of climate change.⁶³

⁵⁹ Liberty's 2023-2025 WMP R2, page 116.

⁶⁰ Liberty's 2023-2025 WMP R2, page 117.

⁶¹ [Technical Guidelines](#), Section 4.4 "Risk-Informed Framework," pages 11-14 (<https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true>, accessed May 5, 2023).

⁶² Liberty's 2023-2025 WMP R2, page 130.

⁶³ Liberty's 2023-2025 WMP R2, page 86-88.

7.2.1.1 2022 Areas for Continued Improvement

Energy Safety evaluated the progress Liberty made toward addressing areas for continued improvement identified in Energy Safety's 2022 WMP Decision. See Appendix B for the status of each 2022 area for continued improvement.

7.2.2 Areas for Continued Improvement

Liberty must continue to improve in the following areas.

7.2.2.1 Cross-Utility Collaboration on Best Practices for Inclusion of Climate Change Forecasts in Consequence Modeling, Inclusion of Community Vulnerability in Consequence Modeling, and Utility Vegetation Management for Wildfire Safety

Liberty must make further improvements in cross-utility collaboration on best practices for:

- Inclusion of climate change forecasts in consequence modeling.
- Inclusion of community vulnerability in consequence modeling.
- Utility vegetation management for wildfire safety.

Although Liberty joined the other electrical corporations in participating in past Energy Safety-sponsored scoping meetings, they have not reported any additional collaboration. In their 2025 Updates, the electrical corporations (not including independent transmission operators) must provide a status update on any collaboration with each other that has taken place in these areas, including a list of any resulting changes made to their WMPs since the 2023-2025 WMP submission.

Energy Safety sets forth specific areas for improvement and associated required progress in Section 11.

7.3 Wildfire Mitigation Strategy

Section 7.2 of the Technical Guidelines requires Liberty to describe its proposed wildfire mitigation strategies based on the evaluation process identified in Section 7.1 of its WMP.⁶⁴

Liberty's operationalized modeling framework maintains an overall wildfire and PSPS risk score for each individual circuit.⁶⁵ Overall wildfire and PSPS risk scores are calculated using a vendor risk model and data inputs such as circuit-specific data (e.g., vegetation and assets), past risk studies, and mitigation portfolios selected by subject matter experts.

⁶⁴ [Technical Guidelines](#), Section 7.2, pages 66-74

(<https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true>, accessed May 5, 2023)

⁶⁵ Liberty's 2023-2025 WMP R2, page 138.

7.3.1 Maturity Survey Results

According to its responses to the 2023 Maturity Survey, Liberty has a 2023 maturity level of 1.43 for risk prioritization. For 2024, Liberty projects the same. For 2025, Liberty projects that it will slightly increase in maturity to a level of 1.86.

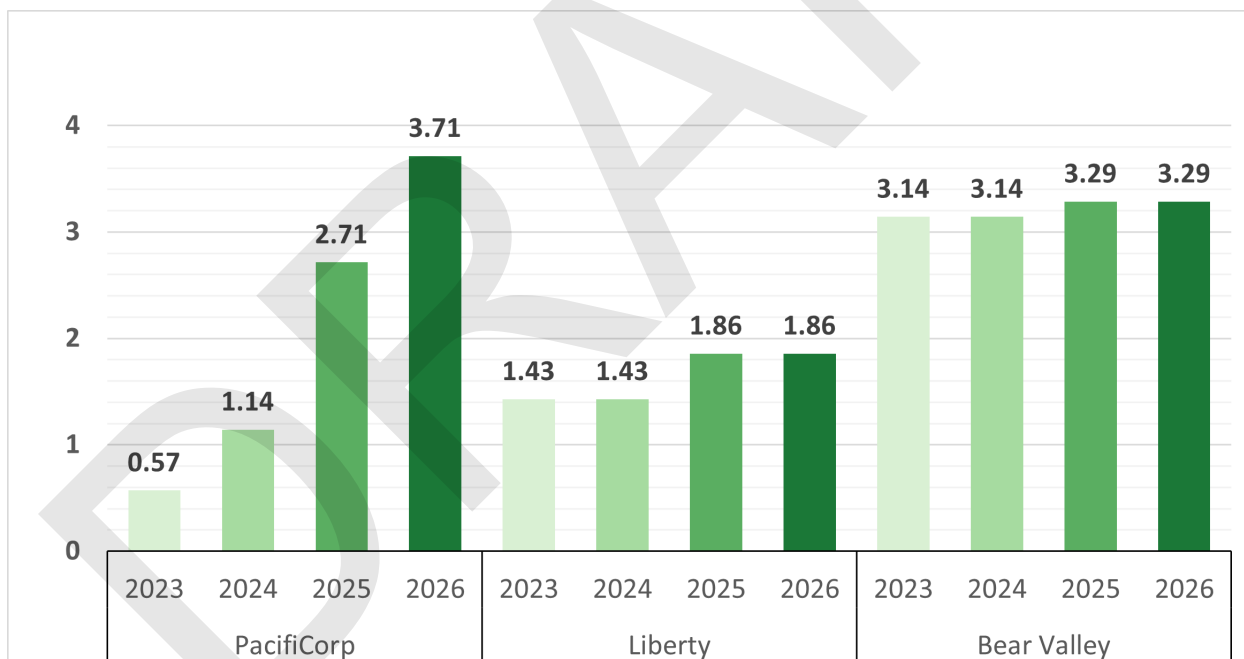
Note that cross-category themes are calculated by averaging the relevant sub-capability maturity levels.⁶⁶

Liberty’s maturity level in this cross-category theme is limited by its response to the following question:

- Liberty reports that it does not estimate risk reduction by maintenance prioritization. To increase the maturity level, Liberty would need to estimate the risk reduction achieved by maintenance prioritization.⁶⁷

Liberty’s current maturity level in this cross-category theme is between its peers, with PacifiCorp and Bear Valley reporting at levels 0.57 and 3.14, respectively. See Figure 7-1.

Figure 7-1. Cross-Utility Maturity for Risk Prioritization (Cross-Category Theme; Average Values)



⁶⁶ [2023-2025 Electrical Corporation Wildfire Mitigation Maturity Model \(Second Revised Final, Feb. 2023\)](https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53394&shareable=true) page 13 (https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53394&shareable=true, accessed May 5, 2023).

⁶⁷ Liberty’s 2023 Maturity Survey, response to 3.3.4.Q4.

Energy Safety finds that Liberty does not project sufficient growth in its maturity. Liberty must address the issues related to risk trade-off transparency discussed in Section 6.6.2 to demonstrate that it is maturing its risk prioritization capabilities.

7.3.2 Liberty's WMP Strengths

Liberty projects improvement in its wildfire mitigation strategy over the WMP cycle in the following areas: risk impact of mitigation initiatives.

Liberty implemented a modeling approach that attempts to quantify the cost impact of PSPS events.⁶⁸ Once mature, Liberty will be able to use this approach to conduct mitigation effectiveness comparisons thereby improving mitigation selection and prioritization decisions.

7.3.2.1 2022 Areas for Continued Improvement

Liberty adequately addressed the 2022 areas for continued improvement for this topic. See Appendix B for the status of each 2022 area for continued improvement.

7.3.3 Revision Notice Critical Issues

Energy Safety did not find any critical issues within the wildfire mitigation strategy section of its Base WMP.

7.3.4 Areas for Continued Improvement

Energy Safety has no areas for continued improvement for Liberty under the wildfire mitigation strategy section of its Base WMP.

⁶⁸ Liberty's 2023-2025 WMP R2, page 80.

8. Wildfire Mitigation Initiatives

This section comprises Energy Safety's evaluation of the mitigation initiatives Liberty undertakes to reduce the risk of catastrophic wildfire. For each mitigation initiative this section provides an analysis of Liberty's maturity level, the ways Liberty is progressing and specific areas where Liberty must continue to improve.

The following mitigation initiatives, each with corresponding capabilities and maturity levels, are discussed in Sections 8.1 through 8.6.

- Grid design, operations, and maintenance, including grid design and system hardening, asset inspections, equipment maintenance and repair, and grid operations and procedures.
- Vegetation management and inspections.
- Situational awareness and forecasting.
- Emergency preparedness.
- Community outreach and engagement.

Liberty's approach to PSPS is discussed in Section 9. Liberty's process for continuous improvement, including lessons learned, corrective action programs, and notices of violation and defect, are discussed in Section 10.

8.1 Grid Design, Operations, Maintenance

In response to Section 8.1 of the Technical Guidelines,⁶⁹ Liberty provided information about its grid design and system hardening; asset inspections; equipment maintenance and repair; asset management and inspection enterprise systems; quality assurance and quality control; open work orders; grid operations and procedures; and workforce planning.

Below is Energy Safety's evaluation regarding Liberty's objectives and targets, maturity levels, and strengths in these areas. In addition, Energy Safety has identified areas where Liberty must improve, described at the end of each subsection.

8.1.1 Objectives and Targets

As part of its Base WMP, Liberty provided 3-year and 10-year objectives for its grid design, operations, and maintenance programs.⁷⁰

⁶⁹ [Technical Guidelines](#), Section 8.1, pages 75-93

(<https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true>, accessed May 5, 2023).

⁷⁰ Liberty 2023-2025 WMP R2, pages 147-149.

Liberty minimally revised its grid design and system hardening targets in its Revision Notice Response.⁷¹ For example, Liberty updated its covered conductor targets to include an additional 1.5 miles over the 3-year period, and provided expulsion fuse targets for 2023, as seen in Table 8.1-1 below.

Liberty also defined quantitative targets for initiative activities for grid design, operations, and maintenance programs. Liberty's Base WMP includes end-of-year targets for 2023, 2024, and 2025. Selected targets are included in Table 8.1-1 to demonstrate the utility's projected progress.

Table 8.1-1. Liberty Grid Design, Operations, and Maintenance – Selected Targets⁷²

Initiative Activity	Target Unit	2023 Target	2024 Target	2025 Target
Covered conductor installation	Circuit miles	5.72	5.61	2.68
Expulsion fuse replacement	Fuses replaced	3,800	TBD	TBD
Undergrounding	Circuit miles	1.37	1.25	1.25
Traditional overhead hardening	Circuit miles	4	2	2
Microgrids	Microgrids	0	1	0
Open wire/grey wire	Circuit miles	2.55	5.10	5.24

8.1.2 Grid Design and System Hardening

Section 8.1.2 of the Technical Guidelines requires Liberty to provide information on how it designs its system to reduce ignition risk and what it is doing to strengthen its distribution, transmission, and substation infrastructure to reduce the risk of utility-related ignitions resulting in catastrophic wildfires.⁷³

8.1.2.1 Maturity Survey Results

According to its responses to the 2023 Maturity Survey, Liberty has a 2023 maturity level of 0 for grid design and resiliency. For 2024, Liberty projects no change. For 2025, Liberty projects that it will increase in maturity to a level of 1 (Figure 8.1-2).

⁷¹ Liberty's 2023-2025 WMP R2 Redlined, pages 152-154.

⁷² Liberty's 2023-2025 WMP R2, Table 8-3: Liberty Grid Design, Operations, and Maintenance Targets by Year pages 152-153.

⁷³ [Technical Guidelines](#), Section 8.1.2, page 82 (<https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true>, accessed May 5, 2023).

Figure 8.1-1. Cross-Utility Maturity for Grid Design and Resiliency⁷⁴ (Minimum Values)



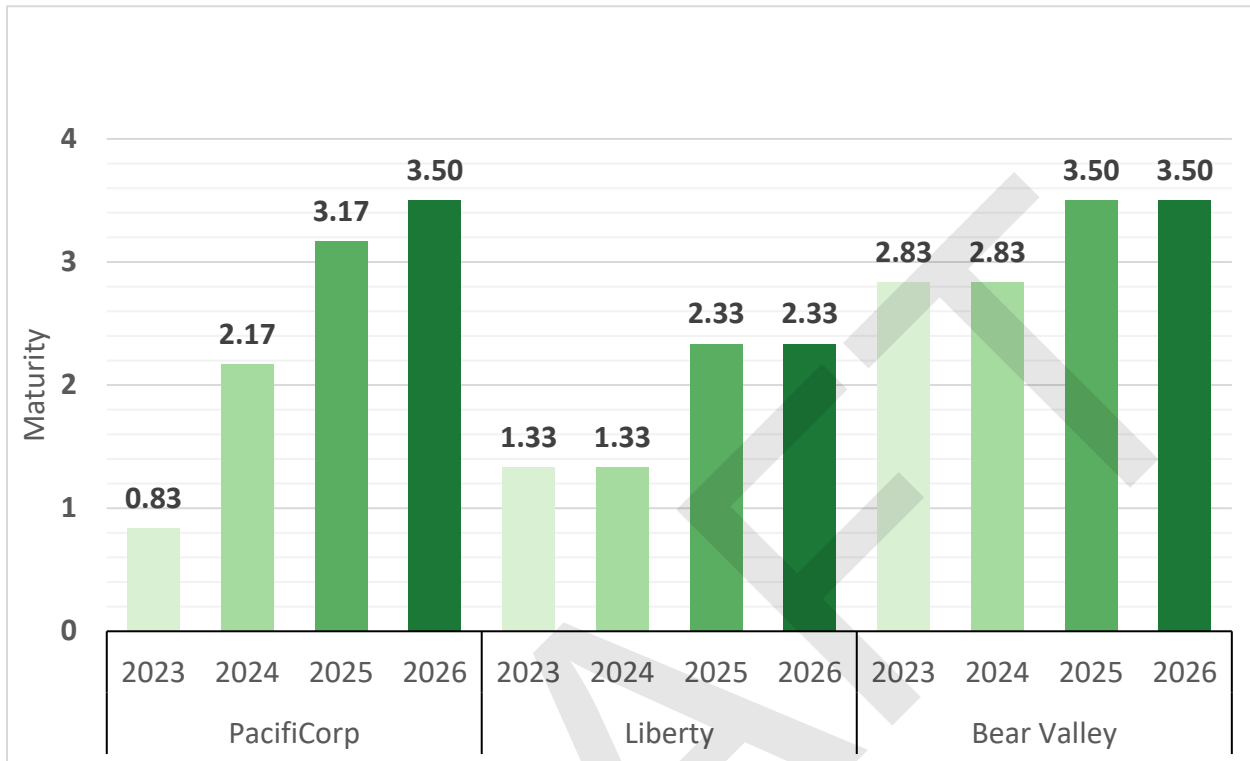
The utility’s maturity level for the grid design and resiliency capability described above is calculated using the minimum value of component sub-capabilities. The capability average is another way to look at Liberty’s performance in grid design and resiliency. The capability average is determined from the average of all component sub-capabilities and is an additional tool to evaluate the utilities’ maturity.⁷⁵

When the capability maturity is calculated using the average (rather than the minimum), Liberty has a maturity level for grid design and resiliency of 1.33 for 2023. It projects the same maturity level in 2024, and an increase in maturity to 2.33 in 2025 (Figure 8.1-3).

⁷⁴ 2023 Maturity Survey Category C “Grid Design, Inspections, and Maintenance,” Capability 16 “Grid design and resiliency.”

⁷⁵ For further information on maturity level determinations, see Section 4 of the 2023-2025 Electrical Corporation Wildfire Mitigation Maturity Model (second revision), published February 21, 2023.

Figure 8.1-2. Cross-Utility Maturity for Grid Design and Resiliency⁷⁶ (Average Values)



The rest of this section reports on maturity levels considering the average values.

Liberty’s maturity level in this capability is limited by its response to the following questions:

- Liberty reports that it evaluates the grid design and performs circuit load assessments on an annual basis.⁷⁷ In order to increase in maturity, Liberty would need to do evaluations and assessments every six months or quarterly.
- Liberty reports that it does not independently evaluate new initiatives using laboratory facilities by a trained team of grid innovation specialists.⁷⁸ In order to increase in maturity, Liberty will need to have initiatives evaluated in this way.
- Liberty reports that its grid design, design evaluation, and grid impact evaluation does not consider the total percentage of grid localization features normalized by circuit

⁷⁶ 2023 Maturity Survey Category C “Grid Design, Inspections, and Maintenance,” Capability 16 “Grid design and resiliency.”

⁷⁷ Liberty’s 2023 Maturity Survey, responses to 3.4.1.Q1 and 3.4.1.Q2.

⁷⁸ Liberty’s 2023 Maturity Survey, response to 3.4.2.Q5.

length in the HFTD.⁷⁹ In order to increase in maturity, Liberty will need to take grid localization into consideration for these elements.

- Liberty reports that it does not consider the location of non-electrical corporation overhead distribution equipment in the HFTD as part of its grid design, design evaluation, and grid impact evaluation.⁸⁰ In order to increase in maturity, Liberty will need to take these considerations into account.

Liberty's current maturity level in this capability is between those of its peers, with BVES and PacifiCorp reporting at levels 0.83 and 2.83, respectively. See Figure 8.1-3.

Energy Safety finds that Liberty does not project sufficient growth in its maturity. This is further discussed in Section 8.1.2.3 "Areas for Continued Improvement" below.

8.1.2.2 Liberty's WMP Strengths

Liberty projects improvement in grid design and system hardening over the WMP cycle in the following areas: microgrids and open wire/grey wire.

Liberty currently has one microgrid project planned for 2024, including associated line removals. Liberty plans to explore potential installation of additional microgrids when it proves to be a cost-effective solution.

Liberty also has plans regarding open wire and grey wire, which involves replacing old service wire with new service wire. Liberty did not provide specific targets for this initiative in 2022 but plans to replace 12.89 miles total from 2023 to 2025, as seen in Table 8.1-1 above.

2022 Areas for Continued Improvement

Energy Safety evaluated the progress Liberty made toward addressing areas for continued improvement identified in Energy Safety's 2022 WMP Decision. See Appendix B for the status of each 2022 area for continued improvement. Notable progress was made in the following selected areas:

- In response to LU-22-07 Update Progress Associated with Distribution Fault Anticipation/High-Impedance Fault Detection Research, Liberty provides that it has installed 10 DFA units along its system that will be operational in 2023.⁸¹

⁷⁹ Liberty's 2023 Maturity Survey, response to question 3.4.3.Q2.

⁸⁰ Liberty's 2023 Maturity Survey, response to question 3.4.3.Q4.

⁸¹ Liberty's 2023-2025 WMP R2, Appendix D.

8.1.2.3 Revision Notice Critical Issues

As described in Section 3.4, Energy Safety issued Liberty a Revision Notice in response to its WMP submitted on May 5, 2023. Liberty submitted its Revision Notice Response on October 6, 2023. This section evaluates that response as it relates to grid design and system hardening.⁸²

RN-LU-23-02: Decreased Rate of Covered Conductor

Energy Safety required Liberty to update its WMP to include analysis demonstrating that use of Sensitive Relay Profiles (SRP) and traditional hardening provide effective risk reduction when compared to covered conductor. Liberty was required to show its decision-making process accounting for reducing the risk of specific ignition drivers at a given location, feasibility, deployment time, and cost. Liberty was also required to adjust hardening targets to continue progressing toward aggressive and feasible goals that maximize risk reduction.

RN-LU-23-02: Liberty Response Summary

In Liberty's response to the Revision Notice, Liberty stated that by focusing on SRP, it can reduce risk over a greater area for less cost. Liberty has increased covered conductor targets slightly in 2023 and 2024, but slightly reduces the target in 2025, as shown in Table 8.1-4 below.

Table 8.1-2. Liberty's Adjusted Covered Conductor Targets⁸³

Year	Original Target	Revised Target	Difference
2023	2.41 circuit miles	5.72 circuit miles	+3.31
2024	4.03 circuit miles	5.61 circuit miles	+1.58
2025	2.78 circuit miles	2.68 circuit miles	-0.10
Total	9.22 circuit miles	14.01 circuit miles	+4.79

RN-LU-23-02: Energy Safety Evaluation

While Liberty has increased its covered conductor targets as part of its revision notice, as shown in Table 8.1-2 above, the new targets still remain below Liberty's historic targets. For example, in 2022 Liberty set and completed a target of 9.55 circuit miles for covered conductor installation.⁸⁴ Liberty has stated that it has selected to move towards

⁸² Liberty's 2023-2025 WMP R2, pages 157-162.

⁸³ Liberty's 2023-2025 WMP R2 Redlined, Table 8-3. Liberty Grid Design, Operations, and Maintenance Targets by Year, page 152.

⁸⁴ Liberty's 2023-2025 WMP R2, page 157.

implementing SRP and traditional hardening, rather than continuing to pursue covered conductor to harden its system, citing SRP's faster deployment time and lower costs.⁸⁵

Liberty stated that focusing on SRP will reduce risk over a greater area, but did not quantify the risk reduced by SRP, and did not compare it with the risk reduced by covered conductor. Additionally, Liberty did not demonstrate that focusing on SRP reduces the need or ability of the utility to install covered conductor.

Liberty stated that it plans to perform traditional hardening as an alternative to covered conductor in high fire risk areas that are not heavily forested. However, Liberty does not demonstrate that traditional hardening will mitigate risk more efficiently than covered conductor in these areas.

Energy Safety finds that Liberty has de-escalated this critical issue to an area for continued improvement given its modifications to increase covered conductor targets. However, Liberty must quantitatively demonstrate that SRP and traditional hardening mitigate risk as effectively and efficiently as covered conductor in the planned locations.

Energy Safety sets forth specific areas for improvement and associated required progress in Section 11.

8.1.2.4 Areas for Continued Improvement

Liberty must continue to improve in the following areas. Areas for continued improvement in this section are in addition to areas for continued improvement resulting from Liberty's Revision Notice Response, discussed above.

Further Design Considerations

As a part of its maturity survey responses, discussed above, Liberty reports that it does not currently consider or plan to consider by 2026 its grid localization features or its non-electrical corporation overhead equipment as part of its grid design, design evaluation, and grid impact evaluation. Grid localization is vital for reducing reliability and safety impacts given that localization is a major determining factor in the impact of an outage. This is particularly necessary information given that Liberty intends to rely more heavily on SRP as part of its wildfire mitigation plan, which uses grid localization elements to minimize outage impacts.

It is also important that Liberty consider non-electrical corporation equipment as part of its grid design given that historic catastrophic wildfires in California were related to non-electrical facilities contacting electrical facilities, such as the Guejito Fire in 2007.

⁸⁵ Liberty's 2023-2025 WMP R2, pages 160-161.

Energy Safety sets forth specific areas for improvement and associated required progress in Section 11.

8.1.3 Asset Inspections

Section 8.1.3 of the Technical Guidelines requires Liberty to provide an overview of its procedures for inspecting its assets.⁸⁶

8.1.3.1 Maturity Survey Results

According to its responses to the 2023 Maturity Survey, Liberty has a 2023 maturity level of 0 for asset inspections. Liberty projects no maturity level change for 2024 or 2025.

Figure 8.1-3. Cross-Utility Maturity for Asset Inspections⁸⁷ (Minimum Values)



The utility’s maturity level for the asset inspection capability described above is calculated using the minimum value of component sub-capabilities. The capability average is another

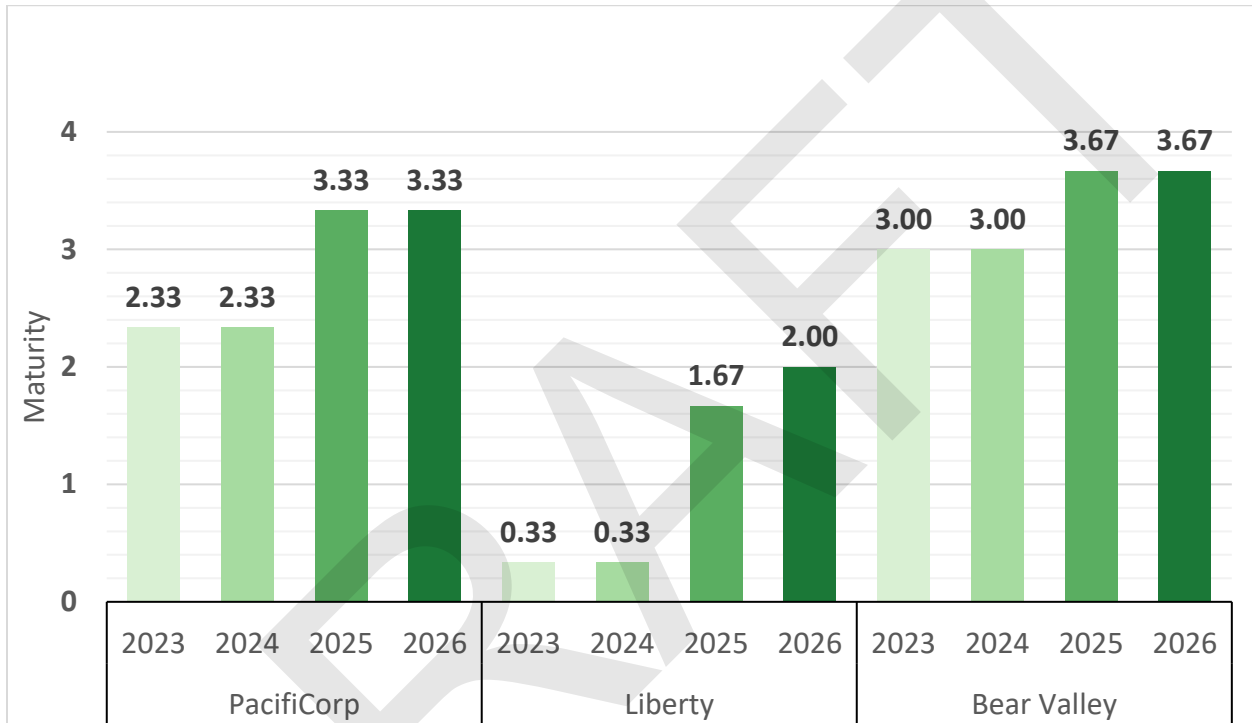
⁸⁶ [Technical Guidelines](https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true), Section 8.1.3, pages 83-85 (https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true, accessed May 5, 2023).

⁸⁷ 2023 Maturity Survey Category C “Grid Design, Inspections, and Maintenance,” Capability 14 “Asset inspections.”

way to look at Liberty’s performance in asset inspections. The capability average is determined from the average of all component sub-capabilities and is an additional tool to evaluate the utilities’ maturity.⁸⁸

When the capability maturity is calculated using the average (rather than the minimum), Liberty has a maturity level for asset inspections of 0.33 for 2023, and projects the same level in 2024. It projects an increase in maturity to 1.67 in 2025 (Figure 8.1-6).

Figure 8.1-4. Cross-Utility Maturity for Asset Inspections⁸⁹ (Average Values)



The rest of this section reports on maturity levels considering the average values.

Liberty’s current maturity level in this capability is lower than its peers, with PacifiCorp and Bear Valley reporting at levels 2.33 and 3.00, respectively. See Figure 8.1-6.

8.1.3.2 Liberty’s WMP Strengths

Liberty projects improvement in asset inspections over the WMP cycle in the following areas: technology augmented inspections and overhead inspection QA/QC target sample rates.

⁸⁸ For further information on maturity level determinations, see Section 4 of the 2023-2025 Electrical Corporation Wildfire Mitigation Maturity Model (second revision), published February 21, 2023.

⁸⁹ 2023 Maturity Survey Category C “Grid Design, Inspections, and Maintenance,” Capability 14 “Asset inspections.”

Liberty states that it plans to incorporate light detection and ranging (LiDAR), infrared, and drone inspections over the 2023-2025 WMP cycle.⁹⁰ Incorporating new technologies will strengthen Liberty's inspection program.

Liberty has set a sampling target of 12 percent for the QA/QC of its detailed inspections in 2024 and 2025.⁹¹ Statistically relevant sample sizes are essential to perform effective QA/QC, and Liberty has set a stronger target than its peers.

2022 Areas for Continued Improvement

Energy Safety evaluated the progress Liberty made toward addressing areas for continued improvement identified in Energy Safety's 2022 WMP Decision. Liberty adequately addressed the 2022 areas for continued improvement for this topic. See Appendix B for the status of each 2022 area for continued improvement.

8.1.3.3 Revision Notice Critical Issues

As described in Section 3.4, Energy Safety issued Liberty a Revision Notice in response to its WMP submitted on May 5, 2023. Liberty submitted its Revision Notice Response on October 6, 2023. This section evaluates that response as it relates to asset inspections section.⁹²

RN-LU-23-04: Asset inspection QA/QC pass rates

Energy Safety required Liberty to establish QA/QC pass rate targets for its various asset inspections.

RN-LU-23-04: Liberty Response Summary

In Liberty's response to the Revision Notice, it provided QA/QC pass rate targets of 80 percent for all varieties of asset inspections in 2023.⁹³ Liberty did not set pass rate targets for 2024 or 2025.

RN-LU-23-04: Energy Safety Evaluation

While Liberty established pass rate targets for the QA/QC of its inspections in 2023, it did not create targets for 2024 or 2025, stating that "Liberty will determine pass rate targets for 2024-2025 after the previous year results are available."⁹⁴

⁹⁰ Liberty's 2023-2025 WMP R2, page 179.

⁹¹ Liberty's 2023-2025 WMP R2, page 153.

⁹² Liberty's 2023-2025 WMP R2, pages 184-191.

⁹³ Liberty's 2023-2025 WMP R2, page 188.

⁹⁴ Liberty's 2023-2025 WMP R2, page 189.

Liberty states that it did not provide 2024 and 2025 targets because the asset inspection QA/QC program is nascent and data from the 2023's QA/QC inspections are required to set 2024 and 2025 targets.⁹⁵ Given the infancy of Liberty's asset inspection QA/QC program, it is reasonable that Liberty requires additional data to calculate appropriate targets. In its 2025 Update, Liberty must provide asset inspection QA/QC pass rate targets for 2025 that both demonstrate its progress toward industry standard QA/QC pass rates and account for an appropriate increase in 2024.

Energy Safety finds that Liberty has de-escalated this critical issue to an area for continued improvement.

RN-LU-23-03: Strategy to address past due work orders

Energy Safety required Liberty to provide more information regarding its plan to address past due work orders. Liberty was instructed to provide the following:

- An analysis of options considered to address its work order backlog.
- A timeline for completing backlogged work orders and restarting detailed distribution inspections.
- An analysis of the increased risk resulting from halting detailed distribution inspections and how Liberty intends to reduce this risk, including:
 - Prioritization of highest risk areas.
 - Explanation of monitoring processes.
 - Implementation of alternatives to detailed inspections.
 - Addressing a potential work order quantity spike from missing a year of inspections.

RN-LU-23-03: Liberty Response Summary

In Liberty's response to the Revision Notice, it provided details on the decision making process that led to its determination to halt detailed inspections to focus on clearing its work order backlog. Liberty states that it completed a full system survey in 2020 that included detailed inspections of the entirety of its overhead system, allowing the utility to remain in compliance with General Orders (GOs) 95 and 165 without completing detailed inspections in 2023.⁹⁶ Liberty states that it will manage the risk resulting from not performing detailed inspections by continuing to perform corrective work in the HFTD and with its 2023 Resilience Project, which will monitor one third of the utility's circuits.⁹⁷

⁹⁵ Liberty's 2023-2025 WMP R2, pages 188 to 189.

⁹⁶ Liberty's 2023-2025 WMP R2, page 191.

⁹⁷ Liberty's 2023-2025 WMP R2, page 191.

Liberty provided a timeline for the completion of its work order backlog, stating it plans to complete 1,500 work orders per quarter and resolve its backlog by December 31, 2025.⁹⁸

RN-LU-23-03: Energy Safety Evaluation

While Liberty did not provide an analysis of alternate options considered to reduce its work order backlog, it did outline its plan to mitigate the risk associated with halting detailed inspections.⁹⁹ Liberty provided a timeline for the completion of its work order backlog. Liberty commits to performing detailed inspections on 264.2 circuit miles in 2024 and 260.9 circuit miles in 2025 in Table 8-4.¹⁰⁰ Liberty's response does not discuss how it plans to maintain the accelerated pace of repair work when detailed inspections are resumed.

Energy Safety finds that Liberty has de-escalated this critical issue to an area for continued improvement.

Liberty explained its decision to halt detailed distribution inspections in 2023 to focus on reducing its backlog of work orders. In its 2025 Update, Liberty must update Energy Safety on the effectiveness of its chosen strategy. Liberty must provide an analysis comparing the number of work orders closed in 2021, 2022, and 2023 to the number of work orders generated in 2021, 2022, and 2023. Liberty must also provide details on how it will continue to reduce its backlog after resuming detailed inspections.

Energy Safety sets forth specific areas for improvement and associated required progress in Section 11.

8.1.3.4 Areas for Continued Improvement

Liberty must continue to improve in the following areas. Areas for continued improvement in this section are in addition to areas for continued improvement resulting from Liberty's Revision Notice Response, discussed above.

Covered Conductor Inspections and Maintenance

Liberty states it will continue participating in covered conductor meetings and workshops with other utilities in 2023 and lists inspection practices as a discussion topic.¹⁰¹ In its 2025 Update, Liberty must discuss how failure modes unique to covered conductor will be accounted for in its inspections, including applying lessons learned from the joint covered conductor sessions to its inspection and maintenance programs. For example, Liberty may elect to update its detailed inspection procedures to check for covered conductor surface

⁹⁸ Liberty's 2023-2025 WMP R2, pages 190-191.

⁹⁹ Liberty's 2023-2025 WMP R2, page 190.

¹⁰⁰ Liberty's 2023-2025 WMP R2, page 152.

¹⁰¹ Liberty's 2023-2025 WMP R2, Appendix D, Response to LU-22-10.

damage. In some cases, new procedures may need to be developed. One failure mode identified during the covered conductor joint workshops is corrosion caused by water intrusion.¹⁰² In the case of covered conductor, a visual inspection is unlikely to discover this failure, necessitating a different approach.

Distribution Detailed Inspection Frequency

Liberty currently performs overhead distribution detailed inspections on a five-year interval,¹⁰³ and does not adjust the frequency based on risk. This may not adequately cover wildfire risk, particularly in the riskiest areas, given high-priority issues could propagate within the five-year timeline. Liberty must strive to adopt a risk-based approach by increasing the frequency of these inspections on the circuits identified by its risk model to have the highest risk.

Additional Inspection Practices

Liberty states that it plans to incorporate LiDAR, infrared, and drone inspections during the 2023-2025 WMP cycle,¹⁰⁴ but does not provide details. For each listed technology, Liberty must discuss the scope of the pilot and provide a timeline of project milestones.

Energy Safety sets forth specific areas for improvement and associated required progress in Section 11.

8.1.4 Equipment Maintenance and Repair

Section 8.1.4 of the Technical Guidelines requires Liberty to provide a narrative of its maintenance programs, including its strategy for replacing/upgrading and for specific equipment types.¹⁰⁵

8.1.4.1 Maturity Survey Results

According to its responses to the 2023 Maturity Survey, Liberty has a 2023 maturity level of 0 for asset maintenance and repair. Liberty projects no maturity level change for 2024 or 2025.

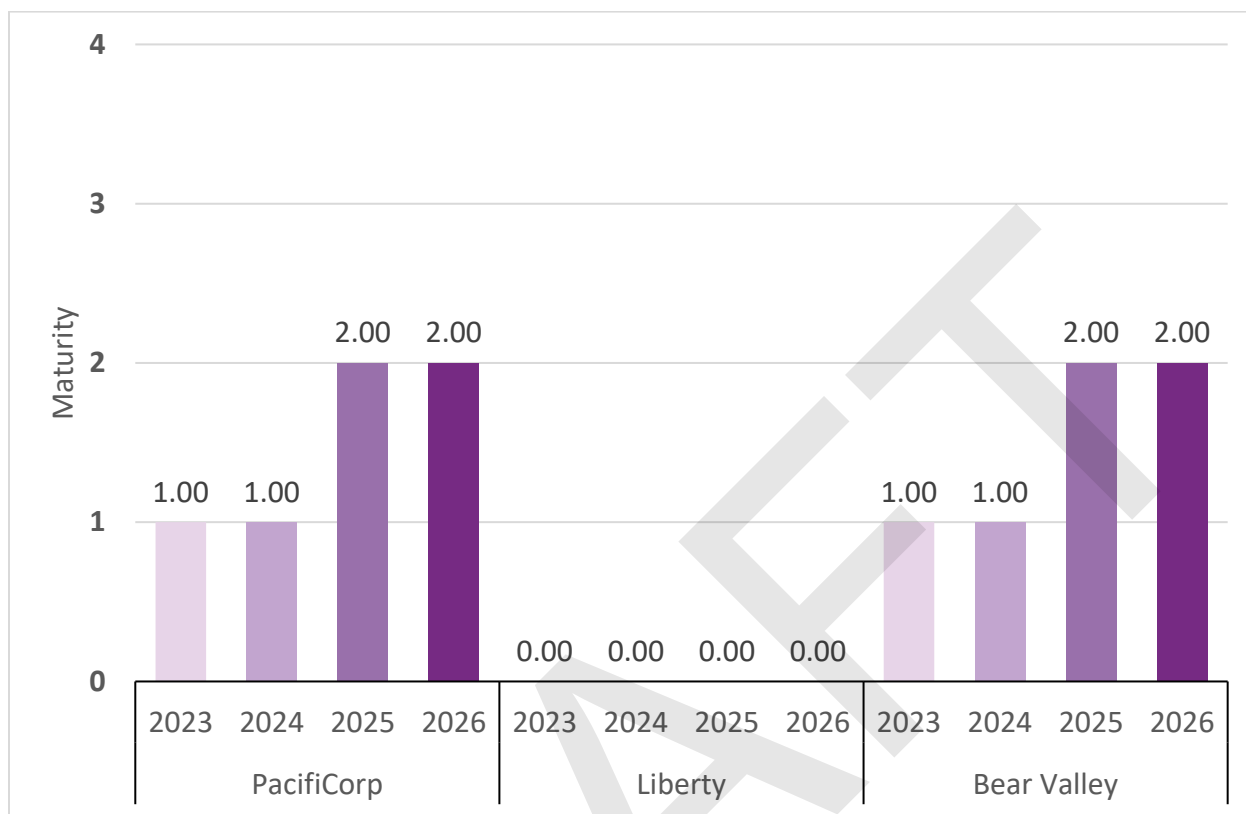
¹⁰² Exponent, Inc. (December 2022). *Effectiveness and Implementation Considerations of Covered Conductors: Testing and Analysis*, pages 42-79.

¹⁰³ Liberty's 2023-2025 WMP R2, page 174.

¹⁰⁴ Liberty's 2023-2025 WMP R2, page 179.

¹⁰⁵ [Technical Guidelines](#), Section 8.1.4, pages 85-86 (https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true, accessed May 5, 2023).

Figure 8.1-5. Cross-Utility Maturity for Asset Maintenance and Repair¹⁰⁶ (Minimum Values)

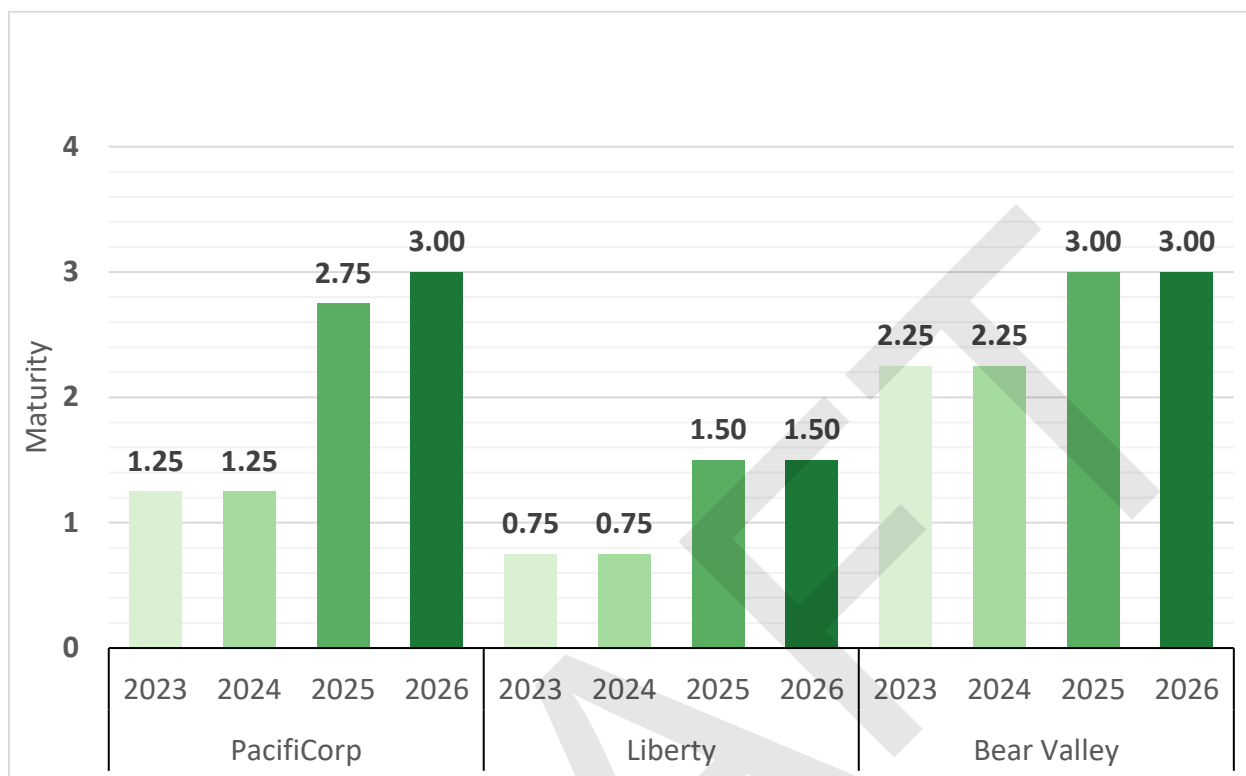


The utility’s maturity level for the asset maintenance and repair capability described above is calculated using the minimum value of component sub-capabilities. The capability average is another way to look at Liberty’s performance in asset maintenance and repair. The capability average is determined from the average of all component sub-capabilities and is an additional tool to evaluate the utilities’ maturity.¹⁰⁷

When the capability maturity is calculated using the average (rather than the minimum), Liberty has a maturity level for asset maintenance and repair of 0.75 for 2023, and projects the same level in 2024. It projects an increase in maturity to 1.50 in 2025 (Figure 8.1-8).

¹⁰⁶ 2023 Maturity Survey Category C “Grid Design, Inspections, and Maintenance,” Capability 15 “Asset maintenance and repair.”

¹⁰⁷ For further information on maturity level determinations, see Section 4 of the 2023-2025 Electrical Corporation Wildfire Mitigation Maturity Model (second revision), published February 21, 2023.

Figure 8.1-6. Cross-Utility Maturity for Asset Maintenance and Repair¹⁰⁸ (Average Values)

The rest of this section reports on maturity levels considering the average values.

Liberty's maturity level in this capability is limited by its response to the following questions:

- Liberty does not consider local wildfire risk when establishing maintenance frequency. To increase in maturity, Liberty will need to adjust maintenance frequency based on local wildfire risk.¹⁰⁹
- Liberty does not consider PSPS risk when establishing maintenance frequency. To increase in maturity, Liberty will need to adjust maintenance frequency based on local PSPS risk.¹¹⁰
- The quality of Liberty's asset maintenance activities is assessed by subject matter expert review once per year. To increase in maturity, Liberty will need subject matter experts to review the quality of its asset maintenance at least twice per year.¹¹¹

¹⁰⁸ 2023 Maturity Survey Category C "Grid Design, Inspections, and Maintenance," Capability 15 "Asset maintenance and repair."

¹⁰⁹ Liberty's 2023 Maturity Survey, response to 3.3.1Q1.

¹¹⁰ Liberty's 2023 Maturity Survey, response to 3.3.1.Q2.

¹¹¹ Liberty's 2023 Maturity Survey, response to 3.3.3Q2.

Liberty's current maturity level in this capability is lower than its peers, with PacifiCorp and Bear Valley reporting at levels 1.25 and 2.25, respectively. See Figure 8.1-8.

8.1.4.2 Liberty's WMP Strengths

Liberty projects improvement in equipment maintenance and repair over the WMP cycle in the following area: risk-based condition remediation.

Liberty states that it performs equipment maintenance based on risk. Conditions are prioritized for repair based on HFTD tier. Liberty states it has created Pole Risk of Failure categories to prioritize Level 3 findings. Instead of assigning the same risk to all Level 3 conditions, Liberty assigns a high, medium, or low risk to each pole and prioritizes accordingly.¹¹²

2022 Areas for Continued Improvement

Liberty adequately addressed the 2022 areas for continued improvement for this topic. See Appendix B for the status of each 2022 area for continued improvement.

8.1.4.3 Revision Notice Critical Issues

As described in Section 3.4, Energy Safety issued Liberty a Revision Notice in response to its WMP submitted on May 5, 2023. Liberty submitted its Revision Notice Response on October 6, 2023. This section evaluates that response as it relates to equipment maintenance and repair.¹¹³

RN-LU-23-05: Expulsion fuse replacement targets

Energy Safety required Liberty to update its fuse replacement targets for 2023 to 2025. If Liberty had not yet determined these targets, Energy Safety required it to provide an explanation for the delay, timeline for setting targets, and describe interim mitigations used to manage the expulsion fuses currently installed.

RN-LU-23-05: Liberty Response Summary

In Liberty's response to the Revision Notice, it provided a target of 3,800 expulsion fuses to be replaced in 2023.¹¹⁴ Liberty committed to providing targets for 2024 and 2025 in its next WMP Update.¹¹⁵ Liberty stated it plans to mitigate the ignition risk associated with expulsion fuses

¹¹² Liberty's 2023-2025 WMP R2, page 184.

¹¹³ Liberty's 2023-2025 WMP R2, pages 171-173.

¹¹⁴ Liberty's 2023-2025 WMP R2, page 152.

¹¹⁵ Liberty's 2023-2025 WMP R2, page 173.

by implementing SRP and clearing vegetation around the base of the poles with expulsion fuses.¹¹⁶

RN-LU-23-05: Energy Safety Evaluation

Liberty provided an expulsion fuse replacement target for 2023 and outlined the interim mitigations being used to manage the risk of installed expulsion fuses.

Energy Safety finds that Liberty has de-escalated this critical issue to an area for continued improvement.

While Liberty provided a fuse replacement target for 2023, it did not provide targets for 2024 or 2025. Liberty explains it did not provide 2024 or 2025 targets because of a manufacturing issue identified in the current limiting fuses it was installing.¹¹⁷ In its 2025 Update, Liberty must provide an expulsion fuse replacement target for 2025 that encompasses replacements from both 2024 and 2025.

Energy Safety sets forth specific areas for improvement and associated required progress in Section 11.

8.1.4.4 Areas for Continued Improvement

Liberty must continue to improve in the following areas. Areas for continued improvement in this section are in addition to areas for continued improvement resulting from Liberty's Revision Notice Response, discussed above.

Liberty states that it has begun evaluating CAL FIRE-exempt lightning/surge arresters to replace installed non-exempt arresters.¹¹⁸ In its 2025 Update, Liberty must provide a timeline for the evaluation and pilot phase of non-exempt arreser replacement. Liberty must also provide its plan to identify and track non-exempt arresters for replacement.

Energy Safety sets forth specific areas for improvement and associated required progress in Section 11.

¹¹⁶ Liberty's 2023-2025 WMP R2, pages 173-173.

¹¹⁷ Liberty's 2023-2025 WMP R2, page 172.

¹¹⁸ Data Request [OEIS-P-WMP 2023-LU-003](https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=54421&shareable=true) (Question1) (<https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=54421&shareable=true>, accessed 12/07/2023.)

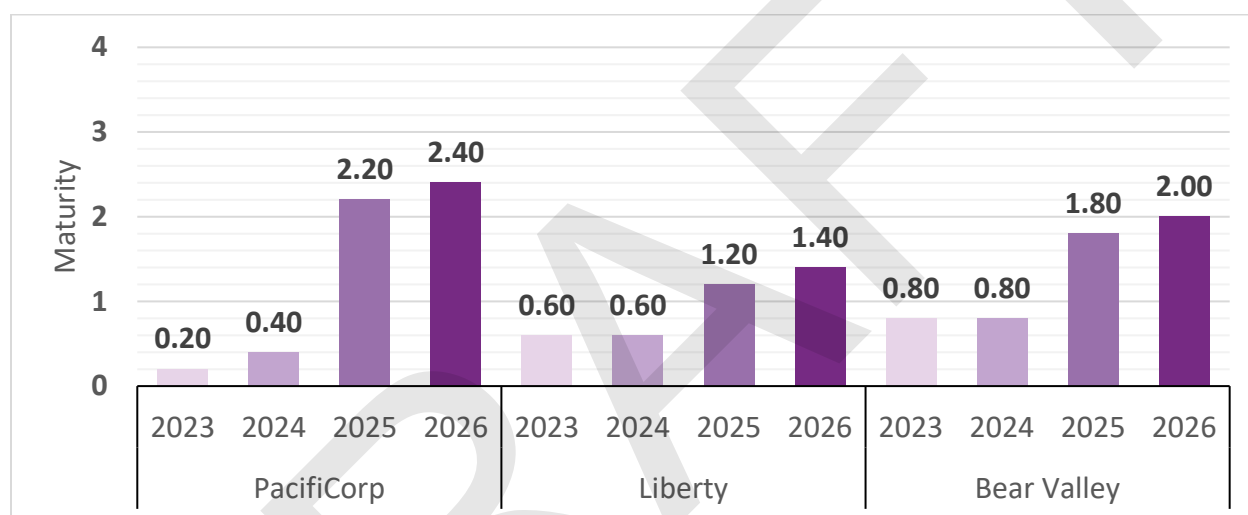
8.1.5 Grid Operations and Procedures

Section 8.1.8 of the Technical Guidelines requires Liberty to describe how it manages and operates its grid to reduce wildfire risk, including aspects such as equipment settings, grid response procedures and notifications, and personnel work procedures and training.¹¹⁹

8.1.5.1 Maturity Survey Results

According to its responses to the 2023 Maturity Survey, Liberty has a 2023 maturity level of 0.60 for grid operations and protocols. For 2024, Liberty projects the same. For 2025, Liberty projects that it will increase in maturity to a level of 1.2 (Figure 8.1-9).

Figure 8.1-7. Cross-Utility Maturity for Grid Operations and Protocols¹²⁰ (Minimum Values)



The utility's maturity level for the grid operations and protocols category described above is calculated using the minimum value sub-capability of each capability. Using the capability average is another way to look at Liberty's performance in grid operations and protocols. The capability average is determined from the average of all component sub-capabilities and is an additional tool to evaluate the utilities' maturity.¹²¹

When the category maturity is calculated using the capability average (rather than the minimum), Liberty has a maturity level for grid operations and protocols of 1.77 for 2023, and

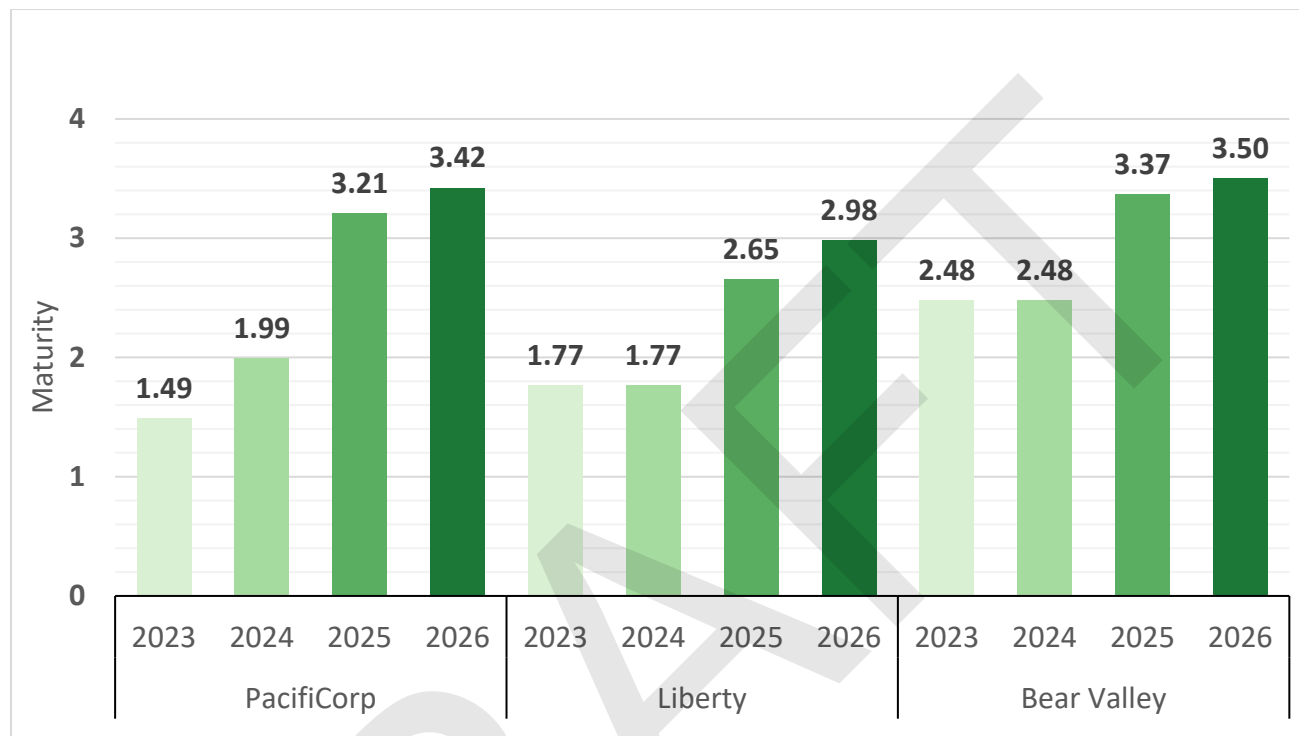
¹¹⁹ [Technical Guidelines](#), Section 8.1.8, pages 88-89 (https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true, accessed May 5, 2023).

¹²⁰ 2023 Maturity Survey Category E "Grid Operations and Protocols."

¹²¹ For further information on maturity level determinations, see Section 4 of the 2023-2025 Electrical Corporation Wildfire Mitigation Maturity Model (second revision), published February 21, 2023.

projects the same level in 2024. It projects an increase in maturity to 2.65 in 2025 (Figure 8.1-10).

Figure 8.1-8. Cross-Utility Maturity for Grid Operations and Protocols¹²² (Average Values)



The rest of this section reports on maturity levels considering the minimum values.

Liberty's maturity level in this category is limited by its response to the following questions:

- Liberty reports that it only reviews policies and procedures for determining and applying thresholds of grid elements and protective equipment at least once annually.¹²³ In order to mature, Liberty will need to review these policies at least once per six months or once per quarter.
- Liberty reports that it determines sensitivities for grid elements and protective equipment manually based on current fire risk conditions.¹²⁴ In order to mature, Liberty will need to determine these sensitivities automatically.

¹²² 2023 Maturity Survey Category E "Grid Operations and Protocols."

¹²³ Liberty's 2023 Maturity Survey, response to question 5.1.4.Q1.

¹²⁴ Liberty's 2023 Maturity Survey, response to question 5.1.6.Q2.

- Liberty reports that it does not use predictive modeling to replace equipment before predicted failure.¹²⁵ In order to mature, Liberty will need to use predictive modeling to determine equipment replacements.
- Liberty reports that it does not have fire suppression and safety teams on site during asset and vegetation management work in the HFTD.¹²⁶ In order to mature, Liberty will have to have fire suppression and safety teams on site.

Liberty's current maturity level in this category is around the same as its peers, with PacifiCorp and BVES reporting at levels 0.20 and 0.80, respectively. See Figure 8.1-9.

Based on its responses to the 2023 Maturity Survey, Liberty reported its highest levels of projected maturity in the following capabilities for 2023 and 2024:

- Ignition prevention and suppression.¹²⁷

Based on its responses to the 2023 Maturity Survey, Liberty reported its lowest levels of projected maturity in the following capabilities for 2023 and 2024:

- Incorporation of ignition risk factors in grid control.¹²⁸
- Protective equipment and device settings.¹²⁹

8.1.5.2 Liberty's WMP Strengths

Liberty projects improvement in grid operations and procedures over the WMP cycle in the following area: prioritization of grid response.

Liberty states that it has procedures in place to prioritize responding to grid issues based on safety to the public and employees, wildfire risk, critical customer impact, and customer count. Additionally, Liberty states that it tracks the locations of personnel via dispatch operations to optimize response times and effectively use resources.

2022 Areas for Continued Improvement

There were no areas for continued improvement for Liberty in its grid operations and procedures resulting from Energy Safety's evaluation of Liberty's 2022 WMP Update.

¹²⁵ Liberty's 2023 Maturity Survey, response to question 5.2.1.Q1.

¹²⁶ Liberty's 2023 Maturity Survey, response to 5.5.3.Q3.

¹²⁷ Liberty's responses to questions on the 2023 Maturity Survey under Category E "Grid Operations and Protocols," Capability 26 "Ignition prevention and suppression."

¹²⁸ Liberty's responses to questions on the 2023 Maturity Survey under Category E "Grid Operations and Protocols," Capability 23 "Incorporation of ignition risk factors in grid control."

¹²⁹ Liberty's responses to questions on the 2023 Maturity Survey under Category E "Grid Operations and Protocols," Capability 22 "Protective equipment and device settings."

8.1.5.3 Revision Notice Critical Issues

Energy Safety did not find any critical issues within the grid operations and procedures section of its Base WMP.

8.1.5.4 Areas for Continued Improvement

Liberty must continue to improve in the following areas.

Reliability Impacts of SRP

In 2023, Liberty states that it expanded its SRP program because of the low capital costs and its effectiveness in reducing ignition risk. Given the expansion of Liberty's SRP program in 2023, Liberty must evaluate the impacts that implementation has had on safety and reliability.

High Impedance Fault Detection

Liberty evaluated high impedance fault detection (HIFD) technology to implement in its system in combination with SRP settings. However, Liberty concluded that it should not move forward with implementing the technology further after piloting it in one of its circuits, given that it calculated HIFD to have effectiveness against only 70 percent of the faults along its line and would cause additional unnecessary trips.¹³⁰ Liberty must fully justify why it is not pursuing HIFD further, particularly because SRP settings alone are not as effective against ignitions from high impedance faults.¹³¹

Energy Safety sets forth specific areas for improvement and associated required progress in Section 11.

8.2 Vegetation Management and Inspections

In response to Section 8.2 of the Technical Guidelines, Liberty provided information on its vegetation management programs, including vegetation inspections, vegetation and fuels management, vegetation management enterprise systems, environmental compliance and permitting, quality assurance and quality control, open work orders, and workforce planning as applicable.¹³²

Below is Energy Safety's evaluation regarding Liberty's objectives and targets, maturity levels, and strengths in these areas.

¹³⁰ Liberty's 2023-2025 WMP R2 Redline, page 270.

¹³¹ PG&E's 2023-2025 WMP R3, pages 455-456.

¹³² [Technical Guidelines](https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true), Section 8.2, "Vegetation Management and Inspections," pages 94-113 (https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true, accessed May 5, 2023).

8.2.1 Objectives and Targets

As part of its Base WMP, Liberty provided 3-year and 10-year objectives for its vegetation management programs.¹³³

Liberty also defined quantitative targets for initiative activities for its vegetation management programs. Liberty's Base WMP includes end-of-year targets for 2023, 2024, and 2025. Selected targets are included in Table 8.2-1 to demonstrate the utility's commitment to mitigating ignition risk from vegetation contact.

Table 8.2-1. Liberty Vegetation Management – Selected Targets

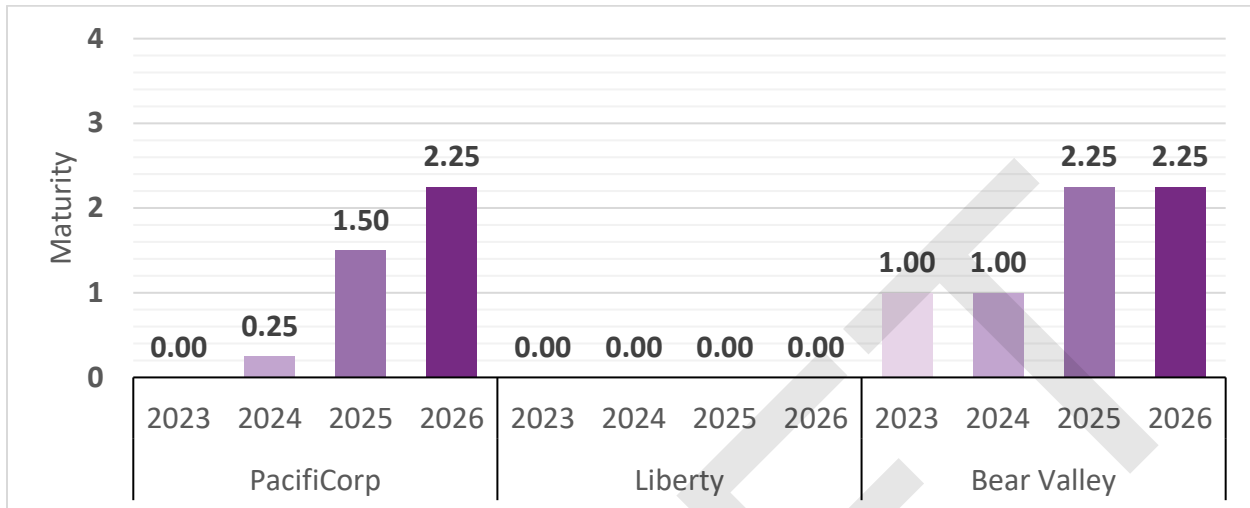
Initiative Activity	Target Unit	2023 Target	2024 Target	2025 Target
Detailed Vegetation Inspections	Circuit miles inspected	220	220	220
Quality Assurance/Quality Control	Circuit miles inspected	229	229	229
Wood and Slash Management	Acres	280	280	280

8.2.2 Maturity Survey Results

According to its responses to the 2023 Maturity Survey, Liberty has a 2023 maturity level of 0.0 for vegetation management and inspections. Liberty projects no maturity level change for 2024 or 2025 (Figure 8.2-1).

¹³³ Liberty's 2023-2025 WMP R2, page 199.

Figure 8.2-1. Cross-Utility Maturity for Vegetation Management and Inspections (Minimum Values)

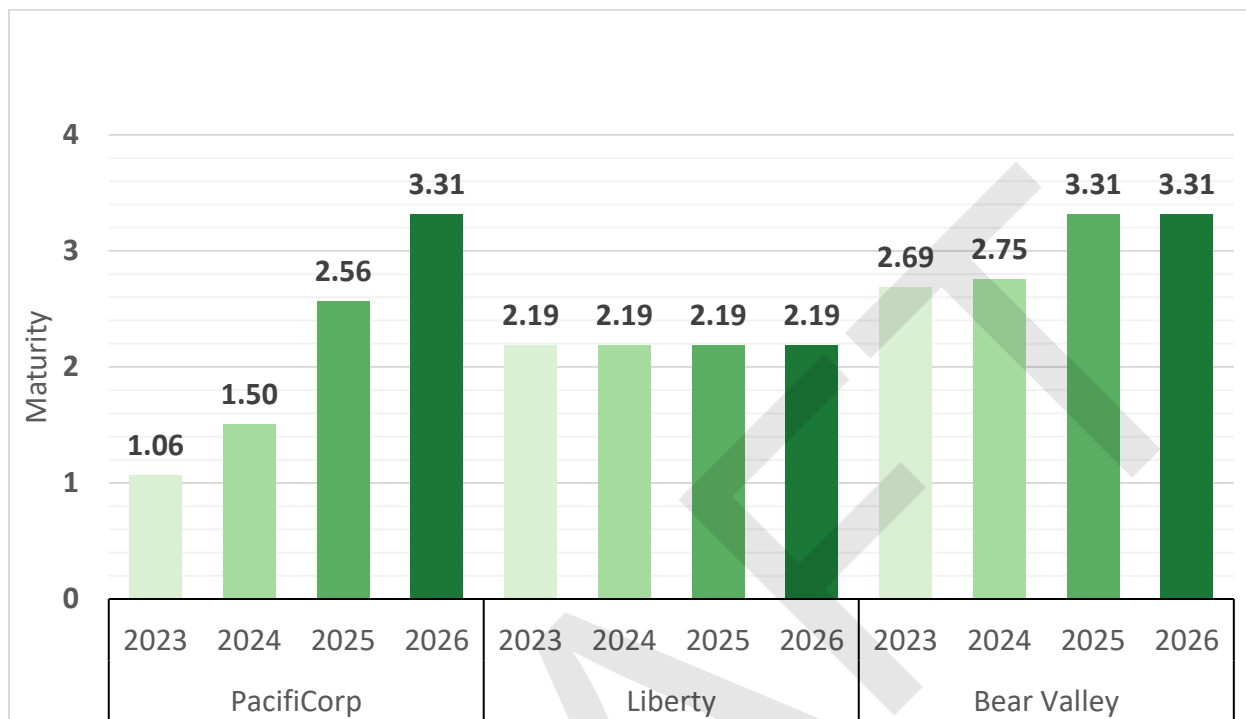


The utility’s maturity level for the vegetation management and inspections category described above is calculated using the minimum value sub-capability of each capability. Using the capability average is another way to look at Liberty’s performance in vegetation management and inspections. The capability average is determined from the average of all component sub-capabilities and is an additional tool to evaluate the utilities’ maturity.¹³⁴

When the category maturity is calculated using the capability average (rather than the minimum), Liberty has a maturity level for vegetation management and inspections of 2.19 for 2023, and projects no change for 2024 or 2025 (Figure 8.2-2).

¹³⁴ For further information on maturity level determinations, see Section 4 of the 2023-2025 Electrical Corporation Wildfire Mitigation Maturity Model (second revision), published February 21, 2023.

Figure 8.2-2. Cross-Utility Maturity for Vegetation Management and Inspections
(Average Values)



The rest of this section reports on maturity levels considering the average values.

Liberty's maturity level in this category is limited by its response to the following questions:

- Liberty reports that its vegetation database does not have information about typical environmental conditions such as slope, aspect, soil type, and wind exposure.¹³⁵ To mature in this capability, Liberty would have to include typical environmental conditions in its vegetation database.
- Liberty reports that the time between routine vegetation inspection and treatment (i.e., trimming or removal) of non-urgent vegetation inspection findings is greater than 30 days.¹³⁶ To mature in this capability, Liberty would have to reduce that time to less than 30 days.
- Liberty reports that it does not have procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the training and quality

¹³⁵ Liberty's 2023 Maturity Survey, response to 4.1.2 Q4.

¹³⁶ Liberty's 2023 Maturity Survey, response to 4.3.2 Q3.

assurance of vegetation personnel.¹³⁷ To mature in this capability, Liberty would have to develop those procedures.

Liberty's current maturity level in this category is between its peers, with Bear Valley and PacifiCorp reporting at levels 1.06 and 2.69, respectively. See Figure 8.2-2.

Based on its responses to the 2023 Maturity Survey, Liberty reported its highest levels of projected maturity in the following capabilities for 2023 and 2024:

- Vegetation inventory and condition database¹³⁸
- Vegetation inspections¹³⁹

Based on its responses to the 2023 Maturity Survey, Liberty reported its lowest levels of projected maturity in the following capability for 2023 and 2024: vegetation personnel training and quality.¹⁴⁰

8.2.3 Liberty's WMP Strengths

Liberty projects improvement in vegetation management over the WMP cycle in the following areas: wood management, right-of-way management, and pole brushing.

Liberty offers wood removal and disposal services to all residential customers.¹⁴¹ This practice reduces fuel generated from vegetation management activities. Additionally, this practice likely relieves physical and financial burden from the landowner as heavy logs and large piles of brush are removed. With that burden relieved, Liberty may see a decrease in customer refusals related to vegetation management.¹⁴²

Liberty also continues to develop its Integrated Vegetation Management Program with the intent of promoting a stable, low-growing community of utility-compatible shrub species along its rights-of-way.¹⁴³ As part of this program, Liberty states that it is providing compatible plant training to its vegetation management inspectors, which includes training on compatible plants, understory species, ecological zones, and how the landscape reacts to

¹³⁷ Liberty's 2023 Maturity Survey, response to 4.4.1 Q5.

¹³⁸ Liberty's responses to questions on the 2023 Maturity Survey under Category D "Vegetation Management and Inspections," Capability 18 "Vegetation inventory and condition database."

¹³⁹ Liberty's responses to questions on the 2023 Maturity Survey under Category D "Vegetation Management and Inspections," Capability 19 "Vegetation inspections."

¹⁴⁰ Liberty's responses to questions on the 2023 Maturity Survey under Category D "Vegetation Management and Inspections," Capability 21 "Vegetation personnel training and quality."

¹⁴¹ Liberty's 2023-2025 WMP R2, page 212.

¹⁴² Refusals of access to property by customers or landowners preventing utility vegetation management work prescribed by the electrical corporation.

¹⁴³ Liberty's 2023-2025 WMP R2, page 228.

disturbances such as mechanical treatments and wildfire.¹⁴⁴ This program and training should allow Liberty to embed environmental resilience and wildfire mitigation awareness into Liberty's vegetation management program. Furthermore, Liberty prioritizes right-of-way management that is designed to reduce future powerline-vegetation conflicts.

Additionally, Liberty performs pole clearing in both the State Responsibility Areas (as required by Public Resources Code section 4292) and the Federal Responsibility Area.¹⁴⁵ The benefits of pole clearing do not stop at administrative boundaries and much of Liberty's service territory lies in the Federal Responsibility Area.

8.2.3.1 2022 Areas for Continued Improvement

Liberty adequately addressed the 2022 areas for continued improvement for this topic. See Appendix B for the status of each 2022 area for continued improvement.

8.2.4 Areas for Continued Improvement

Liberty must continue to improve in the following areas.

In its WMP, Liberty reports over 3,262 past-due vegetation management work orders in HFTD Tier 2 and Tier 3 lands with 80 percent of those work orders more than 181 days overdue.¹⁴⁶ While Liberty asserts that it "adheres to the mitigation timelines it has identified for completing vegetation work orders" and that "under no circumstances will Liberty leave a hazardous vegetation condition unmanaged,"¹⁴⁷ Energy Safety is nonetheless concerned about this backlog. As such, Liberty must report on its plan and progress toward eliminating its backlog.

Energy Safety sets forth specific areas for improvement and associated required progress in Section 11.

8.3 Situational Awareness and Forecasting

In response to Section 8.3 of the Technical Guidelines, Liberty provided information on its situational awareness and forecasting, including environmental monitoring systems, grid

¹⁴⁴ Liberty's 2023-2025 WMP R2, page 214.

¹⁴⁵ Liberty's 2023-2025 WMP R2, page 218.

¹⁴⁶ Liberty's 2023-2025 WMP R2, Table 8-31 "Liberty Past Due Vegetation Management Work Orders Categorized by Age," page 243.

¹⁴⁷ Liberty's 2023-2025 WMP R2, page 241.

monitoring systems, ignition detection systems, weather forecasting, and fire potential index as applicable.¹⁴⁸

Below is Energy Safety's evaluation regarding Liberty's objectives and targets, maturity levels, and strengths in these areas. In addition, Energy Safety has identified areas where Liberty must improve, described at the end of this section.

8.3.1 Objectives and Targets

As part of its Base WMP, Liberty provided 3-year and 10-year objectives for its situational awareness and forecasting programs.¹⁴⁹

Liberty also defined quantitative targets for initiative activities for its situational awareness and forecasting programs. Liberty's Base WMP includes end-of-year targets for 2023, 2024, and 2025. Selected targets are included in Table 8.3-1.

Table 8.3-1. Liberty Situational Awareness and Forecasting – Selected Targets

Initiative Activity	Target Unit	2023 Target	2024 Target	2025 Target
Fault indicators	Installed circuits	10	10	10
Weather stations	Installed stations	4	TBD ¹⁵⁰	TBD
HD cameras adopted	Deployed cameras	8	UNK	UNK

8.3.2 Maturity Survey Results

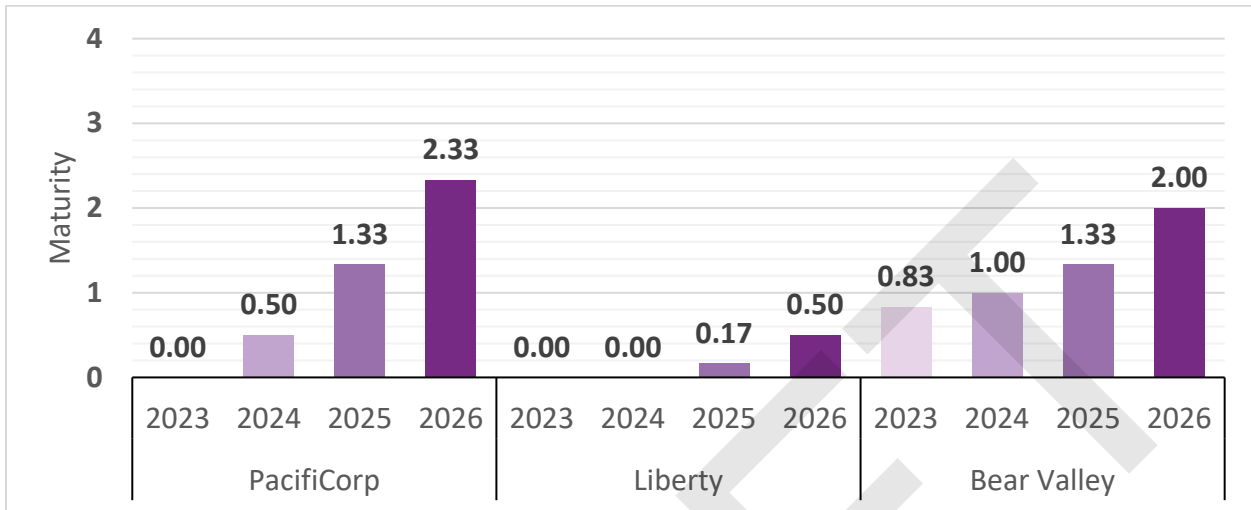
According to its responses to the 2023 Maturity Survey, Liberty has a 2023 maturity level of 0 for situational awareness and forecasting. Liberty projects no change in 2024. For 2025, Liberty projects an increase in maturity to a level of 0.17 (Figure 8.3-1).

¹⁴⁸ [Technical Guidelines](#), Section 8.3, "Situational Awareness and Forecasting," pages 114-135 (<https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true>, accessed May 5, 2023).

¹⁴⁹ Liberty 2023-2025 WMP R2, page 258.

¹⁵⁰ Liberty is planning to install additional weather stations based on determining optimal density using an optimization study in 2023. See Liberty's 2023-2025 WMP, page 258.

Figure 8.3-1. Cross-Utility Maturity for Situational Awareness and Forecasting (Minimum Values)

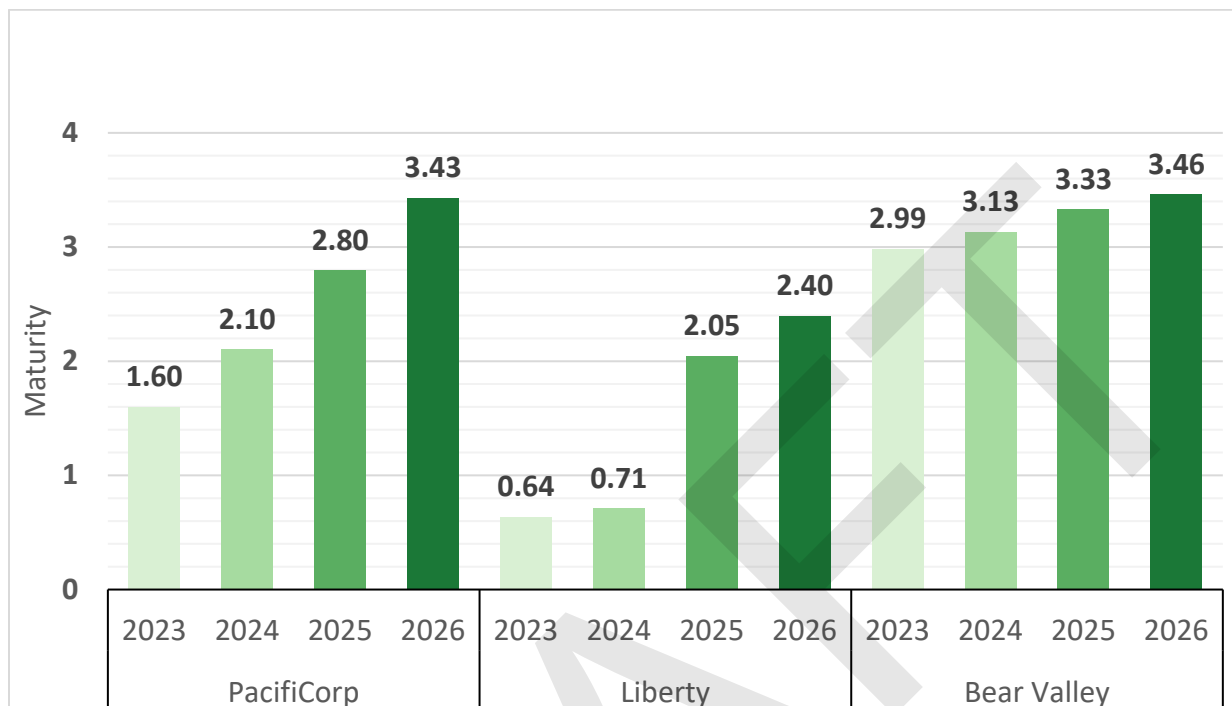


The utility’s maturity level for the situational awareness and forecasting category described above is calculated using the minimum value sub-capability of each capability. Using the capability average is another way to look at Liberty’s performance in situational awareness and forecasting. The capability average is determined from the average of all components sub-capabilities and is an additional tool to evaluate the utilities’ maturity.¹⁵¹

When the category maturity is calculated using the capability average (rather than the minimum), Liberty has a maturity level for situational awareness and forecasting of 0.64 for 2023. It projects an increase in maturity to 0.71 in 2024 and 2.05 in 2025 (Figure 8.3-2).

¹⁵¹ For further information on maturity level determinations, see Section 4 of the 2023-2025 Electrical Corporation Wildfire Mitigation Maturity Model (second revision), published February 21, 2023.

Figure 8.3-2. Cross-Utility Maturity for Situational Awareness and Forecasting (Average Values)



The rest of this section reports on maturity levels considering the average values.

Across the three-year WMP cycle, Liberty shows slight improvement each year of the WMP cycle.

Liberty's current maturity level in this category is lower than its peers, with PacifiCorp and Bear Valley reporting at levels 1.60 and 2.99, respectively. See Figure 8.3-2.

Based on its responses to the 2023 Maturity Survey, Liberty reported its highest levels of projected maturity in the following capability for 2023 and 2024:

- Centralized monitoring of real-time conditions.¹⁵²

Based on its responses to the 2023 Maturity Survey, Liberty reported its lowest levels of projected maturity in the following capability for 2023 and 2024:

- Wildfire detection and alarm systems.

¹⁵² Liberty's responses to questions on the 2023 Maturity Survey under Category B "Situational Awareness and Forecasting," Capability 12 "Centralized monitoring of real-time conditions."

8.3.3 Liberty's WMP Strengths

Liberty projects improvement in situational awareness and forecasting over the WMP cycle in the following area: grid monitoring.

Liberty's grid monitoring strategy involves deployment of fault indicators on circuits that have SRP. Liberty plans to install fault indicators on 10 circuits with SRP for each year of its WMP cycle.¹⁵³ Liberty states that this will accelerate the process of pinpointing and addressing fault locations, while leading to improved restoration times for customers. The effectiveness of this approach has already been demonstrated on two circuits in Liberty's territory equipped with SRP in 2022, underscoring its potential benefits.¹⁵⁴

8.3.3.1 2022 Areas for Continued Improvement

Liberty adequately addressed the 2022 areas for continued improvement for this topic. See Appendix B for the status of each 2022 area for continued improvement.

8.3.4 Areas for Continued Improvement

Liberty must continue to improve in the following areas.

Weather stations play a critical role in collecting weather data that can directly influence wildfire risk assessment and impacts to utility infrastructure. Liberty must address spatial gaps in its network and conduct maintenance and calibration of existing weather stations. For 2023, Liberty intends to assess the density of its weather stations through an optimization tool to identify the number and location for additional weather station installations.¹⁵⁵ In its 2025 Update, Liberty must provide the results of its weather station optimization tool, including its assessment, any locations identified for additional weather stations, and number of weather stations planned for future installations.

Liberty has not performed any weather station maintenance on its 35 installed weather stations in three years and has only conducted repairs on an as-needed basis.¹⁵⁶ In 2023, Liberty plans to initiate an annual maintenance schedule for repairs, calibration, and software updates on its existing weather stations.¹⁵⁷ In its 2025 Update, Liberty must report on its annual maintenance schedule, calibration, and updates of existing weather stations.

High definition (HD) wildfire cameras are also a critical situational awareness tool that can enable early detection of fire ignitions, identify ignition locations, track a fire's progression,

¹⁵³ Liberty's 2023-2025 WMP R2, Page 253

¹⁵⁴ Liberty's 2023-2025 WMP R2, Page 260

¹⁵⁵ Liberty's 2023-2025 WMP R2, Page 258

¹⁵⁶ Liberty's Data Request No. OEIS-P-WMP_2023-LU-001, Question 1

¹⁵⁷ Liberty's 2023-2025 WMP R2, page 256.

and visually observe changing fuel conditions on the landscape. Since its 2021 WMP Update, Liberty has continually reported that it would partner/adopt HD wildfire cameras each year.¹⁵⁸ However, Liberty still does not have any equipment installed that can detect or monitor ignitions on the grid. In its 2025 Update, Liberty must provide a plan for the adoption of the targeted eight HD cameras, including what factors caused the delay and how Liberty is working to resolve the delay. Liberty must also provide an outline on the development and implementation of policy and procedures for HD cameras in its service territory.

Energy Safety sets forth specific areas for improvement and associated required progress in Section 11.

8.4 Emergency Preparedness

In response to Section 8.4 of the Technical Guidelines, Liberty provided information on its emergency preparedness, including its wildfire and PSPS emergency preparedness plan; collaboration and coordinating with public safety partners; public notification and communications strategy; preparedness and planning for service restoration; customer support in wildfire and PSPS emergencies; and learning after wildfire and PSPS events as applicable.¹⁵⁹

Below is Energy Safety's evaluation regarding Liberty's objectives and targets, maturity levels, and strengths in these areas.

8.4.1 Objectives and Targets

As part of its Base WMP, Liberty provided 3-year and 10-year objectives for its emergency preparedness programs.¹⁶⁰

Liberty also defined quantitative targets for initiative activities for its emergency preparedness programs. Liberty's Base WMP includes end-of-year targets for 2023, 2024, and 2025. Selected targets are included in Table 8.4-1.

¹⁵⁸ Liberty's 2021 WMP update, Page 83

¹⁵⁹ [Technical Guidelines](https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true), Section 8.4, "Emergency Preparedness," pages 135-179 (https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true, accessed May 5, 2023).

¹⁶⁰ Liberty's 2023-2025 WMP R2, pages 278-279.

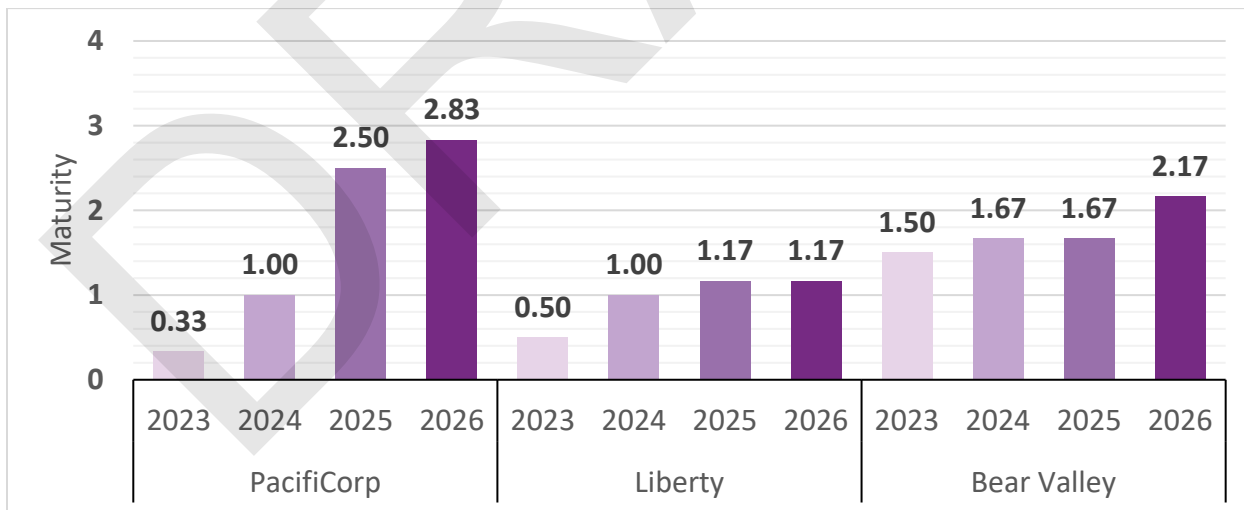
Table 8.4-1. Liberty Emergency Preparedness – Selected Targets

Initiative Activity	Target Unit	2023 Target	2024 Target	2025 Target
Engage with local stakeholders. Meet with Community Advisory Boards	Conduct emergency drills	Annually	Annually	Annually
	Meet with Community Advisory Boards			
Train Incident Command Members	Conduct IC training for all members- Target	Annually	Annually	Annually
	Hold virtual PSPS tabletop exercises- Target			
Update AFN and emergency response plans	AFN plan	Annually	Annually	Annually

8.4.2 Maturity Survey Results

According to its responses to the 2023 Maturity Survey, Liberty has a 2023 maturity level of 0.50 for emergency preparedness. For 2024, Liberty projects that it will increase in maturity to a level of 1.00. For 2025, Liberty projects that it will slightly increase in maturity to a level of 1.17 (Figure 8.4-1).

Figure 8.4-1. Cross-Utility Maturity for Emergency Preparedness (Minimum Values)

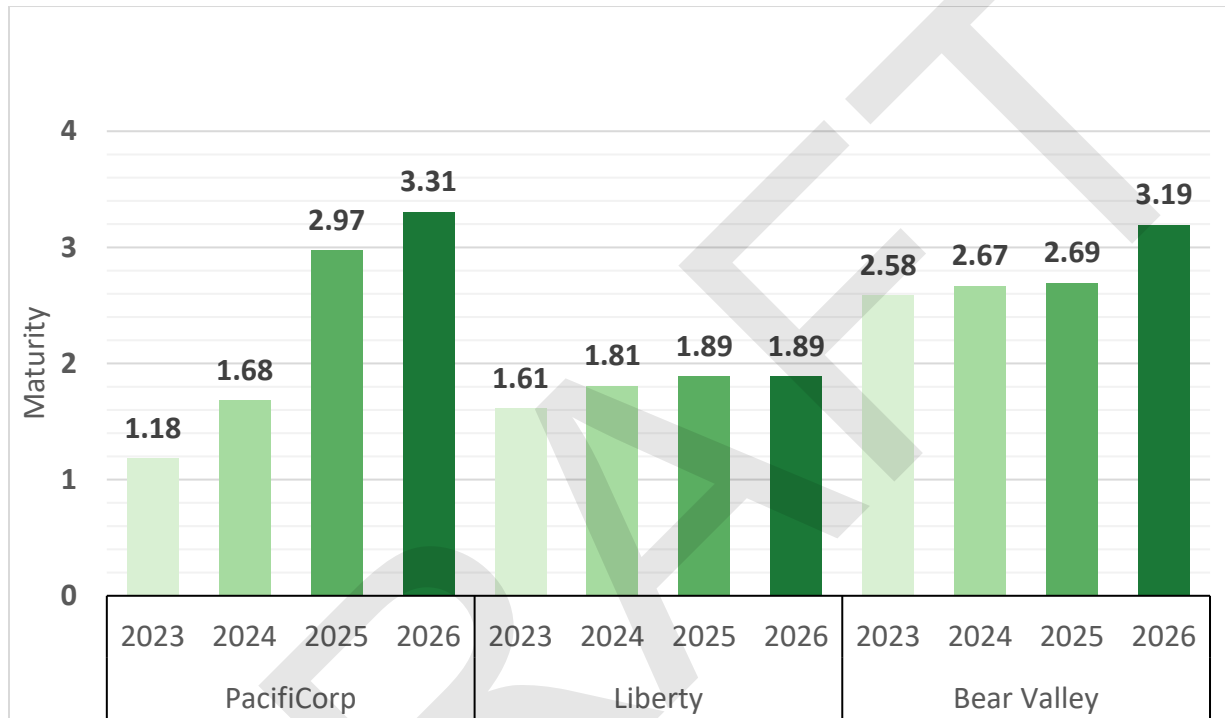


The utility’s maturity level for the emergency preparedness category described above is calculated using the minimum value sub-capability of each capability. Using the capability average is another way to look at Liberty’s performance in emergency preparedness. The

capability average is determined from the average of all component sub-capabilities and is an additional tool to evaluate the utilities’ maturity.¹⁶¹

When the category maturity is calculated using the capability average (rather than the minimum), Liberty has a maturity level for emergency preparedness of 1.61 for 2023. It projects an increase in maturity to 1.81 in 2024 and 1.89 in 2025 (Figure 8.4-2).

Figure 8.4-2. Cross-Utility Maturity for Emergency Preparedness (Average Values)



The rest of this section reports on maturity levels considering the minimum values.

Liberty’s current maturity level in this category is between that of its peers, with PacifiCorp and Bear Valley reporting at levels 0.33 and 1.50, respectively. See Figure 8.4-1.

Based on its responses to the 2023 Maturity Survey, Liberty reported its highest levels of projected maturity in the following capability for 2023 and 2024:

- Wildfire and PSPS Emergency and Disaster Preparedness Plan.¹⁶²

¹⁶¹ For further information on maturity level determinations, see Section 4 of the 2023-2025 Electrical Corporation Wildfire Mitigation Maturity Model (second revision), published February 21, 2023.

¹⁶² Liberty’s responses to questions on the 2023 Maturity Survey under Category F “Emergency Preparedness,” Capability 27 “Wildfire and PSPS emergency and disaster preparedness plan.”

Based on its responses to the 2023 Maturity Survey, Liberty reported its lowest levels of projected maturity in the following capability for 2023 and 2024:

- Preparedness and planning for service restoration.¹⁶³

8.4.3 Liberty's WMP Strengths

Liberty projects improvement in emergency preparedness over the WMP cycle in the following area: public emergency communication strategy.

Liberty maintains a contact list of local governmental agencies, municipalities, and media outlets within its service territory. Liberty's public safety partner and critical facilities contact list, which includes CAL FIRE, is formatted for compatibility with a mass notification platform. Liberty reports that mass notification can be done through text, email, and voice push notifications, and includes receipt verification capability to ensure that the notifications were received.¹⁶⁴

8.4.3.1 2022 Areas for Continued Improvement

There were no areas for continued improvement for Liberty in its emergency preparedness resulting from Energy Safety's evaluation of Liberty's 2022 WMP Update.

8.4.4 Areas for Continued Improvement

Energy Safety did not find any critical issues within the emergency preparedness section of its Base WMP.

8.5 Community Outreach and Engagement

In response to Section 8.5 of the Technical Guidelines, Liberty provided information on its community outreach and engagement, including its public outreach and educational awareness for wildfires, PSPS, outages, and vegetation management; public engagement in the WMP decision-making process; engagement with AFN populations, local governments, and tribal communities; collaboration on local wildfire mitigation and planning; and best practice planning as applicable.¹⁶⁵

Below is Energy Safety's evaluation regarding Liberty's objectives and targets, maturity levels, and strengths in these areas.

¹⁶³ Liberty's responses to questions on the 2023 Maturity Survey under Category F "Emergency Preparedness," Capability 30 "Preparedness and planning for service restoration."

¹⁶⁴ Liberty's 2023-2025 WMP R2, pages 20 and 310.

¹⁶⁵ [Technical Guidelines](https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true), Section 8.5, "Community Outreach and Engagement," pages 179-194 (https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true, accessed May 5, 2023).

8.5.1 Objectives and Targets

As part of its Base WMP, Liberty provided 3-year and 10-year objectives for its community outreach and engagement programs.¹⁶⁶

Liberty also defined quantitative targets for initiative activities for its community outreach and engagement programs. Liberty’s Base WMP includes end-of-year targets for 2023, 2024, and 2025. The following selected target is included in Table 8.5-1.

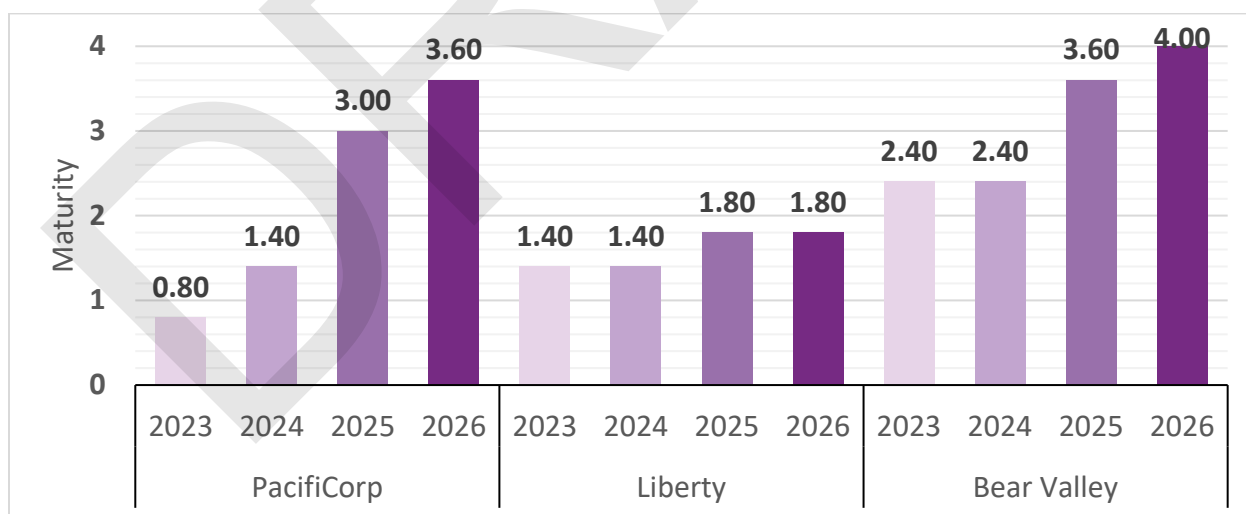
Table 8.5-1. Liberty Community Outreach and Engagement – Selected Target

Initiative Activity	Target Unit	2023 Target	2024 Target	2025 Target
Hire additional customer support	# staff hired	2 additional supervisors hired	4 additional agents hired	3 additional agents hired

8.5.2 Maturity Survey Results

According to its responses to the 2023 Maturity Survey, Liberty has a 2023 maturity level of 1.4 for community outreach and engagement. For 2024, Liberty projects no maturity changes, remaining at a maturity level of 1.4. For 2025, Liberty projects that it will slightly increase in maturity to a level of 1.8 (Figure 8.5-1).

Figure 8.5-1. Cross-Utility Maturity for Community Outreach and Engagement (Minimum Values)

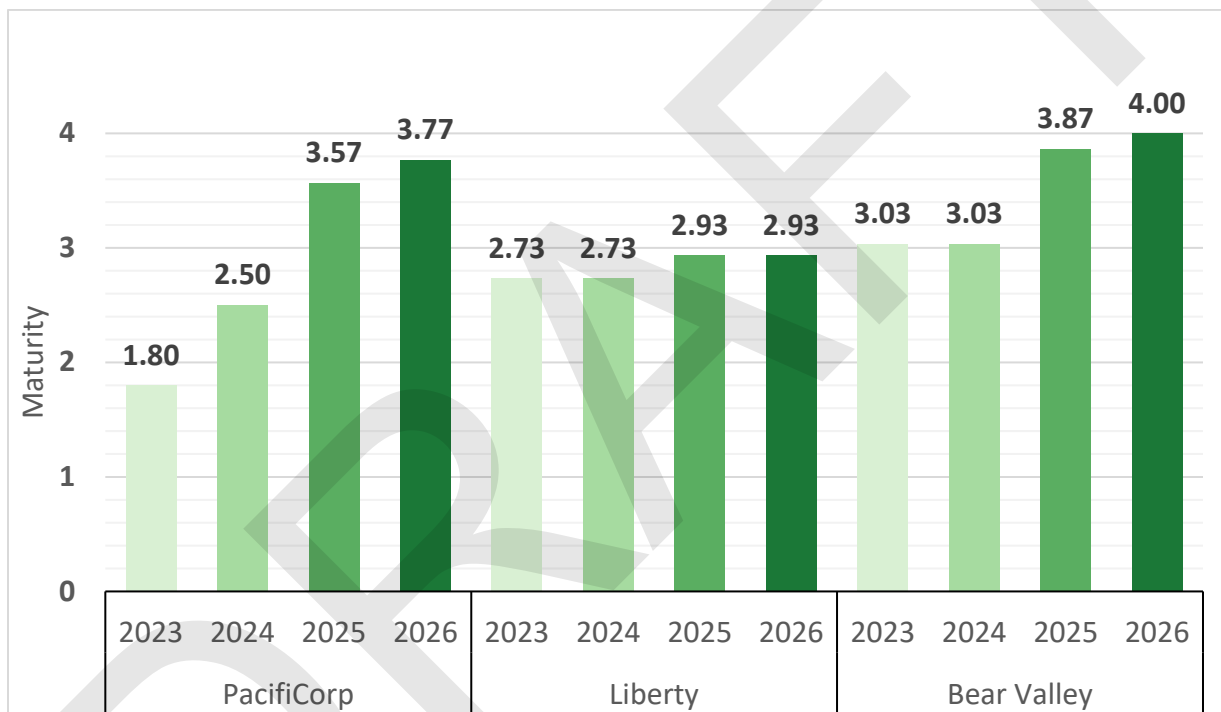


¹⁶⁶ Liberty’s 2023-2025 WMP R2, pages 346-349.

The utility’s maturity level for the community outreach and engagement category described above is calculated using the minimum value sub-capability of each capability. Using the capability average is another way to look at Liberty’s performance in community outreach and engagement. The capability average is determined from the average of all component sub-capabilities and is an additional tool to evaluate the utilities’ maturity.¹⁶⁷

When the category maturity is calculated using the capability average (rather than the minimum), Liberty has a maturity level for community outreach and engagement of 2.73 for 2023. It projects the same level for 2024 and a slight increase to 2.93 in 2025 (Figure 8.5-2).

Figure 8.5-2. Cross-Utility Maturity for Community Outreach and Engagement (Average Values)



The rest of this section reports on maturity levels considering the minimum values.

Liberty’s current maturity level in this category is in between its peers, with PacifiCorp and Bear Valley reporting at levels 0.8 and 2.4, respectively. See Figure 8.5-1.

Based on its responses to the 2023 Maturity Survey, Liberty reported its highest levels of projected maturity in the following capability for 2023 and 2024:

¹⁶⁷ For further information on maturity level determinations, see Section 4 of the 2023-2025 Electrical Corporation Wildfire Mitigation Maturity Model (second revision), published February 21, 2023.

- Cooperation and best practice sharing with other electrical corporations.¹⁶⁸

Based on its responses to the 2023 Maturity Survey, Liberty reported its lowest levels of projected maturity in the following capability for 2023 and 2024:

- Collaboration on local wildfire mitigation planning.¹⁶⁹

8.5.3 Liberty's WMP Strengths

Liberty projects improvement in community outreach and engagement over the WMP cycle in the following area: engagement with access and functional needs populations.

Liberty shows strength in evaluating the challenges and needs it has identified for its AFN customer base and outlining the specific objectives and goals to address these needs. Liberty states that in 2022 it identified AFN challenges that align with the primary risk driver analysis and guidance developed by the Joint IOU Statewide AFN Advisory Council and AFN Core Planning Team. These challenges include lack of identification, lack of preparation, and lack of communication.¹⁷⁰

To address each of the challenges, Liberty first outlines key objectives for 2023, followed by more granular goals to meet said objectives. Liberty's 2023 goals are organized into categories, including communications, resources, and AFN self-identification.¹⁷¹

8.5.3.1 2022 Areas for Continued Improvement

There were no areas for continued improvement for Liberty in its community outreach and engagement resulting from Energy Safety's evaluation of Liberty's 2022 WMP Update.

8.5.4 Areas for Continued Improvement

Energy Safety has no areas for continued improvement for Liberty under the community outreach and engagement section of its Base WMP.

¹⁶⁸ Liberty's responses to questions on the 2023 Maturity Survey under Category G "Community Outreach and Engagement," Capability 37 "Cooperation and best practice sharing with other electrical corporations."

¹⁶⁹ Liberty's responses to questions on the 2023 Maturity Survey under Category G "Community Outreach and Engagement," Capability 36 "Collaboration on local wildfire mitigation planning."

¹⁷⁰ Liberty's 2023-2025 WMP R2, pages 362-363.

¹⁷¹ Liberty's 2023-2025 WMP R2, pages 363-364.

9. Public Safety Power Shutoffs

In response to Section 9 of the Technical Guidelines,¹⁷² Liberty provided its key statistics regarding PSPS; circuits that have been frequently de-energized and measures for how to reduce PSPS implementation on those circuits; how its PSPS program will evolve over the next three and ten years; lessons learned for past PSPS events; and its protocols for PSPS implementation.

Below is Energy Safety's evaluation regarding Liberty's objectives and targets, maturity levels, and strengths in these areas.

9.1 Objectives and Targets

As part of its Base WMP, Liberty provided 3-year and 10-year objectives for its PSPS programs.¹⁷³

Liberty also defined quantitative targets for initiative activities for its PSPS programs. Liberty's Base WMP includes end-of-year targets for 2023, 2024, and 2025. Selected targets are included in Table 9.1-1.

Table 9.1-1. Liberty Public Safety Power Shutoffs – Selected Targets

Initiative Activity	Target Unit	2023 Target	2024 Target	2025 Target
System Automation Equipment	Automatic reclosers installed	8	8	4
Grid Monitoring Systems	Circuits installed	10	10	10

9.2 Maturity Survey Results

The Maturity Survey does not measure the maturity of a utility's PSPS operations separately from other mitigation efforts. While it does measure the maturity of PSPS likelihood, exposure potential, and vulnerability, these risk component maturity levels are primarily evaluated in Section 6, Risk Methodology and Assessment, and Section 7, Wildfire Mitigation Strategy Development. Individual maturity capabilities or survey questions related to PSPS are evaluated in the relevant subsection of Section 6.

¹⁷² [Technical Guidelines](#), Section 9, pages 195-206 (<https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true>, accessed May 5, 2023).

¹⁷³ Liberty's 2023-2025 WMP R2, pages 373-375.

9.3 Liberty's WMP Strengths

Liberty projects improvement in PSPS-related initiatives and activities over the WMP cycle.

Liberty has not proactively shut off power since the PSPS program's implementation in 2019. Liberty has had two potential events in which customers were notified of a potential PSPS event, but lines were ultimately not de-energized.¹⁷⁴

Liberty provided an extensive list of PSPS objectives, which linked PSPS impact reduction to many mitigation initiatives discussed in the WMP. As Liberty matures in its risk modeling capabilities, Energy Safety expects Liberty to improve its ability to quantify PSPS risk and how mitigations impact PSPS risk. See discussion of "PSPS and wildfire risk trade-off transparency" in Section 6.6.

9.3.1 2022 Areas for Continued Improvement

There were no areas for continued improvement for Liberty in PSPS resulting from Energy Safety's evaluation of Liberty's 2022 WMP Update.

9.4 Areas for Continued Improvement

Energy Safety has no areas for continued improvement for Liberty under the PSPS section of its Base WMP.

¹⁷⁴ Liberty's 2023-2025 WMP R2, pages 364-365.

10. Liberty's Process for Continuous Improvement

In response to Sections 10, 11, and 12 of the Technical Guidelines,¹⁷⁵ Liberty provided information on its lessons learned, a description of its corrective action program, and information on any Notices of Violation or Notices of Defects it has received.

Below is Energy Safety's evaluation regarding these steps to drive continuous improvement.

10.1 Lessons Learned

Section 10 of the Technical Guidelines requires a utility to use lessons learned to drive continuous improvement in its WMP. Lessons learned can be divided into the three main categories: (1) internal monitoring and evaluation, (2) external collaboration with other electrical corporations, and (3) feedback from Energy Safety or other authoritative bodies. This section includes an assessment of Liberty's implementation of lessons learned.

Liberty includes 13 lessons learned in its WMP.¹⁷⁶ Liberty's lessons learned cover all mitigation initiative categories.

One of the major lessons learned that Liberty discusses in its WMP is risk modeling best practices from across the California IOUs. Liberty states that it will continue to participate in the Energy Safety-led risk modeling working group to further its understanding of best practices in risk modeling. Energy Safety addresses its expectations for continued participation and implementation of lessons learned from the Energy Safety-led risk modeling working group. Particularly focusing in the area for continued improvement "Cross-Utility Collaboration on Risk Model Development."

Liberty is also planning pilot programs based on lessons learned. A notable example is Liberty's planned pilot of infrared inspections to address lessons learned from its asset inspection programs.

Many of Liberty's lessons learned originate from Energy Safety's findings during the WMP evaluation. Energy Safety will continue to closely monitor Liberty's implementation of improvements associated with these lessons learned.

¹⁷⁵ [Technical Guidelines](#), Section 10, pages 207-209; Section 11, pages 210-211; Section 12, pages 212-213 (<https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53286&shareable=true>, accessed May 5, 2023).

¹⁷⁶ Liberty's 2023-2025 WMP R2, Table 10-1 "Liberty WMP Lessons Learned," page 387.

10.2 Corrective Action Program

Section 11 of the Technical Guidelines requires a utility to describe its corrective action program (CAP) and a summary of the relevant portions of its existing procedures. This section includes an assessment of Liberty's implementation of its CAP relative to wildfire safety, including how it prevents recurrence of risk events; addresses findings from wildfire investigations; addresses findings from Energy Safety Compliance Assurance Division; and addresses areas for continued improvement identified by Energy Safety as applicable.

Liberty describes its corrective action program and reports on how it maintains the CAP and how it reviews each area for improvement.

Liberty states that it investigates the cause of each ignition and creates a corrective action. To reduce recurrence, Liberty plans to inspect all locations with that type of equipment or type of construction. In addition, Liberty plans to inspect the immediate area of the risk event to determine if a similar hazard exists within the area. Liberty also plans to review if relevant standards or inspections processes may help identify and prevent similar issues. Liberty reviews and updates its construction standards and inspection process documentation as necessary.¹⁷⁷

As part of its CAP, Liberty participates regularly in internal and external collaboration meetings where lessons learned are shared with other utilities, public safety partners, and other groups.¹⁷⁸

10.3 Areas for Continued Improvement

Energy Safety has no areas for continued improvement for Liberty in these areas of its Base WMP.

¹⁷⁷ Liberty's 2023-2025 WMP R2, page 393.

¹⁷⁸ Liberty's 2023-2025 WMP R2, page 395.

11. Required Areas for Continued Improvement

Energy Safety's evaluation of the 2023-2025 WMPs focused on each utility's strategies for reducing the risk of utility-related ignitions. The evaluation included assessing the utility's progress implementing wildfire mitigation initiatives, evaluating the feasibility of its strategies, and measuring year-to-year trends. As a result of this evaluation, Energy Safety identified areas where the utility should continue to improve its wildfire mitigation capabilities in future plans. The complete list of all Liberty's areas for continued improvement follows below.

11.1 Risk Methodology and Assessment

- **LU-23-01. Cross-Utility Collaboration on Risk Model Development**
 - Description: Liberty and the other IOUs have participated in past Energy Safety-sponsored risk model working group meetings. The risk model working group meetings facilitate collaboration among the IOUs on complex technical issues related to risk modeling. The risk model working group meetings are ongoing.
 - Required Progress: Liberty and the other IOUs must continue to participate in all Energy Safety-organized risk model working group meetings.
 - Discussed in Section 6, "Risk Methodology and Assessment."

- **LU-23-02. PSPS and Wildfire Risk Trade-Off Transparency**
 - Description: Liberty does not provide adequate transparency regarding PSPS and wildfire risk trade-offs, or how it uses risk ranking and risk buy-down to determine risk mitigation selection.
 - Required Progress: In its 2025 Update, Liberty must describe:
 - How it prioritizes PSPS risk in its risk-based decisions, including trade-offs between wildfire risk and PSPS risk.
 - How the rank order of its planned mitigation initiatives compares to the rank order of mitigation initiatives ranked by risk buy-down estimate, along with an explanation for any instances where the order differs.
 - Discussed in Section 6, "Risk Methodology and Assessment"; Section 7, "Wildfire Mitigation Strategy Development."

- **LU-23-03. Collaboration Between Vendor and Utility Risk Teams**
 - Description: Liberty has not shown how its internal team and risk model vendor will share risk modeling and mitigation related duties.
 - Required Progress: In its 2025 Update, Liberty must:
 - Demonstrate how Liberty differentiates between activities completed by the internal staff and vendor staff throughout risk modeling narratives. This includes processes, procedures, methodologies, flow charts, schematics, and any explanations that describe collaboration with a risk modeling vendor.
 - Demonstrate how Liberty identifies activities that require vendor discretion and state whether final approval from the Liberty risk team is required. This includes any decisions that need to be made, such as mitigation selection.
 - Indicate the source of the data where a description of data is required, specifically indicating whether the data are internally generated or vendor generated. If Liberty cannot indicate the source of the data, it must explain why.
 - Discussed in Section 6, “Risk Methodology and Assessment”

11.2 Wildfire Mitigation Strategy Development

- **LU-23-04. Vendor Fire Risk Model Implementation Milestones and Dates**
 - Description: Liberty’s operational and planning models may experience many changes once the vendor model implementation is complete. Energy Safety needs more information regarding improvements Liberty expects in its operational and planning models along with expected milestones and dates to ensure Liberty is being transparent about the state of its model maturity.
 - Required Progress: In its 2025 Update, Liberty must describe how it will use the new vendor risk modeling software to improve operational and/or planning risk analysis and provide a plan with milestones and dates for achieving those improvements.
 - Discussed in Section 7, “Wildfire Mitigation Strategy Development.”

- **Liberty-23-05. Cross-Utility Collaboration on Best Practices for Inclusion of Climate Change Forecasts in Consequence Modeling, Inclusion of Community Vulnerability in Consequence Modeling, and Utility Vegetation Management for Wildfire Safety**

- Description: Liberty and the other IOUs have participated in past Energy Safety-sponsored scoping meetings on these topics but have not reported other collaboration efforts.
- Required Progress: Liberty and the other IOUs must participate in all Energy Safety-organized activities related to best practices for:
 - Inclusion of climate change forecasts in consequence modeling.
 - Inclusion of community vulnerability in consequence modeling.
 - Utility vegetation management for wildfire safety.

Liberty must collaborate with the other IOUs on developing the above-mentioned best practices. In their 2025 Updates, the IOUs (not including independent transmission operators) must provide a status update on any collaboration with each other that has taken place, including a list of any resulting changes made to their WMPs since the 2023-2025 WMP submission.

- Discussed in Section 7, “Wildfire Mitigation Strategy Development”; 8.2, “Vegetation Management and Inspections.”

11.3 Grid Design, Operations, and Maintenance

- **LU-23-06. Effectiveness of SRP and Traditional Hardening**

- Description: Liberty states that it is not pursuing more installation of covered conductor due to implementation of SRP and the use of traditional hardening, but does not adequately demonstrate the effectiveness or comparability of SRP versus covered conductor.
- Required Progress: In its 2025 Update, Liberty must:
 - Provide its calculations for ignition reduction effectiveness for covered conductor compared to SRP, traditional hardening, and SRP in combination with traditional hardening. This must demonstrate considerations of various ignition risk drivers, deployment time and resources, performance comparison in forested versus non-forested areas, and risk model output of riskiest areas.

- Adjust its covered conductor targets accordingly based on the analysis provided.
 - Discussed in Section 8.1, “Grid Design, Operations, Maintenance.”
- **LU-23-07. Further Design Considerations**
 - Description: Liberty’s maturity for the grid design and resiliency capability does not project comparable growth when compared to its peers.
 - Required Progress: In its 2025 Update, Liberty must provide a plan demonstrating how it will progress in maturity for the grid design and resiliency capability by 2026. This must include advancements in considering grid localization features as well as non-electrical corporation equipment as part of its grid design, design evaluation, and grid impact evaluation. If Liberty does not find that it is necessary to advance in these areas, Liberty must justify why these considerations are not necessary as part of its wildfire risk evaluations.
 - Discussed in Section 8.1, “Grid Design, Operations, Maintenance.”
- **LU-23-08. Halting Detailed Distribution Inspections**
 - Description: Liberty elected to halt its Detailed Distribution inspections in 2023 to focus on reducing its work order backlog. Liberty did not explain how it will continue to manage its backlog after resuming detailed distribution inspections.
 - Required Progress: In its 2025 Update, Liberty must:
 - Update Energy Safety on the effectiveness of its decision to halt detailed inspections to address its work order backlog. Liberty must provide an analysis comparing the number of work orders closed in 2021, 2022, and 2023 to the number of work orders created in 2021, 2022, and 2023.
 - Explain how it will continue to reduce its backlog after resuming detailed inspections on January 1, 2024. This discussion must include a forecast of the number of tags Liberty expects to open in 2024 and 2025 that accounts for a potential increase in findings resulting from incorporating LiDAR, infrared, and drone technologies into its inspection portfolio. Liberty must provide the number of tags it expects to close in 2024 and 2025. If the utility expects to close ten percent or

more tags in either 2024 or 2025 than the average annual tags closed from 2020-2022, it must provide its reasoning.

- Discussed in Section 8.1.3, “Asset Inspections.”
- **LU-23-09. Covered Conductor Inspections and Maintenance**
 - Description: Liberty does not incorporate checks in its inspection programs that address failures specific to covered conductor. Liberty must tailor its inspection practices to address failure modes specifically related to covered conductor.
 - Required Progress: In its 2025 Update, Liberty must explain how failure modes unique to covered conductor will be accounted for in its inspections, including water intrusion, splice covers, and surface damage. If Liberty determines any or all the preceding changes are unnecessary, then it must provide how its current inspection and maintenance processes address covered conductor failure modes.
 - Discussed in Section 8.2, “Asset Inspections.”
- **LU-23-10. Distribution detailed inspection frequency**
 - Description: Liberty performs the minimum frequency of detailed inspections required by GOs 95 and 165. Liberty must strive to adopt a risk-based approach by increasing the frequency of detailed inspections on assets that have the highest risk according to its risk model.
 - Required Progress: In its 2025 Update, Liberty must either:
 - Outline a plan to update its detailed inspections in higher risk areas, including:
 - An analysis for determining the updated frequency for performing detailed inspections.
 - Prioritization of higher risk areas based on risk analysis and risk model output, including HFTD Tier 3 lands.
 - Updates to inspection checklists to account for equipment or configurations that may pose greater wildfire risk.
 - A plan to obtain any needed workforce for performing more frequent inspections; OR
 - Demonstrate that its existing inspection program adequately addresses risk. This must include analysis of the following:

- Number of Level 1 or critical issues found during detailed inspections.
 - Discussed in Section 8.2, "Asset Inspections."
- **LU-23-11. QA/QC sample size and pass rates**
 - Description: Liberty has created asset inspection QA/QC targets for 2023, but not for 2024 or 2025. Instead, Liberty explained it did not provide the 2024 and 2025 targets given the infancy of its program, and its intention to set these targets based on prior year experience. In its 2025 Update, Liberty must provide QA/QC pass rate targets for 2025.
 - Required Progress: Liberty must establish asset inspection QA/QC targets for 2025. The 2025 targets must demonstrate Liberty's progress toward industry standards in asset inspection QA/QC pass rates, and account for an appropriate increase in 2024. Liberty must strive to reach industry standard QA/QC pass rates by the end of 2025, such as SCE's target of 95 percent,¹⁷⁹ SDG&E's target of 100 percent,¹⁸⁰ and PG&E's target of 95 percent¹⁸¹ for distribution detailed inspections.
 - Discussed in Section 8.2, "Asset Inspections."
- **LU-23-12. Additional Inspection Practices**
 - Description: Liberty states that it plans to incorporate three technologies, LiDAR, infrared, and drone inspections, during the 2023-2025 WMP cycle. Liberty must provide more information on these programs.
 - Required Progress: In its 2025 Update, Liberty must:
 - Define the pilot program scope for each technology.
 - Provide a project milestone timeline for each technology.
 - Discussed in Section 8.2, "Asset Inspections."

¹⁷⁹ SCE's 2023-2025 WMP, page 327.

¹⁸⁰ SDG&E's 2023-2025 WMP, page 226.

¹⁸¹ PG&E's 2023-2023 WMP, page 528.

- **LU-23-013. Lightning arrester replacement**
 - Description: Liberty states that it is evaluating CAL FIRE-exempt arresters for the replacement of installed non-exempt arresters. Liberty has not provided a timeline for the evaluation and pilot process or a plan for identifying and tracking installed, non-exempt arresters.
 - Required Progress: In its 2025 Update, Liberty must provide:
 - A timeline for the evaluation and pilot phase of exempt lightning arrester installation.
 - A plan to identify and track currently installed non-exempt arresters.
 - Discussed in Section 8.3, “Equipment Maintenance and Repair.”

- **LU-23-14. Expulsion fuse replacement targets**
 - Description: Liberty has not provided expulsion fuse replacement targets for 2024 or 2025. Instead, Liberty explained it did not provide targets due to project delays resulting from a high rate of field failures associated with replacement fuses and its intended transition to a new type of expulsion fuse.¹⁸²
 - Required Progress: In its 2025 Update, Liberty must provide an expulsion fuse replacement target for 2025 that encompasses fuses to be replaced in both 2024 and 2025.
 - Discussed in Section 8.3, “Equipment Maintenance and Repair.”

- **LU-23-15. Reliability Impacts of SRP**
 - Description: Liberty has not demonstrated an understanding of the reliability impacts of using SRP.
 - Required Progress: In its 2025 Update, Liberty must:
 - Provide the following information for 2023 outages that occurred while SRP settings were enabled in a spreadsheet format:
 - Circuit impacted by outage.
 - Circuit segment impacted by outage.
 - Cause of outage (in line with QDR Table 6 drivers).
 - Number of customers impacted.

¹⁸² Liberty's 2023-2025 WMP R2, page 172.

- Number of customers impacted belonging to vulnerable populations (such as customers with access and functional needs and Medical Baseline customers).
 - Duration of outage.
 - Response time to outage.
 - Customer minutes of interruption.
 - Provide Liberty's calculations on the effectiveness of the SRP implementation. This must demonstrate calculations of avoided ignitions based on outages that occurred.
 - Discussion of any expected changes in SRP implementation based on the above, including percentages of coverage across Liberty's territory and SRP enablement thresholds used by Liberty.
 - Discussed in Section 8.5, "Grid Operations and Procedures."
- **LU-23-16. Evaluation of High Impedance Fault Detection**
 - Description: Liberty does not provide adequate justification as to why it is not moving forward with HIFD technology.
 - Required Progress: In its 2025 Update, Liberty must provide:
 - A list of the types of faults covered and not covered by HIFD showing 70 percent effectiveness as discussed in its WMP.
 - Evaluation of the effectiveness of HIFD in preventing ignitions, both independently and when used in combination with SRP.
 - Analysis demonstrating the percentage of unnecessary faults caused by HIFD. This should include qualitative as well as quantitative analysis in the form of results from implementation along the Liberty's Meyers 3400 circuit, including a spreadsheet of the faults and associated causes experienced during enablement.
 - Discussion of Liberty's coordination with other utilities on implementation of HIFD, including observed effectiveness.
 - Adjustment of its HIFD implementation targets accordingly given the above analysis.
 - Discussed in Section 8.5, "Grid Operations and Procedures."

11.4 Vegetation Management and Inspections

- **LU-23-17. Progress toward eliminating vegetation management work order backlog.**
 - Description: Liberty reports over 3,262 past-due vegetation management work orders in HFTD Tier 2 and Tier 3 lands.
 - Required Progress: In its 2025 Update, Liberty must provide:
 - A report of its past-due vegetation management work orders categorized by age¹⁸³ and priority condition.¹⁸⁴
 - A plan and timeline for eliminating the past-due work orders.
 - Discussed in Section 8.2, “Vegetation Management and Inspections.”

11.5 Situational Awareness and Forecasting

- **LU-23-18. Weather Station Optimization**
 - Description: In 2023, Liberty plans to use a weather station optimization tool to identify spatial gaps in its weather station network and determine if additional weather stations are needed.¹⁸⁵ Liberty must report on its progress as it completes the assessment.
 - Required Progress: In its 2025 Update, Liberty must:
 - Describe how the weather optimization tool was used to assess the density of weather stations in its service territory.
 - Provide any locations identified for additional weather stations installations.
 - Include the number of weather stations planned for future installations of weather stations, based on its assessment.
 - Discussed in Section 8.3, “Situational Awareness and Forecasting.”

¹⁸³ The age buckets must match those found in Table 8-31 in Liberty’s 2023-2025 WMP.

¹⁸⁴ These priority conditions (1-4 for potential tree or limb failures and 1-3 for potential tree growth encroachments) are defined by Liberty in its 2023-2025 WMP on pages 240-241.

¹⁸⁵ Liberty’s 2023-2025 WMP R2, page 258.

- **LU-23-19. Weather Station Maintenance, and Calibration**

- Description: Liberty reports having 35 weather stations in its network but no maintenance or calibrations on those weather stations in three years.¹⁸⁶ Frequent calibration and maintenance of weather stations is crucial for ensuring accurate, reliable, and high-quality data. As Liberty performs its annual weather station and maintenance and calibration, Energy Safety will need Liberty to report on the following to verify the integrity of the data collected from its weather station network.
- Required Progress: Liberty must:
 - Maintain and keep a log of all the annual maintenance and calibration for each weather station, including the station name, location, conducted maintenance, in compliance with Liberty's weather station installation document, as well as document the annual replacement of any sensors. The log must also include the length of time from initiation of a repair ticket to completion and the corrective maintenance performed to bring the station back into functioning condition.
 - In its 2025 Update, provide documentation indicating the number of weather stations that received their annual calibration and the number of weather stations that were unable to undergo annual maintenance and/or calibration due to factors such as remote location, weather conditions, customer refusals, environmental concerns, and safety issues. This documentation must include:
 - The station name and location.
 - The reason for the inability to conduct maintenance and/or calibration.
 - The length of time since the last maintenance and calibration.
 - The number of attempted but incomplete maintenance or calibration events for these stations in each calendar year.
- Discussed in Section 8.3, "Situational Awareness and Forecasting."

¹⁸⁶ Liberty's 2023-2025 WMP R2, page 256.

- **LU-23-20. Early detection of Ignitions with HD Cameras**
 - Description: Since its 2021 WMP update, Liberty has continually reported that it would partner/adopt HD wildfire cameras each year for early detection of wildfires. However, Liberty still does not have any equipment installed that can detect or monitor ignitions on the grid.
 - Required Progress: In its 2025 Update, Liberty must:
 - Provide a plan for the adoption of the targeted eight HD cameras, including what factors caused the delay and how Liberty is working to resolve the delay. Liberty must also provide an outline on the development and implementation of policy and procedures for HD cameras in its service territory.
 - Include the number and locations of all the HD cameras that have been adopted.
 - Provide an explanation, including any challenges, or roadblocks if the adoption, operationalization, or development of policies and procedures for HD cameras do not get implemented by the time of the submission of Liberty's 2025 Update.
 - Discussed in Section 8.3, "Situational Awareness and Forecasting."

12. Conclusion

Liberty's 2023-2025 Wildfire Mitigation Plan is approved.

Catastrophic wildfires remain a serious threat to the health and safety of Californians. Electrical corporations, including Liberty, must continue to make progress toward reducing utility-related ignition risk. Energy Safety expects Liberty to effectively implement its wildfire mitigation activities to reduce the risk of utility-related ignitions and the potential catastrophic consequences if an ignition occurs, as well as to reduce the scale, scope, and frequency of PSPS events. Liberty must meet the commitments in its WMP and fully address areas for continued improvement identified within this Decision to ensure it meaningfully reduces utility-related ignition and PSPS risk within its service territory over the plan cycle.



Shannon O'Rourke

Deputy Director | Electrical Infrastructure Directorate
Office of Energy Infrastructure Safety

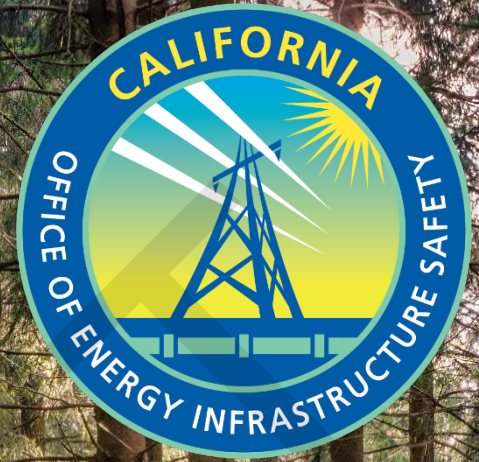
DATA DRIVEN FORWARD-THINKING INNOVATIVE SAFETY FOCUSED



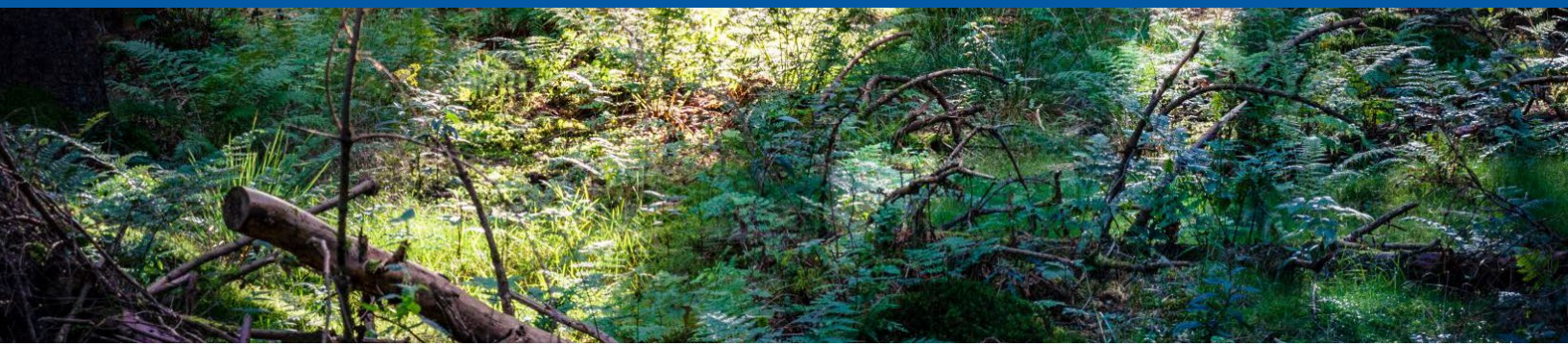
OFFICE OF ENERGY INFRASTRUCTURE SAFETY
A California Natural Resources Agency
www.energysafety.ca.gov

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





APPENDICES



APPENDICES

Appendix A. Glossary of Terms	A-2
Appendix B. Status of 2022 Areas for Continued Improvement.....	A-7
Appendix C. Liberty 2023 Revision Notice Critical Issues	A-10
Appendix D. Stakeholder Comments on the 2023-2025 Wildfire Mitigation Plans.....	A-19
Appendix E. Stakeholder Comments on the Revision Notice Response.....	A-21
Appendix F. Stakeholder Comments on the Draft Decision	A-22
Appendix G. Maturity Survey Results.....	A-23

DRAFT

Appendix A.

Glossary of Terms

Term	Definition
AFN	Access and functional needs
BVES	Bear Valley Electric Service
CAISO	California Independent System Operator
Cal Advocates	The Public Advocates Office at the California Public Utilities Commission
CAL FIRE	California Department of Forestry and Fire Protection
Cal OES	California Office of Emergency Services
CAP	Corrective Action Program
CBO	Community-based organization
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEJA	California Environmental Justice Alliance
CNRA	California Natural Resources Agency
CPUC	California Public Utilities Commission
D.	CPUC decision
DR	Data request
DWR	Department of Water Resources
EBMUD	East Bay Municipal Utility District
EFD	Early fault detection

Term	Definition
EPUC	Energy Producers and Users Coalition
EVM	Enhanced vegetation management
FERC	Federal Energy Regulatory Commission
FPI	Fire potential index
FWI	Fire weather index
GFN	Ground-fault neutralizers
GIS	Geographic information systems
GO	General order
GPI	The Green Power Institute
GRC	General rate case
HD	High definition
HFRA	High Fire Risk Area
HFTD	High fire threat district
HWT or Horizon West	Horizon West Transmission
I.	CPUC Investigation
ICS	Incident command system or structure
IOU	Investor-owned utility
IR	Infrared
ISA	International Society of Arboriculture
ITO	Independent transmission operator
kV	Kilovolt
Liberty	Liberty Utilities

Term	Definition
LiDAR	Light detection and ranging
Maturity Model	Electrical Corporation Wildfire Mitigation Maturity Model
Maturity Survey	Electrical Corporation Wildfire Mitigation Maturity Survey
MAVF	Multi-attribute value function
MBL	Medical Baseline
MGRA	Mussey Grade Road Alliance
ML	Machine learning
NDVI	Normalized difference vegetation index
NERC	North American Electric Reliability Corporation
NFDRS	National Fire Danger Rating System
NOD	Notice of defect
NOV	Notice of violation
OCM	Overhead circuit miles
OEIS or Energy Safety	Office of Energy Infrastructure Safety
PG&E	Pacific Gas and Electric Company
PoF	Probability of failure
PoI	Probability of ignition
PRC	Public Resources Code
PSPS	Public Safety Power Shutoff
Pub. Util. Code or PU Code	Public Utilities Code

Term	Definition
QA	Quality assurance
QC	Quality control
QDR	Quarterly Data Report
R.	CPUC rulemaking
RAMP	Risk Assessment and Management Phase
RCRC	Rural County Representatives of California
REFCL	Rapid earth fault current limiter
RFW	Red Flag Warning
RSE	Risk-spend efficiency
SAWTI	Santa Ana Wildfire Threat Index
SCADA	Supervisory control and data acquisition
SCE	Southern California Edison Company
SDG&E	San Diego Gas & Electric Company
S-MAP	Safety Model Assessment Proceeding, now the Risk-Based Decision-Making Framework Proceeding
SMJU	Small and multijurisdictional utility
TAT	Tree Assessment Tool
TBC	Trans Bay Cable
TURN	The Utility Reform Network
USFS	United States Forest Service
VM	Vegetation management
VRI	Vegetation risk index
WMP	Wildfire Mitigation Plan

Term	Definition
WRRM	Wildfire Risk Reduction Model
WSAB	Wildfire Safety Advisory Board
WSD	Wildfire Safety Division
WUI	Wildland-urban interface

DRAFT

Appendix B.

Status of 2022 Areas for Continued Improvement

Energy Safety's 2022 Decision¹ for each utility identified areas for continued improvement and associated required progress. Areas for continued improvement are where the utility must continue to improve its wildfire mitigation capabilities. As part of the 2023 WMP evaluation process, Energy Safety has reviewed the progress reported by Liberty and is satisfied that Liberty has made sufficient progress in 13 of the 16 identified areas for continued improvement.

Areas for continued improvement identified in 2022 either have been addressed or any outstanding matters are incorporated in the 2023 areas for continued improvement. Liberty's 2022 areas for continued improvement are listed in Table A-1. The status column indicates whether each has been fully addressed. If not, the column notes where to find more information in this Decision.

¹ Insert link to last year's Energy Safety Decision

Table A-1. Liberty 2022 Areas for Continued Improvement

ID	Title	Status
LU-22-01	Collaboration and Research in Best Practices in Relation to Climate Change Impacts and Wildfire Risk and Consequence Modeling.	Liberty has sufficiently addressed the required progress.
LU-22-02	Inclusion of Community Vulnerability in Consequence Modeling.	Liberty has sufficiently addressed the required progress.
LU-22-03	Wildfire Consequence Modeling Improvements.	Liberty has sufficiently addressed the required progress.
LU-22-04	Review, Re-categorize and Fully Justify Risk Events that are Defined as "Other" and "Unknown."	Liberty has sufficiently addressed the required progress.
LU-22-05	Further Evaluate Risk Trends to Apply More Specific Lessons Learned.	Liberty has sufficiently addressed the required progress.
LU-22-06	Update Equipment and Procedures for Detecting Ignitions Along the Grid.	Liberty has sufficiently addressed the required progress thus far. Energy Safety will continue to monitor progress.
LU-22-07	Update Progress Associated with Distribution Fault Anticipation / High-Impedance Fault Detection Research.	Liberty has sufficiently addressed the required progress.
LU-22-08	Justification of Weather Station Density.	Liberty has not sufficiently addressed the required progress. For related areas for continued improvement, see Sections 8.1 and 11 of this Decision.

ID	Title	Status
LU-22-09	Apply Joint Lessons Learned Concerning Covered Conductor.	Liberty has sufficiently addressed the required progress thus far; Energy Safety will continue to monitor progress.
LU-22-10	Determine Best Practices for Covered Conductor Inspection and Maintenance.	Liberty has not sufficiently addressed the required progress. For related areas for continued improvement, see Sections 8.1 and 11 of this Decision.
LU-22-11	Address Unmet Grid Hardening Targets.	Liberty has sufficiently addressed the required progress thus far; Energy Safety will continue to monitor progress.
LU-22-12	Progress on Formal QA/QC Program for Asset Inspections.	Liberty has not sufficiently addressed the required progress. For related areas for continued improvement, see Sections 8.1 and 11 of this Decision.
LU-22-13	Further Integrate Risk-Informed Decision Making into Inspection Scheduling and Planning.	Liberty has sufficiently addressed the required progress.
LU-22-14	Participate in Vegetation Management Best Management Practices Scoping Meeting.	Liberty has sufficiently addressed the required progress thus far; Energy Safety will continue to monitor progress.
LU-22-15	Improve Transparency of the Initiative Selection Process.	Liberty has sufficiently addressed the required progress.
LU-22-16	Commit to Short-Term PSPS Reduction Targets	Liberty has sufficiently addressed the required progress.

Appendix C.

Liberty 2023 Revision Notice

Critical Issues

As discussed in Section 3.4 of this Decision, Energy Safety issued Liberty a Revision Notice on September 6, 2023. The Revision Notice required Liberty to remedy five critical issues identified by Energy Safety during evaluation of Liberty's 2023-2025 Wildfire Mitigation Plan. Each critical issue is discussed in detail under the respective Decision section; Table A-1 below lists all five critical issues and provides a status of each issue.

DRAFT

Table A-2. Liberty 2023 Revision Notice Critical Issues

Critical Issue ID & Title	Critical Issue Description	Required Remedy	Critical Issue Status
<p>RN-LU-23-01: Procedures for independent review of risk modeling</p>	<p>The Technical Guidelines require a utility to report on its procedures for independent review of data used to support its decision-making process. Liberty did not provide a definitive response to this requirement and cites its current risk model transition initiatives as the reason.</p> <p>Liberty states it performs internal reviews of data used in risk modeling and data that is provided to vendors as risk modeling inputs, however Liberty does not provide any explanation on how the reviews are performed. Liberty also states it has executed an agreement with a vendor that will provide wildfire risk analysis services and that Liberty will consider establishing robust internal and external review procedures for its risk modeling data as its risk modeling process matures.</p> <p>Liberty must have an independent review process for data that is collected (e.g., model input) and generated (e.g., through risk models) to validate the model. Liberty’s current state of transitioning to a new risk model does</p>	<p>Liberty must revise Section 6.6.1 of its WMP with information explaining:</p> <ol style="list-style-type: none"> 1. Liberty’s current processes for performing internal reviews of data used in risk modeling and any risk modeling inputs provided to vendors. 2. An estimated completion date for the risk model transition. 3. The procedures Liberty expects to apply for the following model validation activities once the model implementation is complete: <ul style="list-style-type: none"> · Independent review. · Additional review triggers. · Routine review schedule. 4. When Liberty expects to begin conducting the validation activities described in item 3 above. 	<p>Liberty has resolved the critical issue and has satisfied the required remedy for RN-LU-23-01.</p>

Critical Issue ID & Title	Critical Issue Description	Required Remedy	Critical Issue Status
	<p>not preclude it from explaining its current and future plans and procedures for independent review.</p>		
<p>RN-LU-23-02: Decreased covered conductor targets</p>	<p>Liberty is decreasing its rate for covered conductor installation when comparing the 2023-2025 WMP to previous WMPs. Liberty plans 9.22 miles of covered conductor installations from 2023 through 2025, which is fewer than the number of miles planned for installation in 2022 alone, as seen in Table 1 below.</p> <p><i>Table 1: Liberty’s Annual Covered Conductor Installation Mileage²</i></p> <p>(For RN-LU-23-02 Table 1, see below.)</p> <p>Liberty’s justification for its reduced targets is that it is expanding the use of sensitive relay profile (SRP) settings and increasing its traditional hardening</p>	<p>Liberty must update Section 8.1.2 of its WMP to include analysis demonstrating that the use of SRP and traditional hardening provide effective risk reduction when compared to covered conductor. The revision must show Liberty’s decision-making process accounting for reducing the risk of specific ignition drivers at a given location, feasibility, deployment time, and cost.</p> <p>Liberty must also adjust its hardening targets to continue progressing towards aggressive and feasible goals that maximize risk reduction.</p>	<p>Liberty has de-escalated the critical issue; however, Liberty must demonstrate continued progress as described in Section 11 (LU-23-07).</p>

² 2019 through 2022 numbers from Liberty’s 2022 WMP, Table 5.3-1: List and Description of Program Targets, last 5 years, page 82; 2023 through 2025 numbers from Liberty’s 2023-2025 WMP, Table 8-3: Liberty Grid Design, Operations, and Maintenance Targets by Year, page 147.

Critical Issue ID & Title	Critical Issue Description	Required Remedy	Critical Issue Status
	<p>program,³ as seen in Table 1 above.⁴ Even when including planned miles for traditional hardening, Liberty’s overall hardening targets are still fewer than its previous plans. From 2020 to 2022, Liberty averaged 6.71 miles hardened a year, all through the installation of covered conductor. From 2023 to 2025, Liberty is planning an average of 5.74 miles hardened per year, including both covered conductor and traditional hardening.</p> <p>Liberty states that the actual effectiveness of covered conductor is still nonconclusive given the short time period in which Liberty has used it.⁵ However, other electrical corporations have implemented covered conductor for years and have begun recording actual effectiveness for ignition risk in-field. While some variance on the conclusions</p>		

³ Traditional hardening includes “[considerations] used for traditional overhead hardening can include such things as stronger poles, stronger wire, shorter spans, more space between phases, less sag, greater vegetation clearance, and use of CALFIRE-exempt hardware.” Liberty’s 2023-2025 WMP, page 160.

⁴ 2023 WMP Reply Comments of Liberty Utilities, page 4.

⁵ Liberty’s 2023-2025 WMP, page 154.

Critical Issue ID & Title	Critical Issue Description	Required Remedy	Critical Issue Status
	<p>of actual effectiveness exists, and electrical corporations are still working on an agreed effectiveness, electrical corporations are observing and calculating an overall range of approximately 60 to 90 percent effectiveness.⁶ Additionally, traditional hardening options do not compare as favorably to covered conductor in terms of mitigating the sub-drivers for ignitions.⁷</p>		
<p>RN-LU-23-03: Strategy to address past-due work orders</p>	<p>In its WMP, Liberty states it will halt detailed distribution inspections in 2023 and instead shift resources toward responding to and closing out work orders in the backlog. This is due to Liberty reporting a continually increasing number of open work orders since 2021, with a backlog since 2020. This includes 308 work orders overdue by more than 181 days within the HFTD.</p>	<p>Liberty must update Sections 8.1.7 and 8.1.9 of its WMP, as applicable, to include its analysis of all options considered in determining where to obtain workforce and resources to address its work order backlog, including a comparison between reducing the number of detailed asset inspections and halting all</p>	<p>Liberty has de-escalated the critical issue; however, Liberty must demonstrate continued progress as described in Section 11 (LU-23-10).</p>

⁶ Liberty’s 2023-2025 WMP, Appendix F: CC Effectiveness Workstream Joint IOU Report.

⁷ 2022 Effectiveness of Covered Conductor report, Table 13: Mitigation Effectiveness Comparison of Alternatives to Covered Conductor, page 36.

Critical Issue ID & Title	Critical Issue Description	Required Remedy	Critical Issue Status
	<p>However, Liberty has not provided an analysis supporting the resource reallocation. Such an analysis should include considerations of alternative options, a timeline of specific goals, and an understanding of unattended risk resulting from halting inspections.</p> <p>Additionally, Liberty’s targets for detailed distribution inspections are not aligned with Liberty’s plans to halt detailed inspections for 2023. Liberty states that it is targeting to complete 156.4 circuit miles of detailed distribution inspections by the end of 2023, which represents about 20 percent of its distribution circuit miles. 20 percent is the approximate percentage of circuit miles Energy Safety would expect Liberty to inspect in 2023 without halting detailed inspections.</p>	<p>detailed asset inspections. This analysis must at a minimum include weighing pros and cons for each alternative, expected time and cost for completion, and feasibility.</p> <p>Liberty must provide a timeline for completing repairs and associated work from its backlog, including the amount of work orders Liberty plans on addressing per quarter. Additionally, Liberty must provide a date for when it plans to restart its detailed distribution inspections.</p>	
<p>RN-LU-23-04: Asset inspection QA/QC pass rates</p>	<p>Liberty has not provided sample sizes or yearly target pass rates for some of its quality assurance (QA) and quality control (QC) activities, as required by the 2023-2025 WMP Technical Guidelines.⁸ Liberty states in its WMP that it has a</p>	<p>Given the infancy of Liberty’s QA/QC program, Liberty must work with other electrical corporations to establish acceptable pass rates based on industry-standard criteria. This</p>	<p>Liberty has de-escalated the critical issue; however, Liberty must demonstrate continued progress as described in Section 11 (LU-23-11).</p>

⁸ Technical Guidelines, pages 86 and 110-111.

Critical Issue ID & Title	Critical Issue Description	Required Remedy	Critical Issue Status
	<p>newly developed asset inspection QA/QC program but that the pass rates and pass rate targets are not available. Liberty states that it will establish the pass rates and targets during its 2023 QA/QC of asset inspections but had yet to provide such pass rates.⁹</p> <p>Pass rates are critical to understanding and tracking the performance of QA/QC audits, and to better integrating needed improvements in particular areas. Pass rates should be goals set by utilities to improve inspection practices, and therefore Liberty should have its pass rates and targets before its QA/QC of asset inspection. While Liberty may not have its current pass rate, given this is the first year of completing its new QA/QC program, Liberty must at least set an estimated pass rate goal for tracking purposes.</p> <p>In a response to a data request, Liberty stated it expects to take two years of program implementation and data collection to determine the appropriate metrics and scoring criteria to measure</p>	<p>could be as simple as establishing the percentage of QA/QC audits that do not have any sort of finding until Liberty is able to develop a more robust analysis after collecting more data.</p> <p>Liberty must revise Table 8-10 of its WMP to define yearly target pass rates for 2023 through 2025 for its asset management and inspections QA and QC programs.</p>	

⁹ Liberty’s 2023-2025 WMP, page 182.

Critical Issue ID & Title	Critical Issue Description	Required Remedy	Critical Issue Status
	<p>QA/QC program performance.¹⁰ Energy Safety understands and expects that Liberty will mature and refine its pass rates as more data becomes available. However, other electrical corporations with similar QA/QC programs have already implemented and established pass rates and have been using set criteria to determine pass rates for years. Liberty should therefore use the QA/QC pass rates developed by other electrical corporations as resources to help determine its own QA/QC pass rates.</p>		
<p>RN-LU-23-05: Expulsion fuse replacement targets</p>	<p>In its WMP, Liberty states that one of the current-limiting fuse options on the market was experiencing failures and therefore halted its expulsion fuse replacements. Due to these circumstances, Liberty states that it did not provide program targets from 2023 through 2025. Given that expulsion fuses are a known ignition risk given the hot material that is expulsed when the fuse</p>	<p>Liberty must revise Sections 8.1.2.12 and 8.1.4, as well as Table 8-3, of its WMP to update its targets for fuse replacements for 2023 through 2025 to align with the new information provided in its response to Data Request OEIS-P-WMP_LU-001, Question 3. If Liberty is still</p>	<p>Liberty has de-escalated the critical issue; however, Liberty must demonstrate continued progress as described in Section 11 (LU-23-14).</p>

¹⁰ Data Request [OEIS-P-WMP_2023-LU-001](https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=54329&shareable=true) (Question 4) (https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=54329&shareable=true, accessed September 1, 2023).

Critical Issue ID & Title	Critical Issue Description	Required Remedy	Critical Issue Status
	<p>operates, it has become an industry practice to replace expulsion fuses within the CPUC's high fire threat district (HFTD). Many other utilities have already replaced all known fuses with CAL FIRE exempt equipment or are close to reaching such goals.</p> <p>In response to a data request, Liberty stated that it has now identified an alternative non-expulsion fuse and plans to replace "as many fuses as possible throughout 2023" with energy limiting fuses (ELF), another type of current-limiting fuse. Given that Liberty is moving forward with fuse replacements, it must set associated targets in order to track progress or explain why it is still unable to provide targets.</p>	<p>determining such targets, Liberty must provide:</p> <ul style="list-style-type: none"> • An explanation as to the delay for being unable to set targets. • A timeline for when Liberty expects it will be able to determine targets. • Any interim mitigations being used to monitor expulsion fuses currently in-field. 	

RN-LU-23-02 Table 1: Liberty's Annual Covered Conductor Installation Mileage ¹¹

Year	Covered Conductor Miles Completed/Planned	Traditional Overhead Hardening Miles Completed/Planned
2019	2.7 mi completed	-
2020	6.82 mi completed	-
2021	3.75 mi completed	-
2022	9.55 mi planned	-
2023	2.41 mi planned	4 mi planned
2024	4.03 mi planned	2 mi planned
2025	2.78 mi planned	2 mi planned

¹¹ 2019 through 2022 numbers from Liberty's 2022 WMP, Table 5.3-1: List and Description of Program Targets, last 5 years, page 82; 2023 through 2025 numbers from Liberty's 2023-2025 WMP, Table 8-3: Liberty Grid Design, Operations, and Maintenance Targets by Year, page 147.

Appendix D.

Stakeholder Comments on the 2023-2025 Wildfire Mitigation Plans

Energy Safety invited stakeholders, including members of the public, to provide comments on the utilities' 2023-2025 WMPs. Opening comments on the SMJU WMPs were due on June 29, 2023, and reply comments were due on July 10, 2023. The following individuals and organizations submitted comments:

- California Department of Fish and Wildlife (CDFW).
- The Green Power Institute (GPI).
- The Public Advocates Office at the California Public Utilities Commission (Cal Advocates).
- Rural County Representatives of California (RCRC).

Comments received on the 2023-2025 WMPs can be viewed in the 2023-2025 Wildfire Mitigation Plan (2023-2025-WMPs) docket log.

Energy Safety evaluated these comments and concurred with and in some instances incorporated stakeholder input on Liberty's 2023-2025 WMP.

Energy Safety found the following stakeholder comments to concur with topics already included in Energy Safety's findings:

- GPI.
 - Work order Backlog/Halting asset inspections.
 - SRP analysis.
 - Mitigation selection.
 - Mitigation Strategy Development.
 - Risk Modeling Software Use Cases.
 - Risk Modeling Development Timeline.
 - Risk Modeling Maturity Initiatives.
 - Inspection Scheduling and Planning.
 - Develop a plan to eliminate its vegetation management backlog.
- Cal Advocates.
 - Risk informed asset inspections.

- Work order Backlog/Halting asset inspections.
- Asset inspection QA/QC.

The following stakeholder comments introduced new information that influenced Energy Safety's findings:

- GPI.
 - Included in RN RN-LU-23-02 to further evaluate covered conductor as an alternative and justify decreased targets.

Appendix E.

Stakeholder Comments on the Revision Notice Response

Energy Safety invited stakeholders, including members of the public, to provide comments on Liberty's Revision Notice Response. Opening comments on Liberty's Revision Notice Response were due on October 23, 2023, and reply comments were due on November 2, 2023. The following individuals and organizations submitted comments:

- The Green Power Institute (GPI).
- The Public Advocates Office at the California Public Utilities Commission (Cal Advocates).

Comments received on Liberty's Revision Notice Response can be viewed in the 2023-2025 Wildfire Mitigation Plan (2023-2025-WMPs) docket log.

Energy Safety evaluated these comments and concurred with and in some instances incorporated stakeholder input on Liberty's Revision Notice Response.

Energy Safety found the following stakeholder comments to concur with topics already included in Energy Safety's findings:

- GPI.
 - Vendor role in risk modeling.
 - SRP analysis.
 - Repair back-log timeline.
 - Progress on expulsion fuse replacements.
- Cal Advocates.
 - Risk model transition timeline.

Appendix F.

Stakeholder Comments on the Draft Decision

This appendix will contain Energy Safety's summary of stakeholder comments on Energy Safety's draft Decision on Liberty's 2023-2025 Wildfire Mitigation Plan.

DRAFT

Appendix G.

Maturity Survey Results

Energy Safety's 2023-2025 Electrical Corporation Wildfire Mitigation Maturity Model¹² (Maturity Model) and 2023 Electrical Corporation Wildfire Mitigation Maturity Survey¹³ (Maturity Survey) together provided a quantitative method to assess the maturity of each utility's wildfire risk mitigation program.

The Maturity Model consists of 37 individual capabilities describing the ability of electrical corporations to mitigate wildfire risk within their service territory. The 37 capabilities are aggregated into seven categories. The seven mitigation categories are:

- A. Risk Assessment and Mitigation Selection.
- B. Situational Awareness and Forecasting.
- C. Grid Design, Inspections, and Maintenance.
- D. Vegetation Management and Inspections.
- E. Grid Operations and Protocols.
- F. Emergency Preparedness.
- G. Community Outreach and Engagement.

Maturity levels range from 0 (below minimum requirements) to 4 (beyond best practice). Electrical corporations' responses to the Maturity Survey, listed by mitigation category, are depicted in the figures and tables below.

Tables A-3 and A-4 compare the SMJUs' maturity levels across mitigation categories showing minimum values and average values. Figure A-1 shows Liberty's projected maturity growth throughout the WMP cycle. Figure A-2 provides a one-page look at all Liberty's maturity levels for the WMP cycle, including at the capability and sub-capability levels, showing both minimum and average calculations.

¹² [2023-2025 Electrical Corporation Wildfire Mitigation Maturity Model \(Second Revised Final, Feb. 2023\)](https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53394&shareable=true) (https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53394&shareable=true, accessed May 5, 2023).

¹³ [2023 Electrical Corporation Wildfire Mitigation Maturity Survey \(Revised Final, April 2023\)](https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53708&shareable=true) (https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53708&shareable=true, accessed May 5, 2023). This is the version used by Energy Safety when scoring the survey.

Table A-3. Cross-Utility Maturity Level by Category¹⁴ (Minimum Values)

Maturity Category	PacifiCorp		Liberty		Bear Valley	
	2023	2026	2023	2026	2023	2026
A. Risk Assessment and Mitigation Selection	0.00	1.83	0.00	0.00	0.83	1.33
B. Situational Awareness and Forecasting	0.00	2.33	0.00	0.50	0.83	2.00
C. Grid Design, Inspections, and Maintenance	0.40	2.40	0.20	0.60	1.00	2.80
D. Vegetation Management and Inspections	0.00	2.25	0.00	0.00	1.00	2.25
E. Grid Operations and Protocols	0.20	2.40	0.60	1.40	0.80	2.00
F. Emergency Preparedness	0.33	2.83	0.50	1.17	1.50	2.17
G. Community Outreach and Engagement	0.80	3.60	1.40	1.80	2.40	4.00

¹⁴ Table A-3 displays the utilities' maturity level at the start of the current WMP cycle (2023) and their level at the end of the cycle (2026).

Table A-4. Cross-Utility Maturity Level by Category¹⁵ (Average Values)

Maturity Category	PacifiCorp		Liberty		Bear Valley	
	2023	2026	2023	2026	2023	2026
A. Risk Assessment and Mitigation Selection	0.86	3.35	0.43	0.51	3.01	3.37
B. Situational Awareness and Forecasting	1.60	3.43	0.64	2.40	2.99	3.46
C. Grid Design, Inspections, and Maintenance	1.23	3.47	1.28	2.27	2.77	3.58
D. Vegetation Management and Inspections	1.06	3.31	2.19	2.19	2.69	3.31
E. Grid Operations and Protocols	1.49	3.42	1.77	2.98	2.48	3.50
F. Emergency Preparedness	1.18	3.31	1.61	1.89	2.58	3.19
G. Community Outreach and Engagement	1.80	3.77	2.73	2.93	3.03	4.00

¹⁵ Table A-4 displays the utilities maturity level at the start of the current WMP cycle (2023) and their level at the end of the cycle (2026).

Figure A-1. Liberty Projected Growth in Maturity throughout Current WMP Cycle by Category

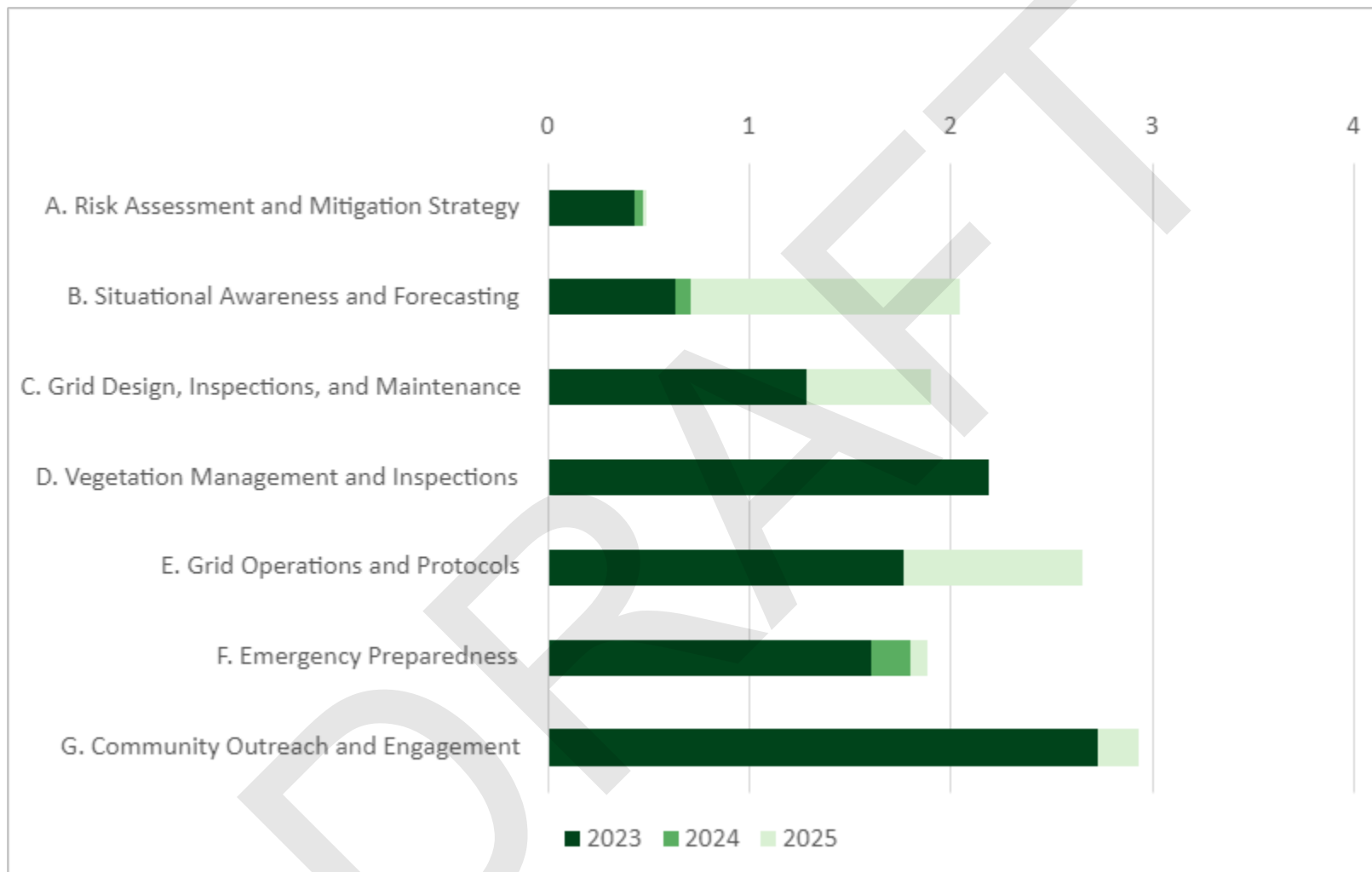


Figure A-2. Liberty Comprehensive Maturity Survey Results

		1. Capability				2. Capability				3. Capability				4. Capability				5. Capability				6. Capability			
		2023	2024	2025	2026	2023	2024	2025	2026	2023	2024	2025	2026	2023	2024	2025	2026	2023	2024	2025	2026	2023	2024	2025	2026
A. Risk Assessment and Mitigation Strategy		1. Statistical weather, climate, and wildfire modeling				2. Calculation of wildfire and PSPS risk exposure for societal values				3. Calculation of community vulnerability to wildfire and Public Safety Power Shutoffs (PSPS)				4. Calculation of risk and risk components				5. Risk event tracking and integration of lessons learned				6. Risk-informed wildfire mitigation strategy			
	Minimum of Sub-Cap.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Average of Sub-Cap.	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.1	0.1	0.1	0.1	1.3	1.4	1.4	1.4	0.1	0.3	0.4	0.5
B. Situational Awareness and Forecasting		7. Ignition likelihood estimation				8. Weather forecasting ability				9. Wildfire spread forecasting				10. Data collection for near-real-time conditions				11. Wildfire detection and alarm systems				12. Centralized monitoring of real-time conditions			
	Minimum of Sub-Cap.	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
	Average of Sub-Cap.	0.4	0.5	1.6	2.3	0.7	0.7	1.0	1.1	0.4	0.4	1.3	1.8	0.9	0.9	2.1	2.9	0.0	0.0	3.0	3.2	1.4	1.4	3.2	3.2
C. Grid Design, Inspections, and Maintenance		13. Asset inventory and condition database				14. Asset inspections				15. Asset maintenance and repair				16. Grid design and resiliency				17. Asset and grid personnel training and quality							
	Minimum of Sub-Cap.	1.0	1.0	1.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0				
	Average of Sub-Cap.	2.5	2.5	2.5	2.5	0.3	0.3	1.7	2.0	0.8	0.8	1.5	1.5	1.3	1.3	2.3	2.3	1.5	1.5	1.5	3.0				
D. Vegetation Management and Inspections		18. Vegetation inventory and condition database				19. Vegetation inspections				20. Vegetation treatment				21. Vegetation personnel training and quality											
	Minimum of Sub-Cap.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0								
	Average of Sub-Cap.	3.0	3.0	3.0	3.0	2.3	2.3	2.3	2.3	2.0	2.0	2.0	2.0	1.5	1.5	1.5	1.5								
E. Grid Operations and Protocols		22. Protective equipment and device settings				23. Incorporation of ignition risk factors in grid control				24. PSPS operating model				25. Protocols for PSPS re-energization				26. Ignition prevention and suppression							
	Minimum of Sub-Cap.	0.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	3.0	1.0	1.0	1.0	1.0	2.0	2.0	2.0	2.0				
	Average of Sub-Cap.	2.0	2.0	3.2	3.3	0.0	0.0	0.6	1.4	2.0	2.0	3.3	3.8	2.5	2.5	2.8	3.0	2.3	2.3	3.3	3.3				
F. Emergency Preparedness		27. Wildfire and PSPS emergency and disaster preparedness plan				28. Collaboration and coordination with public safety partners				29. Public emergency communication strategy				30. Preparedness and planning for service restoration				31. Customer support in wildfire and PSPS emergencies				32. Learning after wildfires and PSPS incidents			
	Minimum of Sub-Cap.	2.0	4.0	4.0	4.0	0.0	1.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0
	Average of Sub-Cap.	3.5	4.0	4.0	4.0	2.0	2.5	3.0	3.0	0.8	1.0	1.0	1.0	1.8	1.8	1.8	1.8	0.0	0.0	0.0	0.0	1.5	1.5	1.5	1.5
G. Community Outreach and Engagement		33. Public outreach and education awareness				34. Public engagement in electrical corporation wildfire mitigation planning				35. Engagement with AFN and socially vulnerable populations				36. Collaboration on local wildfire mitigation planning				37. Cooperation and best practice sharing with other electrical corporations							
	Minimum of Sub-Cap.	2.0	2.0	3.0	3.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	1.0	1.0	3.0	3.0	3.0	3.0				
	Average of Sub-Cap.	3.0	3.0	3.5	3.5	2.7	2.7	2.7	2.7	2.3	2.3	2.3	2.3	2.0	2.0	2.5	2.5	3.7	3.7	3.7	3.7				