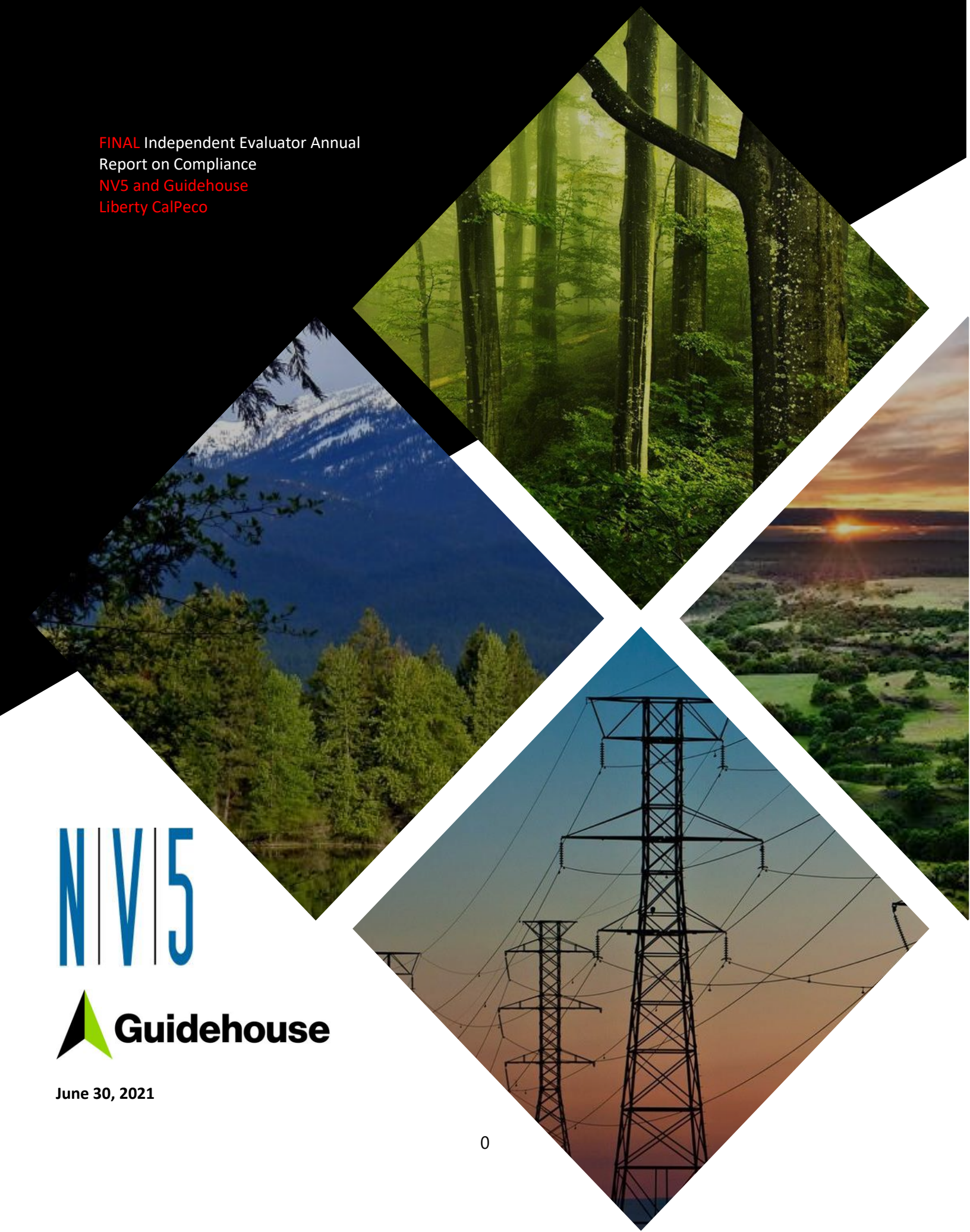
FINAL Independent Evaluator Annual Report on Compliance
NV5 and Guidehouse
Liberty CalPeco



NV5

Guidehouse

June 30, 2021

Contents

1 Executive Summary

The Executive Summary should contain key takeaways from the Independent Evaluator's evaluation, including key findings from the Independent Evaluator's audit of WMP activity completion, verification of funding, and verification of QA/QC programs.

Liberty Utilities (CalPeco Electric) ("Liberty") is a small multi-jurisdictional utility serving approximately 49,000 customers along the western and southern shores of Lake Tahoe in northern California. Liberty's service area covers a relatively compact area of forested wildlife habitats encompassing dense vegetation, high mountains, and the local communities. Accordingly, Liberty's service area represents areas of California Public Utilities Commission-defined High Fire Threat Districts (HFTDs) including Tier 2 elevated and Tier 3 extreme risk areas.

Liberty has put forth considerable effort to prevent ignitions and mitigate the impact of wildfire across its substantial service territory. Through emerging technologies, enhanced mitigation practices, and refined quality assurance (QA)/quality control (QC) (collectively "QA/QC") processes, Liberty is working to achieve risk reduction benefits for their communities in the face of growing threat of increased wildfire events and potential proactive de-energization activations as a measure of last resort. To achieve these risk reduction results Liberty tracked and monitored activities as they are executed to maintain conditional awareness of controllable risk drivers, which may lead to a catastrophic ignition event.

This report demonstrates a review of the wildfire mitigation initiatives that Liberty implemented in 2020 and an accounting of whether Liberty met its performance objective targets, whether it is underfunding any of those initiatives, and whether Liberty is following its quality assurance/quality control processes. The Independent Evaluator (IE) review of these elements determined that Liberty is largely achieving the reviewed initiative objectives, is not failing to fund the portfolio of its initiatives, and lastly, appears to be following its QA/QC processes. The IE noted that several initiatives may require additional investigation or inquiry by the CPUC Wildfire Safety Division (WSD) to validate activities across all Wildfire Mitigation Plan (WMP) initiatives.

This report represents the IE's review, assessment, and findings of the IE on this inaugural effort to perform the statutorily mandated evaluation. In response to California Public Utilities Code §8386.3 Liberty and other California electrical corporations (ECs) contracted with eligible IEs[1] to perform the activities described in the *Final Independent Evaluator Scope of Work for the Review of Compliance with 2020 WMP* issued April 21, 2021 to meet statutory requirements of independently evaluated Wildfire Mitigation Plans (WMPs) by July 1, 2021.[2]

By May 18, 2021, Liberty contracted with the IE and launched the evaluation with an accelerated scope to meet all required objectives under the assessment's timeline duration and presented schedule. The IE met the evaluation tasks and produced a draft IE report on June 15, 2021 for the WSD's initial

[1] Qualified Independent Evaluators were identified Wildfire Safety Division (WSD) *IE Enlistment Announcement* issued February 22, 2021, as amended by the *Amended IE Enlistment Announcement* issued April 20, 2021.

[2] The WSD issued the Independent Evaluator Enlistment Announcement on February 22, 2021 with appointment of the eligibility status of vetted IEs available for EC contracted.

comments, culminating in a final IE report on Liberty's WMP. The IE delivered the final IE report on June 30, 2021.
The table below illustrates insufficient findings or those lacking evidence during the review period. A complete listing of findings are located in this IE Report's conclusion.

Table 1: IE Insufficient Findings

SOW Category	2020 Initiative Number	Initiative Name	Finding	Detail on finding
WMP Activity Completion	5.3.5.15	Remediation of at-risk species	Based on the WMP, documentation reviewed, and live demonstration interviews, the IE has reasonable assurance Liberty did not meet the full obligation of this initiative.	Insufficient evidence was provided, and deficiencies identified in the Field Inspections led to this finding.
WMP Activity Completion	5.3.5.16	Removal and remediation of trees with strike potential to electric lines and equipment	Based on the WMP, documentation reviewed, and live demonstration interviews, the IE has reasonable assurance Liberty did not meet the full obligation of this initiative.	Insufficient evidence was provided, and deficiencies identified in the Field Inspections led to this finding.
WMP Activity Completion	5.3.5.20	Vegetation management to achieve clearances around electric lines and equipment	Based on the WMP, documentation reviewed, and live demonstration interviews, the IE has reasonable assurance Liberty did not meet the full obligation of this initiative.	Insufficient evidence was provided, and deficiencies identified in the Field Inspections led to this finding.
WMP Activity Completion	5.3.4.6	Intrusive pole inspections	Based on the available information and discussion with Liberty, the IE is not able to confirm with reasonable assurance Liberty has performed the obligation of this initiative.	.
WMP Activity Completion	5.3.4.11 & 12	Patrol inspections of distribution and transmission electric lines and equipment	Based on the available information and discussion with Liberty, the IE is not able to confirm with reasonable assurance Liberty has performed the obligation of this initiative.	The IE suggest that the WSD conduct additional inquiry with Liberty and request additional supporting evidence.
WMP Activity Completion	5.3.3.8	Grid Topology improvements to mitigate or reduce PSPS events / Undergrounding of electric lines and/or equipment	The IE has reasonable assurance Liberty is meeting the obligation of this initiative but suggests that Liberty may need to take a more comprehensive approach to undergrounding beyond Rule 20. However, due to time constraints the IE was unable to verify whether four miles were undergrounded.	The IE recommends that the WSD further investigate to verify the project covered the 4 miles
WMP Activity Completion	5.3.3.12	Other corrective action – tree	Given the timeline of this review, the IE was not able to review any additional evidence associated with	The IE suggest that the WSD conduct additional inquiry with

SOW Category	2020 Initiative Number	Initiative Name	Finding	Detail on finding
		attachment removal	this initiative to verify work performed.	Liberty and request additional supporting evidence.
WMP Activity Completion	5.3.3.12.1	Other / not listed Wire Upgrade Program	Based on the Initiative's lack of measurable targets or quantifiable results, available information and discussion with Liberty, the IE cannot verify Liberty performed the obligation of this initiative.	The IE did not have sufficient time to verify activities through the sampled field inspection and did not include these types of assets in the proposed inspection list.
WMP Activity Completion	5.3.2.1	Advanced weather monitoring and weather stations	Given the timeline of this review, the IE was not able to review any additional evidence associated with this initiative to verify work performed	The IE recommends that the WSD follow up with Liberty and request additional supporting evidence.
WMP Activity Completion	5.3.5.1	Additional efforts to manage community and environmental impacts	Given the timeline of this review, the IE was not able to review any additional evidence associated with this initiative to verify work performed	The IE recommends that the WSD follow up with Liberty and request additional supporting evidence.
WMP Activity Completion	5.3.4.9	Stationed and on-call ignition prevention and suppression resources and services	Given the timeline of this review, the IE was not able to review any additional evidence associated with this initiative to verify work performed	The IE recommends that the WSD follow up with Liberty and request additional supporting evidence.
WMP Activity Completion	5.3.3.4	Covered Conductor Maintenance	Given the timeline of this review, the IE was not able to review any additional evidence associated with this initiative to verify Liberty performed the objective of this initiative.	The IE recommends that the WSD follow up with Liberty and request additional supporting evidence.
WMP Activity Completion	5.3.3.18	Other corrective action – Tree attachment removal	Given the timeline of this review, the IE was not able to review any additional evidence associated with this initiative to verify work performed.	The IE suggest that the WSD conduct additional inquiry with Liberty and request additional supporting evidence.
WMP Activity Completion	5.3.3.10	Maintenance, repair, and replacement of connectors, including hotline clamps.	The IE was not able to make determination regarding this initiative due to time limitations.	The IE recommends the WSD follow up with Liberty regarding the applicability of the Grid Design & System Hardening 5.3.3.11 & 2 Asset survey results and the Grid Design & System Hardening 5.3.3.18 – Other corrective action initiative.
WMP Activity Completion	5.3.3.14	Transformers maintenance and replacement	The IE was not able to make determination regarding this initiative due to time limitations. recommends the WSD follow up with Liberty regarding the applicability of the Grid	The IE recommends the WSD follow up with Liberty regarding the applicability of the Grid Design & System Hardening 5.3.3.1 & 2 Asset survey results and the Grid Design

SOW Category	2020 Initiative Number	Initiative Name	Finding	Detail on finding
			Design & System Hardening 5.3.3.1 & 2 Asset survey results and the Grid Design & System Hardening 5.3.3.18 – Other corrective action initiative.	& System Hardening 5.3.3.18 – Other corrective action initiative.

2 Introduction

The Introduction should contain upfront context and a high-level summary of the work performed by the Independent Evaluator.

The state of California has seen an increase of disastrous wildfires in recent years. Fires have historically ravaged communities across the state resulting in billions of dollars in structural damage and catastrophic loss of life. In the recent decade, the California Department of Forestry and Fire Protection (CAL FIRE) reports that larger and more aggressive fires are occurring each year resulting from prolonged drought conditions, historic fire prevention measures, and bark beetle infestations. Consequently, regulatory authorities across propelled various mitigation strategies and roadmaps to directly reduce these growing threats, which are stemmed across multiple oversight agencies and functions.

In 2018, the California State Senate Committee on Energy, Utilities, and Communication relayed that electric utility equipment involvement was the third most common cause of ignition events in response to the devastating wildfire consequences following the 2017 fire season. According to the state list of top 20 largest wildfires, 2020 events accounted for five of the six largest recorded ignitions in the last century.[3] See Table 1 CAL FIRE reported 2019 and 2020 fire incidents.

Table 2: CAL FIRE Reported Fire Ignitions & Acre Impact

NUMBER OF FIRES AND ACRES BURNED		
TIME INTERVAL	**FIRE INCIDENTS RECORDED**	**ACRES BURNED**
JANUARY 1, 2020 - DECEMBER 29, 2020 (CAL FIRE)	8,112	1,443,152
JANUARY 1, 2019 - DECEMBER 29, 2019 (CAL FIRE)	5,687	137,126
5-YEAR AVERAGE (SAME INTERVAL)	5,856	446,960
2020 COMBINED YTD (CAL FIRE & FEDERAL)	9,917	4,257,863

Source: CAL FIRE, 2020 Fire Incident Data captured from its Computer Aided Dispatch System

Wildfire Mitigation Plan Compliance Procedures Background

The July 2019 Assembly Bill (AB) 1054 (Holden, Chapter 79, Statutes of 2019) established a set of tasks and authorities for the California Public Utilities Commission (CPUC or Commission) in regulating and facilitating the strategy for utility wildfire mitigation. This bill supplemented its predecessor, Senate Bill (SB) 901, and directed acceleration of regulatory administration and compliance monitoring of electrical

[3] CAL FIRE, "Top 20 Largest California Wildfires," https://www.fire.ca.gov/media/4jandlhh/top20_acres.pdf. April 28, 2021.

corporations' WMPs and related wildfire data.[4] AB 1054 also established the WSD under the Commission as the primary regulatory body in conjunction with the state Wildfire Safety Advisory Board (WSAB). [5] Its companion bill, AB 111, provided the legislative vehicle for the WSD to later transition under the California Natural Resources Agency (CNRA) on July 1, 2021 as the Office of Energy Infrastructure Safety (OEIS or WSD/OEIS) after establishing and refining the WMP compliance protocols and maintain state oversight for utility WMPs. [6]

Among listed responsibilities, AB 1054 mandated the WSD to create and oversee a compliance process for electrical corporation WMPs and associated reports.[7] The efforts of the WSD took shape during the 2020 WMP template development process. 2020 WMPs were filed on February 7, 2020 also receiving varying degrees of approvals with defect issuances by the end of the year. [8]

Wildfire Mitigation Plan Independent Evaluation Engagement

This report serves as a WMP compliance assessment as required by Public Utilities Code (PUC) § 8386.3[9] that supplements the WSD/OEIS evaluation and understanding of electrical corporation (EC) WMP performance. Consistent with the WSD Guidance Document scoped under Resolution WSD-012,[10] the Independent Evaluator (IE) executed this work in accordance with the scope approved by the WSD on April 21, 2021. [11]

California ECs engaged and contracted with qualified IEs pursuant to statutory obligations and WSD directives. As required, the WSD produced and published a list of qualified vendors experienced in comparable audit activities with the ability to perform the assessment and deliver a report before July 1, 2021. This IE Report aims to verify WMP compliance activities of Liberty, a regulated Investor Owned Utility (IOU) under the CPUC, for its 2020 performance as it corresponds to the initiatives IOU planned to accomplish in 2020 compared to actual performance, whether those activities were funded appropriately, and validate and describe the EC's QA/QC programs for WMP compliance.

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[4] Attributable legislation driving this effort includes SB 1028 (Hill, 2016)

[5] Respondent electrical corporations are, in no particular order, Pacific Gas and Electric Company, Southern California Edison, San Diego Gas & Electric, Liberty Utilities (CalPeco Electric), Bear Valley Electric Service, inc., and Pacific Power, a division of PacifiCorp, along with several independent transmission owners.

[6] On July 1, 2021, the WSD is set to be moved out of the CPUC and became the OEIS under the CNRA pursuant to AB 111. At the time of this IE report, the WSD was still nested under the CPUC.

[7] PUC § 8389 (d)(3) directed the Commission to adopt and approve a WMP compliance process by December 1, 2020.

[8] Attachment 2.2 under Resolution WSD-011 sets forth template guidelines for the 2021 WMP Update and is supplemental to the scope, although not the basis for WMP compliance adherence, determined on December 16, 2019 under the Administrative Law Judge's Ruling on WMP template and related materials.

[9] In accordance with PUC § 8386.3(c)(2)(B)(i), "The engaged independent evaluator shall consult with, and operate under the direction of, the Wildfire Safety Division of the Commission."

[10] Resolution WSD-012. Resolution implementing the requirements of Public Utilities Code Sections 8389(d)(3) related to catastrophic wildfire caused by electrical corporations subject to the Commission's regulatory authority (2020). Available at https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M351/K834/351834801.PDF.

[11] California Public Utilities Commission, "Final Independent Evaluator Scope of Work for the Review of Compliance with 2020 WMP," April 21, 2021. https://www.cpuc.ca.gov/uploadedFiles/CPUCWebsite/Content/About_Us/Organization/Divisions/WSD/Final%20IE%20SOW_20210421.pdf.

This IE Report will inform the WSD's assessments of whether each electrical corporation is satisfactorily implementing projects and programs planned within its WMP. WMPs IEs are part of the WSD's ongoing compliance monitoring protocols and may contribute to, but not direct, any forthcoming actionable remedy statements.

The compliance standard of review to be applied is set forth in the *Final Independent Evaluator Scope of Work for the Review of Compliance with 2020 WMP* which states:

> Pursuant to P.U. Code Section 8386.3(c)(2)(B)(i), the IE is "to review and assess the electrical corporation's compliance with its plan." [12] The IE shall verify that the electrical corporation has complied with the goals set forth for each of the initiatives and/or activities contained in its approved WMP or as modified pursuant to the electrical corporation's submittals through the Change Order process. To effectively execute this scope, at a minimum, the IE shall utilize the approved WMP, remedial compliance plan (RCP), quarterly reports (QRs), change orders, quarterly initiative updates (QIUs), and quarterly advice letters (QALs). In addition, the IE shall determine whether the electrical corporation "failed to fund any activities included in its plan." Finally, in accordance with the April 6th Guidance Document, the IE shall validate and describe the electrical corporation's QA/QC programs in place for WMP compliance. [13]

This IE Report is primarily informed by the IE's assessments of documentation provided, field visits, and interviews with the EC.

2.1 Methodology

The WSD structured and defined the compliance process for this IE. For a successful implementation of the IE Report, the April 21 IE Scope provides the scope and objectives to evaluate evidence of successful implementation of the ECs' WMP initiative activities, funding, and QA/QC efforts executed in 2020. This is validated by documentation reviews, field verifications, and, where appropriate, subject matter expert (SME) responses

Approach

In deliberation with the WSD, the IE proposed to focus efforts and available resources on specific WMP initiatives determined to provide the greatest reduction of risk to life, community, and property impacts due to wildfires or Public Safety Power Shutoff (PSPS) addressed under the WMP.

To perform this assessment, the IE adopted the following approach:

- **Review publicly available information, including the WMP:** The IE reviewed publicly available information to prepare for the assessment including the subject utility's WMP, and other publicly released or submitted documents. Review publicly available documents,

[12] The entire section of PUC §8386.3(c)(2)(B)(i), states, "Each electrical corporation shall engage an independent evaluator listed pursuant to subparagraph (A) to review and assess the electrical corporation's compliance with its plan. The engaged independent evaluator shall consult with, and operate under the direction of, the Wildfire Safety Division of the commission. The independent evaluator shall issue a report on July 1 of each year in which a report required by paragraph (1) is filed. As a part of the independent evaluator's report, the independent evaluator shall determine whether the electrical corporation failed to fund any activities included in its plan. Cal. Pub. Util. Code §8386.3(c)(2)(B)(i), as amended, (2021).

[13] *Id* at p. 2, citations omitted from passage.

which should include, at minimum, the WMP initiatives (there are 10 subject areas discussed in the WMPs these are detailed in Section 5.3 in the 2020 WMP.[14]

- **Prepare initiative and subsequent data requests**: The first data request focused on programmatic level documentation such as the utility's vegetation management program, inspection program, grid hardening program(s), etc. Additional information to request includes any of the WMP submissions that are not on public websites or not available in useful formats and supplemental geographic information system (GIS) spatial data. This provides the IE a baseline understanding of available documentation apart from publicly available sources.
- **Document discovery review**: Review the supplemental information about the WMP initiatives in the Quarterly Data Reports (QDRs), Annual Report on Compliance (ARC), Remedial Compliance Plan (RCP), and the Quarterly Initiative Update (QIU). Review each data request response for completeness, responsiveness, and thoroughness. These materials should address all three subject areas addressed in the report – implementation of initiatives, initiative funding and QA/QC material. The QA/QC materials may also be identified as monitoring an internal auditing or by other similar terms.
- **Perform risk assessment for field inspections:** Using GIS maps submitted by Liberty, the IE identified areas where there is a substantial intersection between risk areas, including High Fire Threat Districts and Wildland Urban Interface populations and WMP initiative activities across the utility's service territory to select meaningful locations for possible site visits to verify initiative activities performed in 2020.
- **Conduct field inspection survey:** This includes a visual patrol assessment of identified circuits and electrical assets within the selected high-risk areas. Results are captured on-site and incorporated with other findings of the document discovery tasks.
- **Interpret document and field inspection results:** Utilizing the WMP and other related compliance documents submitted to the WSD, the IE reviews the field inspection site notes, data request responses, and other evidence of the performed WMP activities and prepared findings surrounding each scoped initiative activity. The IE also conducts interviews, as needed, with SME personnel to gain additional details and clarify questions on program and project targets and QA/QC performance.

The IE found, requested, reviewed, and assessed the following types of information to gain an understanding of the initiatives under the ***Liberty Revised 2020 WMP*** and developed a series of data requests to verify and validate their performance:

- WMP QIUs, QDRs, and the 2020 Annual Report on Compliance (ARC), which make up the primary reporting mechanisms for IOU submittals as well as the RCP and quarterly advice letters (QALs)
- Risk assessment and scoring documentation, (e.g., Risk Assessment Mitigation Phase reports, ignition and weather models and tools, developed GIS maps with unique risk factors);
- Reports from inspection and vegetation management activities
- Work orders, invoices, and key decision reports, of which present business cases for the associated initiative activity;
- Metrics, activity units measured, compiled reports, outage logs, and other trending data sets to inform the risk-based evaluation;

[14] This section is moved to Section 7.3 under the 2021 WMP template guidelines. For the purposes of this IE report and compliance period covering 2020, initiative activities names reflect 5.3.

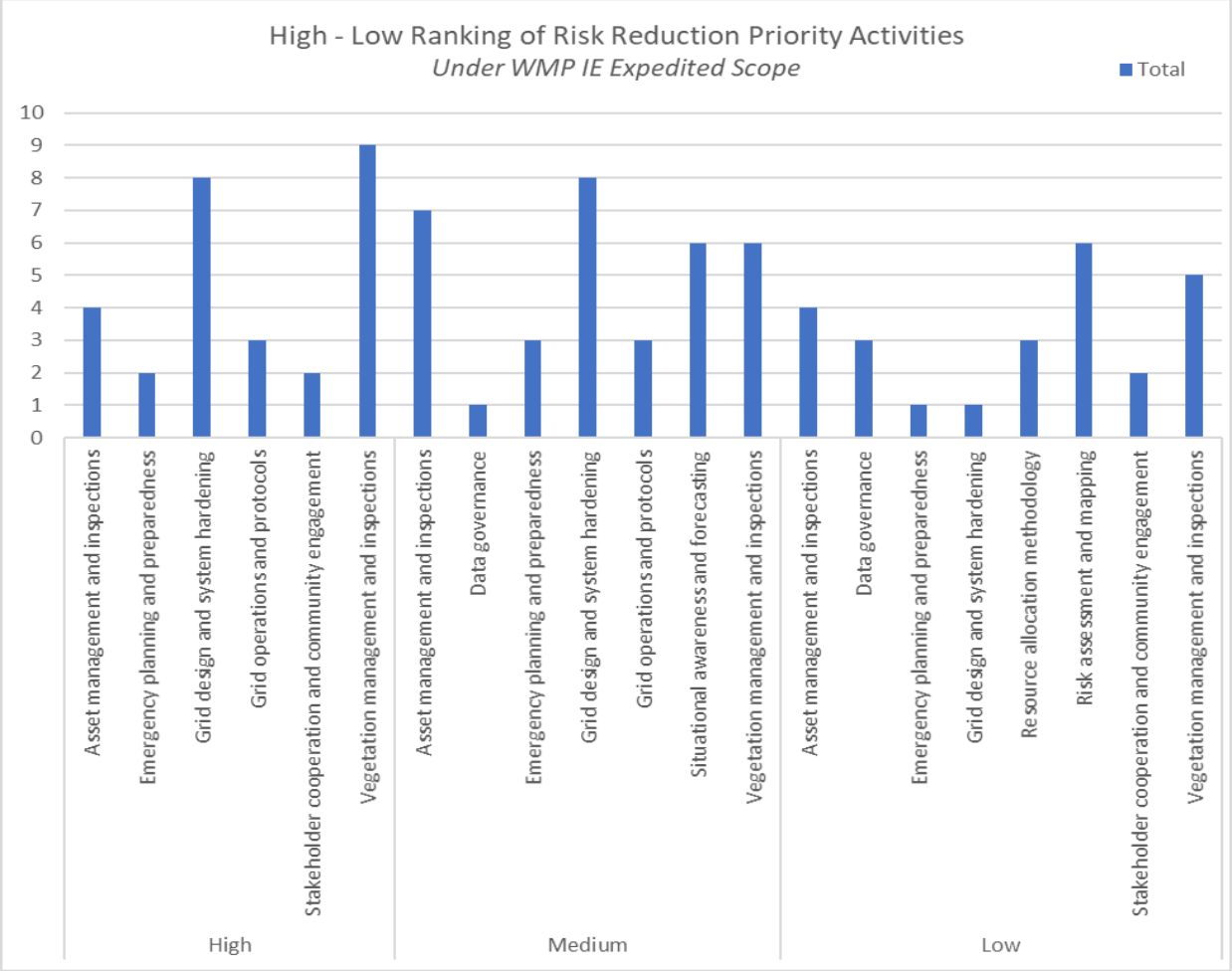
- Funding documentation, General Rate Case workpapers and applications, memorandum account logs, and associated Advice Letters (ALs);
- Internal procedures, QA/QC protocols, example internal/external audit reports and findings, demonstration of procedural use with internal quality programs;
- GIS geodatabase and shapefile layers with utility asset information and specialized characteristics to determine the scope for field inspections; and
- Direct SME-level engagement through coordinated email and telephone communication as well as conducted interviews for QA/QC determinations.

Risk Assessment & Initiative Activity Prioritization

Due to the voluminous quantities of document and data, the vast area of Liberty's territory, the limited time to perform the assessment, and an understanding that not all initiatives identified by the WSD represent an equal level of risk reduction to life, property, communities, and economic activity, the IE focused its efforts through an evaluation of risk reduction each WMP activity contributes towards mitigating wildfire and PSPS consequence on affected parties. The effort did not attempt to exclude particular initiatives but sought to organize a hierarchy of the 87 WMP initiative activities to best guide the IE effort to maximize the resources expended on those elements of the WMP that are key to protecting public safety, lives, and property.

To prioritize WMP initiatives under this scope, the IE created a risk reduction scoring spreadsheet, attached as Appendix 5.2, which lists all of the 87 WMP initiative activities (column C) along with its associated Initiative Category (column A), the appropriate section number for the 2020 WMP (column B), and the WSD definition of each initiative (column D). The IE then assigned a risk reduction rating of 1-10 ranking for each initiative (column E) based upon the likely risk types and severity the action tends to reduce during the subject time period. Given lack of suitable timing to design and test a more sophisticated model, the IE created categorical definitions for the 1-10 ranking with 10 representing the highest risk reduction activities, and 1 representing the lowest relative risk reduction outcome over the triannual period, and, with SME determination, provided an assessment of the risk reduction value such that all evaluations performed under this team will be scoped with similar parameters for a more uniform and risk-informed sample study. The figure below identifies the WMP initiative categories and corresponding counts of initiative activities ranked High, Medium, or Low.

Figure 1: Count of High, Medium, and Low Risk Reduction Impact for IE Scope



This rationale for scoring and selection of highest risk reduction impact is explained in column F. Lastly, the IE assigned a risk reduction rating of high, medium, or low based upon a qualitative ranking scale where 7-10 = High, 4-6 = Medium, and 1-3 = Low risk reduction ratings. (See Table below). This process aims to normalize measurement outcomes under a three-tier rating. The IE then analyzed the distribution of risks across the initiative categories to how risks were distributed across initiative categories. This visual enables the IE Team to assess samples across the various scoring determinations and aim for an achievable but narrowed scope for the most significant results across all evaluations. The IEs selected those WMP initiative activities that scored under "High" for the detailed evaluation and field inspection siting as part of this WMP IE.

The criteria for the risk score ranking are outlined below in Table 2.

Table 3: Risk Score Determination for Sampled Scope

RISK REDUCTION SCORE PROFILED OVER THE 2020 - 2022 WMP CYCLE		
LOW	1 2 3	The initiative activities categorized as Low Risk Reduction have the lowest relative risk among the 87 under the 2020 – 2022 WMP cycle. Low Risk Reduction is not meant to imply, nor does it mean, these initiatives are unnecessary or unimportant. Low risk reduction initiative are largely comprised of process implementation, coordination, and outreach, to enhance other higher risk reduction practices for wildfire mitigation efforts and establishes, in most cases, the baseline of risk and meets required GOs and federal requirements for electrical equipment and vegetation management.
MEDIUM	4 5 6	The initiatives evaluated as Medium Risk Reduction present an effort for operational enhancements and practices, practice and data gathering improvements, and procedural implementation that enhance wildfire risk reduction efforts. These initiatives include continuous improvement processes, quality assurance, enhanced inspections and maintenance, and initiative activity design improvements. This category also includes long lead timelines that will eventually bring substantial risk reduction but not as impactful over the short term as those initiatives in the High-Risk Reduction category.
HIGH	7 8 9 10	High Risk Reduction initiatives activities are those most likely to substantially reduce the risk to life, property, public safety immediately. These are readily implementable activities that disproportionately come from the vegetation management, asset management & inspections, and grid design &system hardening initiative categories. This risk class represents nearly 1/3 of all the identified initiatives.

Table 4: High Risk Reduction Selection of WMP Initiative Category Activities

HIGH RISK SCORE RANKING	
Gid Design & System Hardening	15. Covered conductor installation
	17. Crossarm maintenance, repair, and replacement
	18. Distribution pole replacement and reinforcement, including with composite poles
	19. Expulsion fuse replacement
	21. Installation of system automation equipment
Asset Management & Inspections	22. Maintenance, repair, and replacement of connectors, including hotline clamps
	26. Transformers maintenance and replacement
	28. Undergrounding of electric lines and/or equipment
	30. Detailed inspections of distribution electric lines and equipment
	31. Detailed inspections of transmission electric lines and equipment
	36. LiDAR inspections of distribution electric lines and equipment
	42. Pole loading assessment program to determine safety factor
Vegetation Management & Inspections	46. Detailed inspections of vegetation around distribution electric lines and equipment
	47. Detailed inspections of vegetation around transmission electric lines and equipment
	51. LiDAR inspections of vegetation around distribution electric lines and equipment
	52. LiDAR inspections of vegetation around transmission electric lines and equipment
	55. Patrol inspections of vegetation around distribution electric lines and equipment
	56. Patrol inspections of vegetation around transmission electric lines and equipment
	59. Remediation of at-risk species
	60. Removal and remediation of trees with strike potential to electric lines and equipment
	64. Vegetation management to achieve clearances around electric lines and equipment
Grid Operations & Protocols	65. Automatic recloser operations
	68. Protocols for PSPS re-energization
	69. PSPS events and mitigation of PSPS impacts
Emergency Planning & Preparedness	81. Disaster and emergency preparedness plan
	82. Preparedness and planning for service restoration
Stakeholder Cooperation & Community Engagement	86. Cooperation with suppression agencies
	87. Forest service and fuel reduction cooperation and joint roadmap

Based on this risk assessment, the initiative activities in Table 3 above were prioritized for enhanced focus of this inquiry.

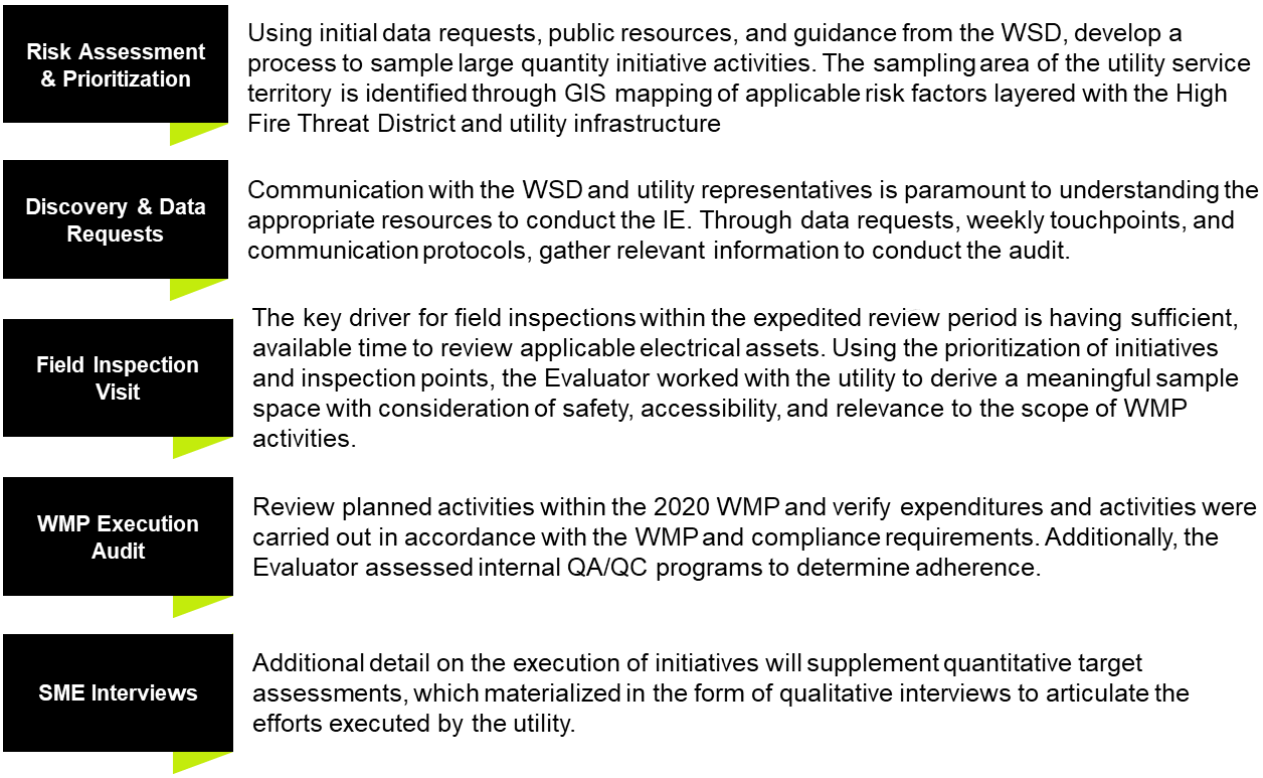
3 Independent Evaluator Review of Compliance

The Independent Evaluator Review of Compliance section is for the Independent Evaluator to provide an overview of its process for review and assessment of the electrical corporation's compliance with its Wildfire Mitigation Plan (WMP).

In the sections below, provide a review of the electrical corporation's WMP activity completion, verification of funding and verification of QA/QC programs.

As described above, this IE assessment is part of the ongoing compliance activities adopted by the Commission and overseen by the WSD.
The figure below summarizes the key activities necessary to perform the IE.

Figure 2: Approach to the WMP IE



3.1 WMP Activity Completion

The WMP Activity Completion section should detail the Independent Evaluator's review and verification of compliance for all WMP activities that have specific quantifiable or qualitative performance goals/targets set forth in the electrical corporation's 2020 WMP.

In-scope WMP activities have been broken out into four categories:

1. *Large volume (≥100 units) + quantifiable goal/target + field verifiable WMP activities*
2. *Large volume (≥100 units) + quantifiable goal/target + non-field verifiable WMP activities*
3. *Small volume (<100 units) + quantifiable goal/target WMP activities*
4. *Qualitative goal/target WMP activities*

The WSD expects Independent Evaluators to assess compliance via multiple dimensions, including work completion, work quality, and adherence to applicable protocols and procedures. For Field Verifiable WMP activities, the Independent Evaluator must verify work quality in addition to completion of initiative installation and adherence to applicable protocols and procedures. For all other WMP activities, the Independent Evaluator must verify initiative installation and adherence to applicable protocols and procedures.

In accordance with the ***IE Scope of Work for the Review of Compliance with 2020 Wildfire Mitigation Plans***, the IE classified Liberty's 2020 WMP Initiatives broken down into four categories:

1. *Large volume (≥100 units) + quantifiable goal/target + field verifiable WMP activities*
2. *Large volume (≥100 units) + quantifiable goal/target + non-field verifiable WMP activities*
3. *Small volume (<100 units) + quantifiable goal/target WMP activities*
4. *Qualitative goal/target WMP activities*

In response to Data Request 5, Liberty provided the ***NV5-Liberty-WMP-05*** spreadsheet which listed each of Liberty's WMP initiative activities according to the four categories listed above. Discrepancies between Liberty's categorization and the IE's are identified in footnotes below the applicable table.

The table provided by Liberty identifies WMP Identifier, Target Units, 2020 Target, Field Verifiable, Initiative Characteristic, and Initiative Category. Liberty identified a total of 35 initiative activities, most of which identify a program target.

This information is presented in the **Appendix 5.1** along with the IE Review approach and performance for each initiative.

3.1.1 Sampling Methodology and Discussion

In this section, the Independent Evaluator should describe its sampling methodology, the samples that were chosen, and areas of focus. The Independent Evaluator may include the samples that were chosen in the Appendix instead of this section.

The Independent Evaluator should also include a discussion of how results of the sampled assessment are indicative of the electrical corporation's broader implementation of WMP initiatives, to give the WSD an understanding of the process the Independent Evaluator used to estimate full completion.

IE Evidence Sampling Methodology

The IE approach to sampling initiatives attempted to formalize a strategy to achieve a statistically valid representative sample of project initiatives in a manner that is objective.

The IE conducted a random sample of the data for each initiative focusing the bulk of our effort on those initiatives, identified by the IE, focusing first on those initiatives with high risk reduction values. The sample size is based upon the North American Electric Reliability Corporation (NERC) ***ERO Sampling***

Handbook Revision 1.0.[15] This methodology is recognized by the Generally Accepted Government Auditing Standards (GAGAS or "the Yellow Book" which is the US federal government's General Accounting Office's auditing guidebook) and the Institute of Internal Auditors (IIA).[16] This handbook sets forth the statistically valid sample size for different populations as can be seen below. This method is used to sample populations of tens of thousands of relays and cyber devices, among other things, in accordance with NERC's obligations mandated by FERC as part of the Federal Power Act Sec 215.[17]

Table 5: Sampling Methodology

Sample Table A	
Population Description	**Sample Selection**
Statistical Sampling	
Primary Population (Examples: Substations, Generating Stations, ESPs, PSPs,	**Using Statistical Sampling**
1-8	Entire population
9 +	8 Samples
Dependent Population of Elements: (Examples: Relays, CCAs, Routers, Firewalls & Other	**Using Statistical Sampling**
1-9	All Elements
10-19	9 Samples
20-40	16 Samples
41-100	23 Samples
101-1000	29 Samples
1001 +	33 Samples
Independent Population of Elements: (Examples: Transmission Segments, Blackstart units, Outages, Mis-operations, Daily Operations reports, Line Ratings, others)	**Using Statistical or Judgemental Sampling**
1-9	All Elements
10-19	9 Samples
20-40	16 Samples
41-100	23 Samples
101-1000	29 Samples
1001 +	33 Samples

Once a sample size is generated, the IE developed and utilized a random sampling tool developed in Excel for the IE to run a random number generator with the appropriate sample size from the chart above and it automatically selects the sample from the list. The IE applied that methodology to the populations of the identified elements in the selected areas.

The IE used the same sampling methodology for initiatives that were and were not field verified. Unfortunately, due to the limited timeframe the IE did not get to sample all initiatives for all of the

[15] ERO Sampling Handbook, Revision 1.0, North American Electric Reliability Corp. (2015). Available at https://www.nerc.com/pa/comp/Documents/Sampling_Handbook_Final_05292015.pdf.
[16] *Id.* at p. 1.
[17] 16 U.S.C. § 824o.

utilities. The IE made its best efforts to try to get through as much data as possible given the circumstances.

Review of Discovery & Field Inspection Results

Field inspection findings contributed to the documentation discovery process by validating whether activities were executed in accordance with the WMP description of activities. The IE compared these results with documentation produced by Liberty to verify accuracy in reporting.

Final IE Report

This IE report represents the final deliverable is submitted directly to the WSD and was not shared with the utility until publication. The IE report documents the "review and assess[ment of] the [Liberty's] compliance with its [wild fire mitigation] plan"[18] to the best of our ability to discern recognizing the limits imposed on our ability to request, review, and clarify data due to the short duration allotted to conduct the review. As the WSD itself noted:

> Finally, as discussed in the April 6th Guidance Document, given the condensed timing of this inaugural IE compliance review process, finalization of this Final IE Scope of Work was expedited and will be applicable for engagement of IEs in 2021 only. The WSD looks forward to further collaborating on refinement of the IE process moving forward. Details of the reviewed initiative activities are discussed in-depth in Section 3.1.[19]

3.1.2 Large Volume Quantifiable Goal/Target – Field Verifiable

The following is a list of initiatives that fall into the Large Volume Quantifiable Goal/Target – Field Verifiable category and their respective goals/targets:

Table 6: Large Volume, Quantifiable Goal, Field Verifiable Initiatives

WMP Section	Program Category	2020 WMP Initiative	Target Units	2020 Target[20]
5.3.3.7	**Grid Design and System Hardening**	Expulsion fuse replacement	Expulsion fuses replaced	720 fuses
5.3.5.15	**Vegetation Management**	Remediation of at-risk species	Number of line miles treated	380 line miles[21]
5.3.5.16	**Vegetation Management**	Removal and remediation of trees with strike potential to	Number of line miles treated	N/A

[18] California Public Utilities Commission, "Final Independent Evaluator Scope of Work for the Review of Compliance with 2020 WMP," April 21, 2021. https://www.cpuc.ca.gov/uploadedFiles/CPUCWebsite/Content/About_Us/Organization/Divisions/WSD/Final%20IE%20SOW_20210421.pdf

[19] *Id.*

[20] 2020 targets were provided by Liberty in ***NV5-Liberty-WMP-05_6.2.21.xls***

[21] It is noted that the 380 line miles referenced in the WMP is a combination target for this initiative as well as the removal and remediation of trees with strike potential to electric lines and equipment [5.3.5.16] and vegetation management to achieve clearances around electric lines and equipment [5.3.5.20] initiatives.

		electric lines and equipment		
5.3.5.20	**Vegetation management**	Achieve clearances around electric lines and equipment[22]	Poles Treated	N/A

3.1.2.1 Review of Initiatives

This section should include the Independent Evaluator's findings and assessment of utility compliance with activities that fall into the Large Volume Quantifiable Goal/Target – Field Verifiable category. Independent Evaluators shall conduct field verification to confirm installation, work quality, and adherence to applicable utility protocols and standards for such work.

Include the electrical corporation's list of initiatives that fall into the Large Volume Quantifiable Goal/Target – Field Verifiable category, including respective goals/targets for each, in the Appendix or within the body of this subsection.

3.1.2.2 Grid Design & System Hardening

WMP Section 5.3.3.7 - Expulsion Fuse replacement

The IE reviewed the ***Liberty Revised 2020 WMP*** which states Liberty has started its expulsion fuse replacement program. This program began in 2019 and sets a target for changing all of its current expulsion fuses to non-expulsion fuse types or electronic devices with an overall completion target of 2026. In Section 5.3.3.7 of the ***Liberty Revised 2020 WMP***, the stated goal for 2020 was to replace 720 conventional expulsion fuses. Liberty reports exceeding the goal, citing the replacement of 853 fuses in 2020 in the ***2020 Q4 QIU***.

The IE reviewed the ***2020 liberty_fuse_install.xlsx*** provide by Liberty. This document demonstrates a total of 896 Fuses were installed in 2020 associated with 483 transformers in Liberty's Service Territory.

Finding: Based on the available information and discussion with Liberty, though this number does not match the ***2020 Q4 QIU***, the IE notes that either number (853 or 896) of fuse replacements exceeds the target for 2020, and therefore the IE has reasonable assurance Liberty at least met the obligation of this initiative.

3.1.2.3 Vegetation Management & Inspections:

WMP Section 5.3.5.15 - Remediation of at-risk species

According to the table on page 87 of the ***Liberty Revised 2020 WMP*** for this initiative activity, Liberty planned to perform inspections for species growth and failure characteristics to determine if trees require remediation of 380-line miles. It is noted that the 380 line miles referenced in the WMP is a combined target for this initiative which also included Initiative activities removal and remediation of

[22] This was added to the list Liberty provided in ***NV5-Liberty-WMP-05_6.2.21.xls*** by the IE.

trees with strike potential to electric lines and equipment [5.3.5.16] and vegetation management to achieve clearances around electric lines and equipment [5.3.5.20]. During 2020, the reporting template combined all three. The Vegetation Management and Inspection category of the WMP focuses on identifying and tracking the need for remediation and doesn't emphasize the actual remediation. Liberty provided the Vegetation Management Plan ***Vegetation Management Plan_V2018_w_Attachments.pdf*** as an initial artifact, which predates, and does not reference the WMP and is of little value for this effort. The IE was later informed that this Plan will be replaced shortly, and a draft is complete but not yet approved.

The IE submitted *Data Request 3* for evidence of the performance for this initiative. Liberty provided ***NV5_Liberty-2020_Tree_Work_Data*** and ***NV5_Liberty03_2020_Veg_Data.dbf***, which include a list of the detailed inspections of tree work performed during 2020. The IE conducted a live demonstration interview with IE, which confirmed that the detailed inspections included identifications of need for remediation of at-risk species. It was also confirmed that the list provided was extracted from a database that stores the details from each work order ticket and details around the remediation, including links to each work order and treatment report. The IE had Liberty explain the process and display a sampling of tickets associated with the list.

To further validate that 380-line miles were covered for this initiative, removal and remediation of trees with strike potential to electric lines and equipment [5.3.5.16] and vegetation management to achieve clearances around electric lines and equipment [5.3.5.20], Liberty provided document ***NV5 LINE MILES COMPLETED REQUEST*** that details the line miles specific to this initiative. Upon completion of the documentation review and the live demonstration, the IE has reasonable assurance Liberty is meeting the obligation of this initiative. The IE confirmed Liberty only completed the combined remediation and removal of 374 of 380 line miles for the combined initiatives in 2020.

Finding: Based on the WMP, documentation reviewed, and live demonstration interviews the IE has reasonable assurance Liberty did not meet the full obligation of this initiative activity. Specifically, Liberty didn't complete the targeted number of miles in the initiative activity.

WMP Sections 5.3.5.16 and 5.3.5.20 - Removal and remediation of trees with strike potential to electric lines and equipment and Vegetation management to achieve clearances around electric lines and equipment

According to the ***Liberty Revised 2020 WMP*** Section 5.3.5.16, to address removal and remediation of trees with strike potential to electric lines and equipment, Liberty complies with General Order 95, rule 35. Liberty uses the prescribed guidance to establish necessary and reasonable clearances, the minimum clearances set forth in Table 1, Cases 13 and 14, measured between line conductors and vegetation under normal conditions are maintained, and removal and remediation of trees with strike potential is continuous and ongoing through Routine Vegetation Maintenance and CEMA programs in accordance with required laws and regulations. As discussed above, Liberty also provided, and the IE reviewed, the Vegetation Management Plan ***Vegetation Management Plan_V2018_w_Attachments.pdf***, as an initial artifact, which predates, and does not reference the WMP.

The IE submitted *Data Request 3* for evidence of the performance for this initiative activity. Liberty provided documents ***NV5_Liberty-2020_Tree_Work_Data*** and ***NV5_Liberty03_2020_Veg_Data.dbf*** which included a list of the detailed inspections of tree work performed during 2020. The IE conducted a live demonstration interview with Liberty, which confirmed that the documentation provided included

removal and remediation of trees with strike potential to electric lines and equipment. The live demonstration also confirmed the provided list of activities was extracted from a database that stores the details from each work order ticket and associated remediation documentation. To further validate the performance of this initiative, the IE had Liberty explain the inspection process and display a sampling of tickets associated with the inspection list.

To further validate that the 380-line miles were covered for this initiative activity, initiative activities Remediation of at-risk species [5.3.5.15] and Vegetation management to achieve clearances around electric lines and equipment [5.3.5.20], Liberty provided a document ***NV5 LINE MILES COMPLETED REQUEST*** that details the line miles specific to this initiative. Upon completion of the documentation review and the live demonstration, the IE has reasonable assurance Liberty is meeting the obligation of this initiative. The IE confirmed Liberty only completed the combined remediation and removal of 374 of 380 line miles for the combined initiatives in 2020.

- Remediation of at-risk species [5.3.5.15]
- Removal and remediation of trees with strike potential to electric lines and equipment [5.3.5.16]
- Vegetation management to achieve clearances around electric lines and equipment [5.3.5.20]

The IE determined that Liberty does not have a specific initiative identified for pole clearing as it relates to vegetation management in 2020. Liberty did inform the IE that in the 2021 WMP their approach has changed to break our recording for the above listed initiatives and better represent pole clearing within one of them.

Table 6: Vegetation Management Field Inspection Results

Inspection ID	Initiative Activity	Structure Type	Asset Compliance	Condition Reviewed	Notes
9410	5.3.5.16/20	Pole	Compliant	PRC 4292 CCR 1254	
9420	5.3.5.16/20	Pole	Compliant	PRC 4292 CCR 1254	
9581	5.3.5.16/20	Pole	Compliant	PRC 4292 CCR 1254	
9830	5.3.5.16/20	Pole	Compliant	PRC 4292 CCR 1254	
8932	5.3.5.16/20	Pole	Compliant	PRC 4292 CCR 1254	
8676	5.3.5.16/20	Pole	Compliant	PRC 4292 CCR 1254	
9161	5.3.5.16/20	Pole	Non-Compliant	PRC 4292 CCR 1254	Tree touching pole at top half
9407	5.3.5.16/20	Pole	Non-Compliant	PRC 4292 CCR 1254	Small pine tree growing next to base
9409	5.3.5.16/20	Pole	Non-Compliant	PRC 4292 CCR 1254	Shrubs growing at base
12424-90892	5.3.5.16/20	Pole	Compliant	PRC 4292 CCR 1254	

34365-5449	5.3.5.16/20	Pole	Compliant	PRC 4292 CCR 1254	
54078-5235	5.3.5.16/20	Pole	Compliant	PRC 4292 CCR 1254	
116594-4995	5.3.5.16/20	Pole	Compliant	PRC 4292 CCR 1254	
259792-5103	5.3.5.16/20	Pole	Compliant	PRC 4292 CCR 1254	
9372	5.3.5.16/20	Pole	Compliant	PRC 4292 CCR 1254	
5148-62737	5.3.5.16/20	Pole	Compliant	PRC 4292 CCR 1254	
90892-5232	5.3.5.16/20	Pole	Compliant	PRC 4292 CCR 1254	
90982-5128	5.3.5.16/20	Pole	Compliant	PRC 4292 CCR 1254	
111448-5164	5.3.5.16/20	Pole	Compliant	PRC 4292 CCR 1254	
116598-5005	5.3.5.16/20	Pole	Compliant	PRC 4292 CCR 1254	
135429-5418	5.3.5.16/20	Pole	Compliant	PRC 4292 CCR 1254	
766812-4981	5.3.5.16/20	Pole	Compliant	PRC 4292 CCR 1254	
66460-4957	5.3.5.16/20	Pole	Compliant	PRC 4292 CCR 1254	
66461-4955	5.3.5.16/20	Pole	Compliant	PRC 4292 CCR 1254	
68768-9508	5.3.5.16/20	Pole	Compliant	PRC 4292 CCR 1254	
76681-5099	5.3.5.16/20	Pole	Compliant	PRC 4292 CCR 1254	
84813-8788	5.3.5.16/20	Pole	Compliant	PRC 4292 CCR 1254	
90891-5232	5.3.5.16/20	Pole	Compliant	PRC 4292 CCR 1254	

Finding: Based on the WMP, documentation reviewed, live demonstration interviews, and site inspections the IE has reasonable assurance Liberty did not meet the full obligation of this initiative. Specifically, of the sampled items inspected, 10.7% (3 of 28[23]) of the sampled locations did not support completion of the initiative activity target. Pole clearing was not identified as a separate initiative in the ***Liberty Revised 2020 WMP*** despite Liberty's efforts to perform such activity. The IE recommends Liberty address pole clearing efforts in its own section in future WMP updates.

[23] The IE intended to sample 33 sites as that is the number necessary for a statistically valid random sample but not all of the sites identified for sample were accessible to the field verification team.

3.1.2.4 Trends and Themes - Large Volume Quantifiable Goal/Target – Field Verifiable initiatives

The IE notes Liberty's presentation of data is often unclear and requires thorough investigation. Generally, the data supports the implementation of the initiatives but the high-level documents (e.g. the ***Liberty Revised 2020 WMP, ARC, and QIU***) and the program documents do not neatly align with the implementation evidence. Liberty is in the process of updating its program documentation, notably its Vegetation Management Program and its data management such as its GIS and Fulcrum system which should improve their data collection consistency and presentation. This is true across the initiative types and sizes.

3.1.3 Large Volume Quantifiable Goal/Target – Not Field Verifiable

The following is a list of initiatives that fall into the Large Volume Quantifiable Goal/Target – Not Field Verifiable category and their respective goals/targets:

Table 7: Large Volume, Quantifiable Goal, Not Field Verifiable Initiatives

WMP Section	Program Category	2020 WMP Initiative	Target Units	2020 Target[24]
5.3.3.18	**Grid Design & System Hardening**	Overhead Asset Repairs from Asset Survey/GIS Update	Number of inspections	N/A
5.3.4.1 & 2	**Asset Management and Inspections**	Detailed inspections of distribution electric lines and equipment	Asset Inspection (Line miles)	1,635
5.3.4.6	**Asset Management and Inspections**	Intrusive pole inspections	Intrusive Pole Inspections	3,113
5.3.4.11 &12	**Asset Management and Inspections**	Patrol inspections of distribution electric lines and equipment	Patrol Inspection (Line Miles)	2,050
5.3.5.2 & 3	**Vegetation Management**	Detailed inspections of vegetation around distribution electric lines and equipment	Number of line miles inspected	230
5.3.5.11 &12	**Vegetation Management**	Patrol inspections of vegetation around distribution electric lines and equipment	Number of line miles inspected	N/A

3.1.3.1 Review of Initiatives

This section should include the Independent Evaluator's findings and assessment of utility compliance with activities that fall into the Large Volume Quantifiable Goal/Target – Not Field Verifiable category. Independent Evaluators shall select a sample to seek additional documentation and conduct SME interviews, as needed, to verify that the activity was completed and executed in accordance with all applicable work procedures and protocols.

Include the electrical corporation's list of initiatives that fall into the Large Volume Quantifiable Goal/Target – Not Field Verifiable category, including respective goals/targets for each, in the Appendix or within the body of this subsection.

[24] 2020 targets were provided by Liberty in ***NV5-Liberty-WMP-05_6.2.21.xls***

3.1.3.2 Grid Design & System Hardening

WMP Section 5.3.3.18 - Other / not listed Overhead Asset Repairs from Asset Survey/GIS Update

Section 5.3.3.18 of the ***Liberty Revised 2020 WMP*** also notes as a result of the system-wide asset survey and GIS update, Liberty estimates a portion of the assets from G.O. 165 review will require repairs and replacements of overhead assets.

The IE submitted a data request for evidence of the performance for this initiative. The IE reviewed the ***2020 Detailed Inspection Data.xlsx*** containing the results of the completed Asset Survey that covered all of Liberty's overhead transmission received in the response to the *Data Request 7*. The sheet contained "System Inventory Inspection" tab that appears to be an export from Liberty's "Fulcrum" system containing 23,546 inspection records that include GIS Data, inspection date, Inspection (Pass/ Fail/ non-go), pole number, Pole Replacement (yes), Priority (Level 1,2,3), codes for failed inspections and other information, "Photos of Structure" tab containing 9432 records with "Fulcrum" related information associated with photos and "Repaired Photos" tab containing 614 records with "Fulcrum" related information associated with the photos.

The IE reviewed pages 5 and 6 of ***Liberty_CalPEC2020_ARC*** to assess Liberty's progress in 2020 related to the Asset Management and Inspections WMP initiatives and if Liberty met the risk reduction intent of its 2020 WMP to reduce ignition probabilities and minimize the societal consequences of both wildfires and mitigations employed to reduce them. Page 13 of ***Liberty_CalPEC2020_ARC*** shows "Planned 2020 Spend" as $3,500,000 and "Actual 2020 Spend" of $837,622 for the "Detailed Inspections of Distribution electric lines and equipment" initiative activity. The IE understands that this initiative activity was mislabeled and should be "Overhead Asset Repairs from Asset Survey/GIS Update" and or "Repairs and G.O 165 Outcome from System Survey." This assumption is based on the following:

1. The $3.5 million planned 2020 initiative spend included in the ***Liberty Revised 2020 WMP*** is labeled as:
    a. "Repairs and G.O 165 Outcome From System Survey" on page 36 of the ***Liberty Revised 2020 WMP***
    b. "Other Asset Repairs from Asset Survey/GIS Update" on page 67 of the ***Liberty Revised 2020 WMP***

2. The explanation for the underfunding on page 13 of the ***Liberty_CalPEC2020_ARC*** states that the underfunding was related to "GO 165 repair costs were lower than anticipated and some of the repairs are carrying into 2021".

It should be further noted that this projected spend is combined from multiple initiatives and was not separated by individual initiative.

3.1.3.3 Asset Management and Inspections

WMP Sections 5.3.4.1 & 2 - Detailed inspections of distribution and transmission electric lines and equipment

The IE reviewed Sections 5.3.4.1. & 5.3.4.2 in the ***Liberty Revised 2020 WMP*** which states that Liberty's "inspection program meets the minimum requirements as outlined in G.O. 165. These detailed inspections involve careful examination of assets. When issues are found, they are then evaluated by the planning and engineering departments for a final decision or work plan for repair or replacement."[25] In 2020, Liberty initially conducted a pilot program using Liberty personnel and then utilized a contractor to perform a system-wide survey of overhead system assets to collect a complete list of equipment attached to poles and to perform detailed visual inspections. Data, including pictures and GPS coordinates, was collected via hand-held devices using its Fulcrum mobile application to transition from paper-based to electronic inspection records improving accuracy of the GIS.

As part of the initiative, the ***Wildfire Safety Division Attachment2.3 Wildfire Mitigation Plan Quarterly report - non-spatial data template***, Liberty projected a spend of $2,920 per line mile for the Asset Survey / GIS Update with a total projection of $6,000,000 for 2,055-line miles to be treated in 2020. Liberty's actual spend was $2,994,266 putting them under the planned spend by $3,005,734. Costs to complete the System Survey were significantly lower than the initial estimate due to competitive bid process. According to the ***Liberty Revised 2020 WMP***, its does not have separate programs for distribution and transmission electric lines and equipment inspections.

The IE reviewed the ***WMP Performance Metric Data Q4*****,** on page 3, Liberty reported that it had inspected a total of 2272 distribution circuit miles and 40 transmission circuit miles for a total of 2312 total circuit miles. The inspection of the 2312 distribution and transmission circuit miles, resulted in the following findings: 57 Level 1, 1,426 Level 2, and 10,089 Level 3 findings. Liberty could not identify the source or basis for the reported number of circuit miles inspected. Due to the limited time to conduct the inquiry, the IE recommends additional efforts to confirm the correct numbers of miles treated and remediations performed.

The IE reviewed the ***2020 Detailed Inspection Data.xlsx*** containing the results of the completed Asset Survey that covered all of Liberty's overhead transmission received in the response to the *Data Request 7*. The sheet contained "System Inventory Inspection" tab that appears to be an export from Liberty's Fulcrum system containing 23,546 inspection records that include criteria for each entry such as GIS Data, inspection date, Status (Pass/ Fail/ repaired/etc., Pole Number, Pole Replacement, Priority (Level 1,2,3), codes for failed inspections and other information, "Photos of Structure" tab containing 9432 records with Fulcrum-related information associated with photos and "Repaired Photos" tab containing 614 records with Fulcrum-related information associated with the photos.

The IE also reviewed the ***LIB 2020 Q4 QIU***, that identified the initiative's "Target Units" as asset inspection (line miles), with an "Annual Quantity Target" as 1635 asset inspection (line miles) and "Actual Quantity Q1-Q4" of 1635 asset inspection (line miles) completed. Liberty explained that this number represents their overhead transmission system excluding the unground system.

Finding: Based on the available information and discussion with Liberty, the IE has reasonable assurance Liberty is meeting the performance obligation of this initiative.

WMP Section 5.3.4.6 - Intrusive pole inspections

[25] Liberty Revised 2020 WMP at p. 68.

According to the ***Liberty Revised 2020 WMP*** for this initiative, Liberty CalPeco's intrusive pole inspection program is on a 10-year inspection cycle and performed by contractors. Wood poles that have previously passed intrusive inspections are also on the 10-year inspection cycle, which exceed the G.O. 165 requirement of 20 years. At a minimum, all poles are visually inspected and, when intrusive inspections are needed, they are excavated around the base of the pole and may include a sound-and-bore test. Poles are also treated with preservative paste or liquid at this time. Weakened poles are either reinforced or replaced based on shell thickness measurements.

The IE reviewed the ***LIB 2020 Q4 QIU***, that identified the initiative's "Target Units" as Intrusive Pole inspections, with an "Annual Quantity Target" as 3113 and "Actual Quantity Q1-Q4" of 3113 Inspections completed.

The IE noticed differences in the ***Liberty Revised 2020 WMP*** initiative's 68-line miles to be treated and the 3113 target "Intrusive Pole Inspections." The new number represents the count as updated to align with the correct unit type required template for the ***LIB 2020 Q4 QIU*.**

Finding: Based on the available information and discussion with Liberty CalPeco, the IE has reasonable assurance Liberty performed the obligation of this initiative.

WMP Sections 5.3.4.11 & 12 - Patrol inspections of distribution and transmission electric lines and equipment

The IE reviewed Sections 5.3.4.11. & 5.3.4.12 in the ***Liberty Revised 2020 WMP,*** *on page 72* which states that Liberty performs annual patrols of all distribution lines in Tier 2 areas and every 6 months for those lines in Tier 3 by vehicle or helicopter as terrain allows.

According to the ***Liberty Revised 2020 WMP***, Liberty CalPeco does not have separate programs for patrol inspections for distribution and transmission electric lines and equipment.

During an SME interview with Liberty, Liberty explained that these 2020 patrol inspections were completed in conjunction with the asset survey initiative described in sections 4.1 and 5.3.3.18 of the ***Liberty Revised 2020 WMP*** and no additional patrols were conducted.

Finding: Based on the available information and discussion with Liberty, the IE is not able to confirm with reasonable assurance Liberty performed the obligation of this initiative. The IE suggest that the WSD conduct additional inquiry with Liberty and request additional supporting evidence.

3.1.3.4 Vegetation Management & Inspections

5.3.5.2 & 3 Detailed inspections of vegetation around distribution and transmission electric lines and equipment

According to the table in Section 5.3.5.2 & 3 of ***Liberty Revised 2020 WMP*** for this initiative, Liberty planned to perform a detailed inspection for 230 miles to prescribe trimming and removal of vegetation as a safeguard against grow-ins and fall-ins and to conform to required laws and regulations including G.O. 95 and PRC 4292. The IE reviewed the initial documents provided by Liberty and determined 233

miles were inspected, however, supplemental documents were needed to validate and complete the evaluation. The IE submitted a request for additional documents demonstrating the completion of the inspections for the 233 miles. In response, Liberty provided the Vegetation Management Plan "***Vegetation Management Plan_V2018_w_Attachments.pdf*** ", as an initial artifact, which predates, and does not reference the WMP.[26] This plan included the standards for inspections and clearances as identified in the WMP, specifically, the plan required inspection to identify: 1) The potential for vegetation to grow and/or encroach within the minimum allowed distances to the facilities within the cycle. 2) The potential for vegetation to structurally fail into the facilities within the cycle. This plan will be replaced with a new plan as well as additional revised vegetation management program documents that address and incorporate Liberty's wildfire mitigation efforts.

The IE submitted *Data Request 3* for documents to demonstrate the inspection was completed as proposed for 2020 and also requested a live demonstration interview to discuss the process and documentation. Liberty provided documents ***NV5_Liberty_2020_Veg_Inspection_DataNV5_Liberty03_2020_Veg_Data.dbf*** and ***NV5_Liberty03_2020_Veg_Data.dbf*** which included a list of the detailed inspections performed during 2020. The IE conducted a live demonstration interview with Liberty, during which Liberty walked through their evidence and explained their program. It was also that confirmed that the list provided was extracted from a database that stores the details from each work order inspection ticket. Additionally, the IE had Liberty explain the inspection process and display a sampling of tickets associated with the inspection list.

To further validate that the inspections covered 230-line miles, Liberty provided document ***NV5 LINE MILES COMPLETED REQUEST*** that maps out the line miles specific to this initiative. The report provided accounts for 233 line miles. Upon completion of the documentation review and the live demonstration, the IE has reasonable assurance Liberty is meeting the obligation of this initiative.

Finding: Based on the WMP, documentation reviewed, and live demonstration interviews, the IE has reasonable assurance Liberty has performed the detailed inspections of vegetation around distribution and transmission electric lines and equipment required for this initiative activity as described in the 2020 WMP.

5.3.5.11 &12 Patrol Inspections of vegetation around distribution electric lines and equipment

According to ***Liberty Revised 2020 WMP*** for this initiative, Liberty planned to inspect for dead and dying trees throughout its entire system by performing an accelerated inspection of the circuits under the Catastrophic Event Memorandum Account (CEMA). Liberty's electric distribution facilities are surveyed consisting of a Level 1 inspection, involving a basic visual ground inspection of trees or populations of trees to identify dead and dying trees. The inspection for 2020 was projected to include 150 miles of line. Liberty provided the Vegetation Management Plan "***Vegetation Management Plan_V2018_w_Attachments.pdf*** ", as an initial artifact, which predates, and does not reference the WMP.

[26] The IE notes that Liberty has drafted a set of new vegetation management program and practice documents that align with its 2021 WMP. Those documents did not apply to the 2020 WMP and its implementation and are outside the scope of this review.

The IE submitted *Data Request 3* for additional documents to demonstrate inspections were completed on 150-line miles. The IE also requested a live demonstration interview to discuss the process and documentation. Liberty CalPeco provided document "***NV5_Liberty_2020_Veg_Inspection_Data NV5_Liberty03_2020_Veg_Data.dbf***" and "***NV5_Liberty03_2020_Veg_Data.dbf***" in response. The IE reviewed the provided documents and performed the live demonstration interview. During the interview It was confirmed that the list provided was extracted from a database that stores the details from each inspection work order ticket. The IE had Liberty explain the inspection process and display a sampling of tickets associated with the inspection list.

To further validate that the inspections covered at least 150-line miles, Liberty provided document ***NV5 LINE MILES COMPLETED REQUEST*** that maps out the line miles specific to this initiative. The report provided accounts for 331 total line miles covered in the inspections. This was also accounted for in the ***LIB 2020 Q4 QIU***. This demonstrates Liberty inspected more than the initial targeted line miles for 2020.

Finding: Based on the WMP, documentation reviewed, and live demonstration interviews, the IE has reasonable assurance Liberty performed the obligation of this initiative.

3.1.3.5 Trends and Themes

The trends and themes identified by the IE are noted in section 3.1.2.4 above.

3.1.4 Small Volume Quantifiable Goal/Target

The following is a list of initiatives that fit under the Small Volume Quantifiable Goal/Target category and their respective goals/targets:

Table 8: Small, Quantifiable Goal Initiatives

WMP Section	Program Category	2020 WMP Initiative	Target Units	2020 Target[27]
5.3.2.1	**Situational Awareness**	Advanced weather monitoring and weather stations	Weather stations installed	20
5.3.3.3	**Grid Design & System Hardening**	Covered conductor installation	Line miles	5
5.3.3.4	**Grid Design & System Hardening**	Covered Conductor maintenance[28]	N/A	N/A
5.3.3.5	**Grid Design & System Hardening**	Crossarm maintenance, repair, and replacement[29]	N/A	N/A
5.3.3.6	**Grid Design & System Hardening**	Distribution Pole Replacement	Number of Poles Replaced	N/A
5.3.3.8	**Grid Design & System Hardening**	Grid topology improvements to mitigate or reduce PSPS events	Line miles	4
5.3.3.9	**Grid Design & System Hardening**	Installation of system automation equipment	Reclosers installed	4
5.3.3.10	**Grid Design & System Hardening**	Maintenance, repair, and replacement of connectors, including hotline clamps	N/A	N/A
5.3.3.12	**Grid Design & System Hardening**	Other corrective action	Tree attachment removals	60
5.3.3.13	**Grid Design & System Hardening**	Pole loading infrastructure hardening and replacement program	N/A	N/A
5.3.3.14	**Grid Design & System Hardening**	Transformers maintenance and replacement	N/A	N/A
5.3.3.16	**Grid Design & System Hardening**	Undergrounding of electric lines and/or equipment – addressed with Section 5.3.3.8	Line miles	4
5.3.4.7 & 8	**Asset Management & Inspections**	LiDAR inspections of distribution and transmission electric lines and equipment	Line Miles to be treated	68
5.3.4.13	**Asset Management & Inspections**	Pole loading assessment program to determine safety factor	Poles assessed	

5.3.5.1	**Vegetation Management**	Additional efforts to manage community and environmental impacts	Line Miles Treated	14
5.3.5.7 & 8	**Vegetation Management & Inspections**	LiDAR inspections of vegetation around distribution electric lines and equipment	Number of line miles inspected	N/A
5.3.6.6	**Grid Operations & Operating Protocols**	Stationed and on-call ignition prevention and suppression resources and services	Number of Vehicles	2

3.1.4.1 Review of Initiatives

This section should include the Independent Evaluator's findings and assessment of utility compliance with activities that fall into the Small Volume Quantifiable Goal/Target category. Independent Evaluators shall perform data/documentation review and conduct SME interviews, as needed, to verify completion of these activities and adherence to all applicable work procedures and protocols.

Include the electrical corporation's list of initiatives that fall into the Small Volume Quantifiable Goal/Target category, including respective goals/targets for each, in the Appendix or within the body of this subsection.

3.1.4.2 Situational Awareness

5.3.2.1 Advanced weather monitoring and weather stations

The IE reviewed Section 5.3.2.1 of the ***Liberty Revised 2020 WMP***, the ***2021 Wildfire Mitigation Plan Update***, and ***2020 Q4 QIU*** which all report that Liberty's target for 2020 was 20 Weather Stations installed in order to better evaluate and forecast weather events that could cause PSPS events. Per the ***QIU Q4 update*** and ***2021 Wildfire Mitigation Plan Update***, Liberty fell short of this target by 1 weather station installation according to their own accounting of this effort. The IE notes that if Liberty is able to exceed the 2021 target by 1 additional station, they would still be on track with the goal of 40 stations installed throughout all of 2020-2021.

Finding: Given the timeline of this review, the IE was not able to review any additional evidence associated with this initiative to verify work performed. The IE recommends that the WSD follow up with Liberty and request additional supporting evidence.

[27] 2020 targets were provided by Liberty in ***NV5-Liberty-WMP-05_6.2.21.xls***
[28] This was added to the list Liberty provided in ***NV5-Liberty-WMP-05_6.2.21.xls*** by the IE.

3.1.4.3 Grid Design and System Hardening

5.3.3.3 Covered Conductor Installation

The IE reviewed Section 5.3.3.3 of the ***Liberty Revised 2020 WMP***, that stated Liberty is continuing the reconductoring of bare electrical lines in various locations in Liberty's Tier 2 and Tier 3 HFTD. Several factors drive the ability to begin reconductoring. These factors include: (1) receipt of the construction permit by regulatory authorities, (2) availability of material, (3) resources to perform the work, and (4) line clearance (maintaining reliability). Liberty began reconductoring in 2019 as the first two projects were prioritized based on the ability to receive the construction permit in the same year. Liberty intends to replace all overhead primary conductor with covered conductor, given that its service territory is in Tier 2 or 3 Wildfire Threat areas. The ***Liberty Revised 2020 WMP*****,** projected 5-line miles to be treated in 2020.

The IE submitted D*ata Request 7* for supporting evidence of the installation of the 6.8-line miles. Liberty provided the following documents ***8800-0117-0114 - Topaz PH 2 - As Built Map, 8800-0119-0100 - Topaz PH 4 - As Built Map, 8800-0120-0348 - Topaz PH 5 - As Built Map, Electric Map-8800-0218-0355 7300 Line Ph 5-Reconductor Liberty_Revised, Map-8800-0218-0261 Vikingsholm Tap-OH Rebuild-Liberty_4-20-2020 and Electric Map-8800-0218-0354 7300 Line Ph 4-Reconductor Liberty_Revised.*** The IE also reviewed the ***LIB 2020 Q4 QIU***, that identified the initiative's "Target Units" as line miles, identifying the "Annual Quantity Target" as 5 lines, and reported that "Actual Quantity Q1-Q4" of 6.8 lines were replaced. These detailed documents demonstrate the map locations of the work to be completed and amount of covered conductor to be installed specific to this initiative.

Liberty also provided the ***JCM's for Covered Conductor***, containing the Job Closure Memo's for the five 2020 covered conductor projects. The Topaz Phase 5 and Topaz Phase 4 projects are completed, but they are still in the process of being closed. The JCM's include the materials and costs for each of the projects.

The IE reviewed the ***LIBERTY UTILITIES (CALPECO ELECTRIC) LLC'S (U 933-E) 2020 WILDFIRE MITIGATION PLAN ARC Document*** stated that Liberty planned to spend $3,198,000 on 5 miles of covered conductor installation but spent $7,820,185 to complete a total of 6.8-line miles. Explanation of the differential was due to more covered conductor being installed than originally planned and design costs and amount of pole replacements were higher than anticipated.

The IE performed a field verification to validate the performance of this initiative. Of the applicable items inspected, all of the 19 inspected sites were compliant. At each noncompliant site stated work was verified as completed but required signage was not visible.

Table 9: Covered Conductor Field Verification Results

Inspection ID	Structure Type	Asset Compliance	Notes
1-153	Covered Conductor/Pole	Compliant	
23-156	Covered Conductor/Pole	Compliant	
77-163	Covered Conductor/Pole	Compliant	
64-161	Covered Conductor/Pole	Compliant	
41-167	Covered Conductor/Pole	Compliant	

32-81	Covered Conductor/Pole	Compliant	
14-96	Covered Conductor/Pole	Compliant	
15-88	Covered Conductor/Pole	Compliant	
19-89	Covered Conductor/Pole	Compliant	
42-24	Covered Conductor/Pole	Compliant	
67-27	Covered Conductor/Pole	Compliant	
74-83	Covered Conductor/Pole	Compliant	
9372	Covered Conductor/Pole	Compliant	
25-11	Covered Conductor/Pole	Compliant	
100-4	Covered Conductor/Pole	Compliant	Signage not visible
81-6	Covered Conductor/Pole	Compliant	Signage not visible
27-7	Covered Conductor/Pole	Compliant	Signage not visible
70-17	Covered Conductor/Pole	Compliant	
97-42	Covered Conductor/Pole	Compliant	

Finding: The IE reviewed the provide documents and discussed with Liberty during the interview, who confirmed the documents validated the implementation of the initiatives 6.8-line miles. Based on the available information, the IE was able to have a reasonable assurance that Liberty had exceeded its projected "Annual Quantity Target" of 5-line miles by completing the installation of the 6.8 lines of covered conductor.

5.3.3.4 Covered Conductor Maintenance

The IE reviewed Section 5.3.3.4 of the ***Liberty Revised 2020 WMP*** that states as covered conductor is installed, field personnel will review the condition of the covered conductor to evaluate the need for a maintenance program. At a minimum, conductor will be visually inspected during routine GO 165 inspections. This is not currently a separate initiative.

Finding: Given the timeline of this review, the IE was not able to review any additional evidence associated with this initiative to verify work performed.

The IE recommends that the WSD follow up with Liberty and request additional supporting evidence.

5.3.3.5 Crossarm maintenance, repair, and replacement

On page 57 of the ***Liberty Revised 2020 WMP***, Liberty states it has no defined crossarm maintenance program aside from as-needed pursuant to GO 165 inspections. Liberty performs maintenance on an as-needed basis per inspections or as turned in by field personnel.

In response to IE's *Data Request 7* for supporting evidence, Liberty clarified that it does not have any reported metrics in the crossarm maintenance, repair, and replacement category in the ***2020 Q4 QIU***.

The IE reviewed the ***2020 Detailed Inspection Data.xlsx*** containing the results of the completed Asset Survey that covered all of Liberty's overhead transmission received in the response to the *Data Request 7*. The sheet contained "System Inventory Inspection" tab that appears to be an export from Liberty's "Fulcrum" system containing 23,546 inspection records that includes numerous attributes including GIS Data, inspection date, Inspection (Pass/ Fail/ non-go), conditions for failed inspections (crossarm broken/poles needs replacement/etc.) pole number, priority (Level 1,2,3), codes for failed inspections, repaired (yes/no), repair date, repair comments and other information including photos. ,
Based on the available information and discussion with Liberty CalPeco, the IE has reasonable assurance Liberty is meeting the obligation of this initiative.

Finding: The IE believes that that these types of repairs are being done under the 2020 Revised WMP 5.3.3.18: Other / not listed: Overhead Asset Repairs from Asset Survey/GIS Update, but was not able to verify the completion of this initiative activity. In the future, the IE believes it would be helpful if Liberty addressed the initiatives separately under the specific initiatives instead of the combining all the repairs into a single initiative.

5.3.3.6 Distribution pole replacement and reinforcement, including with composite poles

The IE reviewed the ***Revised 2020 WMP*** Section 5.3.3.6. On page 57, the WMP states Liberty has a pole test and treatment program, pursuant to GO 165. This program inspects and treats all poles on a 10-year cycle. All poles are treated with a wood preservative and then inspected for structural integrity. If a pole needs to be reinforced, a steel stub is scheduled for installation at the bottom of the pole. If a pole cannot be steel-reinforced due to deterioration, then it is scheduled for replacement, pursuant to G.O. 165, to reduce fire risk and to improve reliability. Liberty has not yet developed methodology to accurately track the effectiveness of pole testing and treating. Pole replacements that occur out of this program are capital expenditures that go through appropriate approval channels. No alternatives to this program are being considered.

The IE reviewed the ***LIB 2020 Q4 QIU***, that identified the initiative's "Target Units" as Poles, identifying the "Annual Quantity Target" as N/A, which is alignment with the "Poles are replaced on an as-needed basis per inspections or as turned in by field personnel." The Q4 QIU, reported that "Actual Quantity Q1-Q4" of 62 poles were replaced.

The IE submitted *Data Request 4* for supporting evidence for the replacement and reinforcement of the Distribution poles. Liberty provided the following documents:

- ***Drawing-(R) 1752 (P) 291450-260 Fallen Leaf Rd,*** was provided appears to be a design drawing for the replacement of the existing pole 1752.
- ***BOM 0120-0387 - (R) 1752 (P) 291450,*** appears to be an itemized list of equipment associated with the pole replacement.
- ***OCalc-(R) 1752 (P) 291450-260 Fallen Leaf Rd,*** is the O-Calc Pro Analysis – G.O.-95 report that appear to be for the pole.
- ***Pole 1752 – Frame.jpg,*** appears to be a picture retain in Fulcrum showing the tower.

- ***2020 Detailed Inspection Data.xlsx*** containing the results of the completed Asset Survey that covered all of Liberty's overhead transmission received in the response to the Data Request 7. The sheet contained "System Inventory Inspection" tab that appears to be an export from Liberty's "Fulcrum" system containing 23,546 inspection records that includes numerous attributes including,

but not limited to, GIS Data, inspection date, Inspection (Pass/ Fail/ non-go), conditions for failed inspections, pole number, pole replacement, pole replaced (yes/no), repair comments and photos of structure.

- ***Q4_2020_PolesReplaced.xlsx*** that appears to be a filtered list from ***2020 Detailed Inspection Data.xlsx*** using "Pole Replaced" containing 60 entries that includes: pole number, status (repaired), GIS location data, inspection date, pole issues, pole replacement (yes), priority (level 1,2,3), and condition codes for failed inspections and repair comments.

Even though the IE, did not have enough information and time to verify how the 60 poles, the ***2020 Q4 QIU***, reported that "Actual Quantity Q1-Q4" of 62 poles[30] were replaced.

Finding: Based on the available information and discussion with Liberty, the IE has reasonable assurance Liberty has performed the obligation of this initiative.

5.3.3.3.8 / 5.3.3.16 Grid Topology improvements to mitigate or reduce PSPS events / Undergrounding of electric lines and/or equipment

The IE reviewed the ***Liberty Revised 2020 WMP*****,** on page 59 its stated Liberty's grid topology efforts primarily reside in its Rule 20 undergrounding program. Liberty also included this in its section on Grid topology improvements to mitigate or reduce PSPS events

The IE reviewed the ***Liberty Revised 2020 WMP*****,** on page 64 its stated Liberty has no defined program to underground electric lines and/or equipment aside from the Rule 20 program. However, Liberty is working with the local counties and cities to prioritize areas that qualify to be undergrounded pursuant to Rule 20. If undergrounding electric lines and equipment outside of the Rule 20 program becomes necessary, then Liberty may reevaluate the need for a separate program. Liberty works with counties and cities to prioritize areas that qualify to be undergrounded pursuant to Rule 20.

The IE submitted a request for evidence of the performance for this initiative. The IE reviewed the provided ***Electric_Map-Apache_Ave_Rule_20-Liberty-8800-0118-0105-12-15-18*** document that contains the detailed diagrams for Overhead to Underground Conversion Rule 20 Apache Ave Project. These diagrams include: General Notes and Legend (#1), Removal Sheets (#2), Installation Sheets (#2), Electric on-line diagram (#1) and details (#1).

Finding: Based on the available information and discussion with Liberty, the IE has reasonable assurance Liberty is meeting the obligation of this initiative but suggests that Liberty may need to take a more comprehensive approach to undergrounding beyond Rule 20. However, due to time constraints the IE was unable to verify whether four miles were undergrounded. The IE recommends that the WSD further investigate to verify the project covered the 4 miles

5.3.3.9 Installation of system automation equipment

The IE reviewed the Revised 2020 WMP, which states that Liberty plans to continue replacing older reclosers and line air switches with new recloser technology with a focus on moving toward a robust Distribution Automation Control (DAC) scheme. These are being strategically placed for better

sectionalization of lines during switching and PSPS events, but also in an effort to bring DAC into play in the next three years.

Liberty planned to install four reclosers in 2020 and reports meeting the target of 4 reclosers replaced in 2020. Liberty provided documentation listing the locations and associated work outputs of the reclosers that were replaced to validate these updates.

Finding: Based on the available information, discussion with Liberty and the demonstration, the IE has reasonable assurance Liberty performed obligation of this initiative.

5.3.3.10 Maintenance, repair, and replacement of connectors, including hotline clamps

The IE reviewed the Section 5.3.3.10 of the ***Liberty Revised 2020 WMP*** for this initiative. On page 61, Liberty indicates it has no program in place for maintenance, repair, and replacement of connectors except as needed in urgent or emergency situations.

Finding: The IE was not able to make an evaluation regarding this initiative and recommends the WSD follow up with Liberty regarding the applicability of the Grid Design & System Hardening 5.3.3.11 & 2 Asset survey results and the Grid Design & System Hardening 5.3.3.18 – Other corrective action initiative.

5.3.3.12 Other corrective action – Tree attachment removal

The IE reviewed the ***Liberty Revised 2020 WMP*** in section 5.3.3.18 addresses tree attachment removal, among other things. With respect to Tree Attachment Removal, Liberty states, Liberty's "Tree Attachment Removal program will install poles to remove these tree attachments and remediate by attaching the wires to utility owned poles. Poles are installed on an as-needed basis, per customer request, to remove a service from a dead tree, scheduled by the customer for removal, or as turned in by field personnel that have identified a tree as dead or dying and a pole installation request is made to Engineering."

The IE noticed differences in the ***Liberty Revised 2020 WMP*** initiative's 2,055 "Target Line Miles to be Treated" and the **LIB 2020 Q4 QIU's** [row 14] "Target Tree Attachment Removal" target listed as N/A and the reported "Quantity Actual Progress Q1-Q4" as 60 which Liberty reiterated in its response *Data Request 5* ***NV5-Liberty-WMP-05_6.2.21***. During discussions with Liberty, it was explained that the correct target should have been "Target Tree Attachment Removal."

The IE submitted a request for evidence of the performance for this initiative. Liberty CalPeco provided "***Combine Drawing -AMF_OH_Rbld-8800-0120-0395-12.20.20",*** which was a detailed project map for the removal of 20 Tree Attachment Removals performed during 2020. Liberty stated that the other remaining 40 Tree Attachment Removals are documented individual work orders. The IE did not have the opportunity to review these documents.

The IE submitted a request for evidence of the performance for this initiative. The IE reviewed the ***2020 Detailed Inspection Data.xlsx*** containing the results of the completed Asset Survey that covered all of Liberty's overhead transmission received in the response to the *Data Request 7*. The sheet contained "System Inventory Inspection" tab that appears to be an export from Liberty's "Fulcrum" system

containing 23,546 inspection records that included tree attachment removal data, pole replacement information, and photos of structures among several other attributes.

Finding: Given the timeline of this review, the IE was not able to review any additional evidence associated with this initiative to verify work performed. The IE suggest that the WSD conduct additional inquiry with Liberty and request additional supporting evidence.

5.3.3.13 Pole loading infrastructure hardening and replacement program

As part of the efforts outlined in 5.3.3.3 Covered Conductor, Liberty is performing pole loading calculations as well as pole health evaluation to determine the strength and weight baring ability to support covered wire. *See* the ***Liberty Revised 2020 WMP*** Section 5.3.3.13 Pole Loading Infrastructure Hardening and Replacement Program for estimated program costs. Liberty plans to integrate the iRestore software to improve efficiencies in getting the pole information found in the field into the pole loading analysis software for pole replacements for the covered conductor program. During a call with Liberty SMEs, Liberty said they conduct G.O. 95 hardening tests and provided records of the testing. The records include 60 detailed ***O-Calc Pro Analysis – G.O.-95 reports*** that appear to correlate with each of the poles replaced as part of the 5.3.3.3 (Covered Conductor) initiative. The reports identify the pole number and pole load assessment summaries.

Finding: Based on the available information and discussion with Liberty, the IE has reasonable assurance Liberty is meeting the obligation of this initiative.

5.3.3.14 Transformers maintenance and replacement

The IE reviewed the ***Liberty Revised 2020 WMP*** on page 63 which states Liberty has no defined distribution transformer maintenance program. Maintenance and transformer replacements are performed on an as-needed basis per inspections, DGA analysis, or as turned in by field personnel.

The IE sorted the ***2020 Detailed Inspection Data.xlsx*** file for Transformers (yes/no), Repaired (yes/no) that shows that a number of completed repairs included the installation of new transformer, or Transformer maintenance.

Findings: The IE was not able to make an evaluation regarding this initiative and recommends the WSD follow up with Liberty regarding the applicability of the Grid Design & System Hardening 5.3.3.1 & 2 Asset survey results and the Grid Design & System Hardening 5.3.3.18 – Other corrective action initiative.

3.1.4.4 Asset Management & Inspections

5.3.4.13 Pole loading assessment program to determine safety factor

Liberty does not have a specific Pole Loading Assessment program but however does conduct pole loading calculations on all poles that are being replaced or have a change in load from proposed new attachments (G.O. 95). The pole loading calculations are done as part of the Covered Conductor Installation Program initiative 5.3.3.3.

The IE submitted data requests for supporting evidence for the replacement and reinforcement of the Distribution poles. Liberty provided the pole loading calculations for Topaz Phase 2, Topaz Phase 4, and Vikingsholm via *Data Request 7.*

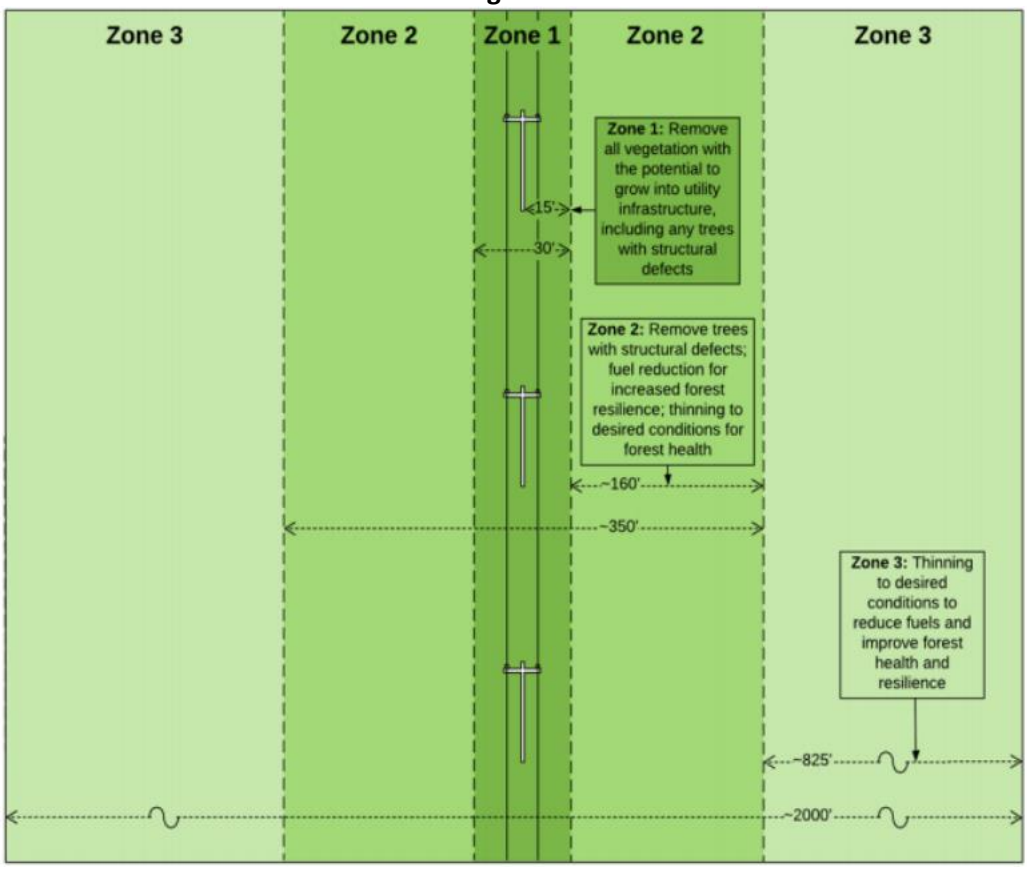
Findings: The provided documentation outlines the poles that were assessed and the outcome of said assessments. With the provided documentation, the IE has reasonable assurance that Liberty has performed the obligations of this initiative, but without a target, the IE cannot state whether the initiative is progressing as intended. The IE recommends that Liberty evaluate the benefit of separating this program out from the Covered Conductor Installation Program for purposes of tracking and presentation in future WMP submissions.

3.1.4.5 Vegetation Management & Inspections and Asset Management & Inspections

5.3.5.1 Additional efforts to manage community and environmental impacts

The IE reviewed the ***Liberty 2020 Revised WMP*** which states that Liberty has "not developed an initiative around additional efforts to manage community and environmental impacts." Liberty notes efforts as part of The Forest Resilience Corridor Project, which is "a comprehensive multi-jurisdictional effort in forest resiliency and fuels reduction surrounding critical community infrastructure," *see* Figure 3 below for further information on the Vegetation Treatment Zones. Per the ***2020 Q4 QIU*** and the ***2021 Wildfire Mitigation Plan Update***, Liberty reports meeting a target of 14 line miles treated under these efforts.

Figure 3



Finding: Given the timeline of this review, the IE was not able to review any additional evidence associated with this initiative to verify work performed.

5.3.5.7 &8 LiDAR inspections of distribution and transmission electric lines and equipment

According to the ***2020 Revised WMP*** Sections 5.3.4.7, 5.3.4.8, 5.3.5.7 & 5.3.5.8, Liberty does not utilize LiDAR inspections at this time. Liberty is currently exploring use cases for LiDAR inspections to determine if LiDAR is an effective and efficient options. Accordingly, Liberty planned to develop criteria for a LIDAR pilot to evaluate how Liberty will develop use cases for LiDAR inspections.

Liberty instituted a $250,000 pilot program for asset inspections in 2020 and noted plans to incorporate more LiDAR efforts if the pilot was determined to be useful.

The IE reviewed the ***LIB 2020 Q4 QIU***, [rows 20-21,32] that reported no "Annual Quantity Targets" but cited "Quantity Actual Progress Q1-Q4" of 328 line miles inspected using LIDAR Inspection for Vegetation around distribution electric lines.

Finding: The IE was not able to verify the implementation of this initiative and recommends the WSD follow up with Liberty.

3.1.4.6 Grid Operations & Operating Protocols

5.3.6.6 Stationed and on-call ignition prevention and suppression resources and services

The IE reviewed the ***Liberty 2020 Revised WMP***, which reports that Liberty "is evaluating the cost/risk/benefit of stationing additional resources strategically during fire threat days." A review of the ***2020 Q4 QIU*** shows that two additional resources were placed during 2020 and a review of the Liberty ***2021 WMP*** indicates continued review of strategy and prioritization of resource placement and deployment to prevent PSPS events and reduce number and length of downtime.

Finding: Given the timeline of this review, the IE was unable to review any additional evidence associated with this initiative to verify work performed. The IE recommends the WSD conduct additional follow-up on this matter.

3.1.4.7 Trends and Themes

The trends and themes identified by the IE are noted in section 3.1.2.4 above.

3.1.5 Qualitative Goal/Target

Table 7: Qualitative Initiatives

WMP Section	Program Category	2020 WMP Initiative	Program Target[31]
5.3.1.1	**Risk Assessment and Mapping**	A summarized risk map that shows the overall ignition probability and estimated wildfire consequence along the electric lines and equipment	Complete risk model
5.3.2.2a	**Situational Awareness**	Continuous monitoring sensors	Procurement of DFA units and signed contract
5.3.3.8	**Grid Design and System Hardening**	Grid topology improvements to mitigate or reduce PSPS events	Microgrid
5.3.5.6	**Asset Management and Inspections**	Improvement of inspections	Enterprise GIS coming in 2022
5.3.4.4 & 5.3.4.5	**Asset Management and Inspections**	Infrared inspections of distribution electric lines and equipment	RFP developed in 2021, bid in 2022

[31] 2020 targets were provided by Liberty in ***NV5-Liberty-WMP-05_6.2.21.xls***

5.3.4.14	**Asset Management and Inspections**	Quality assurance / Quality Control of inspections	RFP developed in 2021, bid in 2022
5.3.6.3	**Situational Awareness**	Personnel work procedures and training in conditions of elevated fire risk	Improve Fire Potential Index Operating Conditions
5.3.7.1	**Data Governance**	Centralized repository for data	Developing a centralized data lake by end of year
5.3.7.2	**Data Governance**	Collaborative research on utility ignition and/or wildfire	Data provided to University of Reno for High Impendence Fault Detection Study
5.3.9.1	**Emergency Planning & Preparedness**	Adequate and trained workforce for service restoration	Update Corporate Emergency Management Plan
5.3.10.1	**Emergency Planning & Preparedness**	Community engagement	Increase public awareness

3.1.5.1 Review of Initiatives

This section should include the Independent Evaluator's findings and assessment of utility compliance with activities that fall into the Qualitative Goal/Target category. Independent Evaluators shall review documentation and conduct SME interviews, as needed, to verify the qualitative goals/targets of these activities were met.

Include the electrical corporation's list of initiatives that fall into the Qualitative Goal/Target category, including respective goals/targets for each, in the Appendix or within the body of this subsection.

Due to the limited timeframe to conduct this inaugural IE assessment and report, the IE did not have adequate time to review the qualitative initiatives listed above. The IE recommends the WSD follow up on these efforts.

3.1.5.2 Trends and Themes - Qualitative Goal/Target initiatives

Include any trends or recurring themes that the Independent Evaluator found while assessing utility compliance to Qualitative Goal/Target initiatives.

The trends and themes identified by the IE are noted in section 3.1.2.4 above.

3.2 Verification of Funding

The Verification of Funding section should document all instances in which WMP activities were funded less than 100 percent. For all such instances, the Independent Evaluator shall request and document utility explanation of such instances.

Fill out the table below containing initiatives which the Independent Evaluator found to be funded less than 100 percent.

Below the table, provide more detail on the Independent Evaluator's findings regarding these initiatives that were funded less than 100 percent, including the utility's explanation.

Liberty's 2020 WMP Annual report filed with the CPUC on March 31,2021 provided a table showing 2020 Initiative spend[32]. A summary of the planned spending and actual spend is shown in Table 1 below.

Table 15: Summary of Liberty 2020 Revised WMP Initiative Spending

Initiative Category	Actual Spend	Planned Spend	Actual Spend as a % of Planned Spend
2020 Planned and Underspent	$ 6,453,599	$ 19,920,054	32%
2020 Unplanned but Spent	$ 7,276,691	$ -	n/a
2020 Planned and Overspent	$ 19,600,805	$ 10,779,000	182%
Total	$ 33,331,095	$ 30,699,054	109%

As shown in Table 15 above, overall actual spend for wildfire mitigation initiatives was greater than the forecasted amounts included in Liberty's Revised 2020 WMP. However, sixteen[33] specific initiatives from the 2020 Revised WMP had deficient[34] funding for 2020. The initiatives with deficient funding are shown in Table 2 below.

[32] Note, Table 1 in the Liberty 2020 Annual report uses 2021 initiative numbers, but these correspond directly with the 2020 initiative numbers except for the first digit. 2021 uses "7" whereas the 2020 WMP uses "5"

[33] In some cases, multiple numbered initiatives are combined for a single initiative in the Revised WMP. As such, the number of initiatives found to be deficient is approximately 16.

[34] Per WSD guidelines, initiative funding is considered deficient for any amount underspent regardless if work was incurred and completed during 2020 but not paid until 2021.

Table 16: Verification of Funding

Category	2020 Revised WMP Initiative Number [2]	Initiative Name	2020 Revised WMP Page Number	Planned	Spent	Funding Discrepancy Amount	Detail on Funding Discrepancy
Situational Awareness	5.3.2.1	Advanced Weather Monitoring and Weather Stations	36, 45	$300,000	$ 242,879	$ (57,121)	One less station installed; contingency not met.
Situational Awareness	5.3.2.4	Fire Potential Index	36, 50	$70,000	$44,313	$(25,687)	Actual costs were less than originally anticipated.
Grid Design & System Hardening	5.3.3.7	Expulsion Fuse Replacement	36, 58	$1,544,000	$737,939	$(806,061)	Cost incurred in late 2020 but not paid until early 2021.
Grid Design & System Hardening	5.3.3.13	Pole Loading Infrastructure Hardening	36, 62	$1,515,000	$ -	$(1,515,000)	Projected costs were not incurred.
Grid Design & System Hardening	5.3.3.16	Undergrounding Overhead Lines (Rule 20A)	36,64	$1,757,500	$522,414	$(1,235,086)	Actual costs were less than originally anticipated; not all project costs were incurred in 2020.
Grid Design & System Hardening	5.3.3.18 Other (Overhead Asset Repairs from Asset Survey/GIS Update)	Repairs and G.O. 165 Outcome from System Survey	36, 65	$3,500,000	$837,622	$(2,662,378)	G.O. 165 repair costs were lower than anticipated and some of the repairs are carrying into 2021.
Asset Management and Inspections	5.3.4.1/5.3.4.2	Detailed Inspections Asset Survey and GIS Update	36, 68	$6,000,000	$2,994,266	$(3,005,734)	Costs to complete the System Survey were significantly lower than the initial estimate due to competitive bid process.
Asset Management and Inspections	5.3.4.3	Improvements of Inspections	36, 68	$890,000	$ -	$(890,000)	Liberty had several software solutions under consideration to improve asset inspections and included the highest figure available at the time of filing. Ultimately, Liberty went with a different solution which meant those dollars were not utilized.

Independent Evaluator Review of Compliance

Category	2020 Revised WMP Initiative Number [2]	Initiative Name	2020 Revised WMP Page Number	Planned	Spent	Funding Discrepancy Amount	Detail on Funding Discrepancy
Asset Management and Inspections	5.3.4.6	Intrusive Pole Inspections	36, 70	$118,554	$10,404	$(108,150)	Due to timing difference, some work performed in 2020 was not paid until the first quarter of 2021. The actual spend related to this work is $138,799.14. The $118,554 is only an estimate based on number of structures and cannot account for when poles need remediation which is determined at time of inspection.
Asset Management and Inspections	5.3.4.7/5.3.4.8	LiDAR Inspections of Electric Lines and Equipment	36,70-71	$250,000	$ -	$(250,000)	LiDAR was utilized for Asset Inspections and Vegetation Management but there was no identified spend for Vegetation Management in 2020. The IE recommends the WSD conduct further inquiry into this issue.
Vegetation Management	5.3.5.2/5.3.5.3	Detailed Inspections of Vegetation around Lines and Equipment	36	$610,000	$555,763	$(54,237)	Actual costs were less than originally anticipated.
Vegetation Management	5.3.5.5	Fuel Management and Reduction of "Slash"	36	$2,000,000	$354,689	$(1,645,311)	Program development took longer than expected and less work was performed than originally anticipated. The IE recommends the WSD conduct further inquiry into this issue.
Vegetation Management	See note 1	Other Discretionary Inspection of Vegetation around Lines and Equipment	36	$450,000	$85,139	$(314,861)	Work was just performed in the Tier 3 area where inspections took place, therefore costs of inspection and tree work were less. The IE recommends the WSD conduct further inquiry into this issue.
Vegetation Management	5.3.5.13	QA/QC of Inspections	36, 85	$250,000	$67,033	$(182,967)	Program development for QA/QC processes was lower cost than originally anticipated.

Category	2020 Revised WMP Initiative Number [2]	Initiative Name	2020 Revised WMP Page Number	Planned	Spent	Funding Discrepancy Amount	Detail on Funding Discrepancy
Data Governance Data Governance	5.3.7.1	Centralized Repository for Data	36, 92	$465,000	$ -	$(465,000)	Costs are captured in 7.3.1.1; no other costs incurred.[2]
Data Governance Data Governance	5.3.7.2	Collaborative Research on Utility Ignition/Wildfire	36, 93	$200,000	$1,138	$(198,862)	DFA costs were initially projected for this initiative but are captured in 7.3.2.2. [2]
Total				**$19,920,054**	**$ 6,453,599**	**$(13,466,455)**	

[1] The table shown in Section 5.1.B (pg 36) of Liberty's 2020 WMP included $50,000 for "Other Discretionary Inspection of Vegetation around Lines and Equipment" for 2020. However, the $50,000 was not specifically itemized or called out in Section 5.3.5.9&10 (pg 83-84) of Liberty's Revised 2020 WMP.
[2] Actual spend for the initiatives above were obtained from Table 1 of Liberty's 2020 ARC. That table shows actual spend for 2020 but for 2021 Initiatives. The 2021 initiative numbers, names and planned amounts were mapped back to the 2020 Revised WMP initiatives. 2021 Initiatives begin with "7" as opposed to 2020 initiatives which begin with "5". Costs spent for 7.3.1.1 for 2020 were $67,465 for a summarized risk map that shows the overall ignition probability and estimated wildfire consequence along the electric lines and equipment. Costs spent for 7.3.2.2 (Continuous Monitoring sensors) were $158,125.

While Table 4 above identifies underfunded initiatives, it is important to note that many unfunded initiatives are the result of accounting differences (dollars spent versus incurred), potential reclassifications and costs that were lower than originally anticipated rather than actual wildfire mitigation work not being performed.

3.3 Verification of QA/QC Programs

This section should include a detailed description of all QA and QC programs that the Independent Evaluator validated during its compliance review. Independent Evaluators shall review all documentation and perform interviews to validate an electrical corporation's QA and QC programs for WMP compliance.

Per the ***Liberty 2020 Revised WMP***, Liberty indicates that they do not currently have a documented QA/QC program that addresses the entire WMP. The current process is outline in section ***5.3.5.13 Quality assurance/quality control of inspections*** and states: **"**Liberty CalPeco audits all vegetation inspection work as part of the review and permitting process for trees located on local, federal, and state agency land. Work quality is assessed for accuracy of the work order and for correct identification of tree work." The WMP and additional responses to IE data requests indicate that Liberty utilizes internal SMEs to cross-audit wildfire mitigation efforts to ensure personnel reviewing metrics are not the same personnel responsible for carrying out day-to-day activities.

The ***Liberty Revised 2020 WMP*** indicates plans to implement a QA/QC program for 2021; however, a review of current 2021 initiatives indicate that such a framework is still in the planning stages. The plan identifies the intention to use a risk-based approach for quality control reviews as well as use of external personnel, where feasible, for impartiality in reviews.

4 Conclusion

Upon completion of the IE report, the IE determined that the EC achieved a majority of WMP Initiative Activity objectives and provided evidence for those that missed targets. Detailed reviews occurred with subsequent data requests and the EC worked closely with the IE, under guidance of the WSD, to answer the intended inquiries, to the best of all parties' capabilities and timeframe challenges.

The IE worked with the WSD and Liberty to determine relevant materials critical to producing a statistically significant and concrete review of executable work performance. The IE faced tight timeline constraints and strived to ensure all records were collected, sorted, vetted for initiative alignment, and categorized with the chronological order of the review process to the extent possible. The final IE report does not present the complete scope of WMP initiative reviews, future inquiries will be needed to adequately address all of Liberty's ongoing initiative activities and their funding.

The table below presents the WMP activity completion findings supported by both desktop and field inspection reviews. The IE aggregated results for verification of funding in Table 1 within section 3.2. Table 1 lists the 2020 Planned and Underspent funds, 2020 Unplanned but Spent funds, and the 2020 Planned and Overspent funds.

Reviewed initiative findings are presented in accordance with the aligned WMP Initiative Activity below.

Table 18: IE Insufficient Findings

SOW Category	2020 Initiative Number	Initiative Name	Finding	Detail on finding
WMP Activity Completion	5.3.5.15	Remediation of at-risk species	Based on the WMP, documentation reviewed, and live demonstration interviews, the IE has reasonable assurance Liberty did not meet the full obligation of this initiative.	Insufficient evidence was provided, and deficiencies identified in the Field Inspections led to this finding.
WMP Activity Completion	5.3.5.16	Removal and remediation of trees with strike potential to electric lines and equipment	Based on the WMP, documentation reviewed, and live demonstration interviews, the IE has reasonable assurance Liberty did not meet the full obligation of this initiative.	Insufficient evidence was provided, and deficiencies identified in the Field Inspections led to this finding.
WMP Activity Completion	5.3.5.20	Vegetation management to achieve clearances around electric lines and equipment	Based on the WMP, documentation reviewed, and live demonstration interviews, the IE has reasonable assurance Liberty did not meet the full obligation of this initiative.	Insufficient evidence was provided, and deficiencies identified in the Field Inspections led to this finding.
WMP Activity Completion	5.3.4.6	Intrusive pole inspections	Based on the available information and discussion with Liberty, the IE is not able to confirm with reasonable assurance Liberty has performed the obligation of this initiative.	.
WMP Activity Completion	5.3.4.11 & 12	Patrol inspections of distribution and transmission electric lines and equipment	Based on the available information and discussion with Liberty, the IE is not able to confirm with reasonable assurance Liberty has performed the obligation of this initiative.	The IE suggest that the WSD conduct additional inquiry with Liberty and request additional supporting evidence.
WMP Activity Completion	5.3.3.12	Other corrective action – tree attachment removal	Given the timeline of this review, the IE was not able to review any additional evidence associated with this initiative to verify work performed.	The IE suggest that the WSD conduct additional inquiry with Liberty and request additional supporting evidence.
WMP Activity Completion	5.3.3.12.1	Other / not listed Wire Upgrade Program	Based on the Initiative's lack of measurable targets or quantifiable results, available information and discussion with Liberty, the IE cannot verify Liberty performed the obligation of this initiative.	The IE did not have sufficient time to verify activities through the sampled field inspection and did not include these types of assets in the proposed inspection list.
WMP Activity Completion	5.3.2.1	Advanced weather monitoring and weather stations	Given the timeline of this review, the IE was not able to review any additional evidence associated with this initiative to verify work performed	The IE recommends that the WSD follow up with Liberty and request additional supporting evidence.

Conclusion

SOW Category	2020 Initiative Number	Initiative Name	Finding	Detail on finding
WMP Activity Completion	5.3.5.1	Additional efforts to manage community and environmental impacts	Given the timeline of this review, the IE was not able to review any additional evidence associated with this initiative to verify work performed	The IE recommends that the WSD follow up with Liberty and request additional supporting evidence.
WMP Activity Completion	5.3.4.9	Stationed and on-call ignition prevention and suppression resources and services	Given the timeline of this review, the IE was not able to review any additional evidence associated with this initiative to verify work performed	The IE recommends that the WSD follow up with Liberty and request additional supporting evidence.
WMP Activity Completion	5.3.3.4	Covered Conductor Maintenance	Given the timeline of this review, the IE was not able to review any additional evidence associated with this initiative to verify Liberty performed the objective of this initiative.	The IE recommends that the WSD follow up with Liberty and request additional supporting evidence.
WMP Activity Completion	5.3.3.8 and 5.3.3.16		The IE has reasonable assurance Liberty is meeting the obligation of this initiative but suggests that Liberty may need to take a more comprehensive approach to undergrounding beyond Rule 20. However, due to time constraints the IE was unable to verify whether four miles were undergrounded.	The IE recommends that the WSD further investigate to verify the project covered the 4 miles
WMP Activity Completion	5.3.3.18	Other corrective action – Tree attachment removal	Given the timeline of this review, the IE was not able to review any additional evidence associated with this initiative to verify work performed.	The IE suggest that the WSD conduct additional inquiry with Liberty and request additional supporting evidence.
WMP Activity Completion	5.3.3.10	Maintenance, repair, and replacement of connectors, including hotline clamps.	The IE was not able to make determination regarding this initiative due to time limitations.	The IE recommends the WSD follow up with Liberty regarding the applicability of the Grid Design & System Hardening 5.3.3.11 & 2 Asset survey results and the Grid Design & System Hardening 5.3.3.18 – Other corrective action initiative.
WMP Activity Completion	5.3.3.14	Transformers maintenance and replacement	The IE was not able to make determination regarding this initiative due to time limitations. recommends the WSD follow up with Liberty regarding the applicability of the Grid Design & System Hardening 5.3.3.1 & 2 Asset survey results and the Grid	The IE recommends the WSD follow up with Liberty regarding the applicability of the Grid Design & System Hardening 5.3.3.1 & 2 Asset survey results and the Grid Design & System Hardening 5.3.3.18 – Other corrective action initiative.

Conclusion

SOW Category	2020 Initiative Number	Initiative Name	Finding	Detail on finding
			Design & System Hardening 5.3.3.18 – Other corrective action initiative.	

5 Appendix

The Appendix can include:

- *Electrical corporation's list of Large Volume Quantifiable Goal/Target – Field Verifiable initiatives*
- *Electrical corporation's list of Large Volume Quantifiable Goal/Target – Not Field Verifiable initiatives*
- *Electrical corporation's list of Small Volume Quantifiable Goal/Target initiatives*
- *Electrical corporation's list of Qualitative Goal/Target initiatives*
- *Electrical corporation's complete listing and description of existing QA/QC programs in place*
- *Data requests and interview requests*
- *Samples chosen by the Independent Evaluator*
- *Financial audit reports and memorandum accounts*
- *Any additional documentation*

5.1 Liberty WMP Activities - Classified by Approach to Verifying Compliance

WMP Category	Initiative Activity	2020 Target	IE Scope Review Type
Asset Management and Inspections	Intrusive pole inspections	3,113	Large Volume Quantifiable Goal/Target - Not Field Verifiable
Asset Management and Inspections	Patrol inspections of distribution electric lines and equipment	2,050	Large Volume Quantifiable Goal/Target - Not Field Verifiable
Asset Management and Inspections	Detailed inspections of distribution electric lines and equipment	1,635	Large Volume Quantifiable Goal/Target - Not Field Verifiable
Grid Design and System Hardening	Expulsion fuse replacement	720	Large Volume Quantifiable Goal/Target - Field Verifiable
Vegetation Management	Detailed inspections of vegetation around distribution electric lines and equipment	230	Large Volume Quantifiable Goal/Target - Not Field Verifiable
Asset Management and Inspections	Substation inspections	46	Small (less than 100 items) Volume Quantifiable Goal/Target
Situational Awareness	Advanced weather monitoring and weather stations	20	Small (less than 100 items) Volume Quantifiable Goal/Target
Vegetation Management	Additional efforts to manage community and environmental impacts	14	Small (less than 100 items) Volume Quantifiable Goal/Target
Vegetation Management	Fuel management and reduction of “slash” from vegetation management activities	N/A	Large Volume Quantifiable Goal/Target - Not Field Verifiable
Vegetation Management	LiDAR inspections of vegetation around distribution electric lines and equipment	N/A	Large Volume Quantifiable Goal/Target - Not Field Verifiable
Vegetation Management	Patrol inspections of vegetation around distribution electric lines and equipment	N/A	Large Volume Quantifiable Goal/Target - Not Field Verifiable

Vegetation Management	Quality assurance / quality control of vegetation inspections	N/A	Small (less than 100 items) Volume Quantifiable Goal/Target
Vegetation Management	Remediation of at-risk species	N/A	Large Volume Quantifiable Goal/Target - Field Verifiable
Vegetation Management	Removal and remediation of trees with strike potential to electric lines and equipment	N/A	Large Volume Quantifiable Goal/Target - Field Verifiable
Vegetation Management	Other discretionary inspections of vegetation around transmission electric lines and equipment	N/A	Small (less than 100 items) Volume Quantifiable Goal/Target
Grid Operations & Operating Protocols	Stationed and on-call ignition prevention and suppression resources and services	2	Small (less than 100 items) Volume Quantifiable Goal/Target
Grid Design and System Hardening	Covered conductor installation	5	Small (less than 100 items) Volume Quantifiable Goal/Target
Grid Design and System Hardening	Grid topology improvements to mitigate or reduce PSPS events	4	Small (less than 100 items) Volume Quantifiable Goal/Target
Grid Design and System Hardening	Installation of system automation equipment	4	Small (less than 100 items) Volume Quantifiable Goal/Target
Grid Design and System Hardening	Other corrective action	60	Small (less than 100 items) Volume Quantifiable Goal/Target
Grid Design and System Hardening	Undergrounding of electric lines and/or equipment	4	Small (less than 100 items) Volume Quantifiable Goal/Target
Grid Design and System Hardening	Distribution Pole Replacement	N/A	Small (less than 100 items) Volume Quantifiable Goal/Target

5.2 Initiative Risk Reduction Rating

Initiative Category	WMP Activity Code	Initiative	WSD Definitions	Risk Reduction Scale (1 - 10)	Rationale for Risk Rating (for incremental work associated with Wildfire Mitigation activities for 2020).	Risk Reduction Rating
Grid design and system hardening	**5.3.3.3**	15. Covered conductor installation	Installation of covered or insulated conductors to replace standard bare or unprotected conductors (defined in accordance with GO 95 as supply conductors, including but not limited to lead wires, not enclosed in a grounded metal pole or not covered by: a "suitable protective covering" (in accordance with Rule 22.8), grounded metal conduit, or grounded metal sheath or shield). In accordance with GO 95, conductor is defined as a material suitable for: (1) carrying electric current, usually in the form of a wire, cable or bus bar, or (2) transmitting light in the case of fiber optics; insulated conductors as those which are surrounded by an insulating material (in accordance with Rule 21.6), the dielectric strength of which is sufficient to withstand the maximum difference of potential at normal operating voltages of the circuit without breakdown or puncture; and suitable protective covering as a covering of wood or other non-conductive material having the electrical insulating efficiency (12kV/in. dry) and impact strength (20ft.-lbs) of 1.5 inches of redwood or other material meeting the requirements of Rule 22.8-A, 22.8-B, 22.8-C or 22.8-D.	10	Bare wire contact poses a high risk of wildfire ignition	High
Grid design and system hardening	**5.3.3.16**	28. Undergrounding of electric lines and/or equipment	Actions taken to convert overhead electric lines and equipment to underground (i.e., located underground and in accordance with GO 128).	10	Changing wire from overhead to underground seriously reduces	High

Appendix

Initiative Category	WMP Activity Code	Initiative	WSD Definitions	Risk Reduction Scale (1 - 10)	Rationale for Risk Rating (for incremental work associated with Wildfire Mitigation activities for 2020).	Risk Reduction Rating
					the risk of contact and wildfire ignition	
Vegetation management and inspections	**5.3.5.20**	64. Vegetation management to achieve clearances around electric lines and equipment	Actions taken to ensure that vegetation does not encroach upon the minimum clearances set forth in Table 1 of GO 95, measured between line conductors and vegetation, such as trimming adjacent or overhanging tree limbs.	10	Vegetation contact with energized equipment poses a very high fire risk	High
Grid operations and protocols	**5.3.6.4**	68. Protocols for PSPS re-energization	Designing and executing procedures that accelerate the restoration of electric service in areas that were de-energized, while maintaining safety and reliability standards.	10	PSPS can significantly reduce the risk of wildfire ignition.	High
Emergency planning and preparedness	**5.3.9.4**	81. Disaster and emergency preparedness plan	Development of plan to deploy resources according to prioritization methodology for disaster and emergency preparedness of utility and within utility service territory (such as considerations for critical facilities and infrastructure), including strategy for collaboration with Public Safety Partners and communities.	10	Establishing, training on, and communicating disaster and emergency plans is essential to an effective, prompt, and thorough response when needed.	High
Grid design and system hardening	**5.3.3.6**	18. Distribution pole replacement and reinforcement, including with composite poles	Remediation, adjustments, or installations of new equipment to improve or replace existing distribution poles (i.e., those supporting lines under 65 kV), including with equipment such as composite poles manufactured with materials reduce ignition probability by increasing pole lifespan and resilience against failure from object contact and other events.	9	Pole failure due to loading or wind contributes to a substantial wildfire risk	High

Appendix

Initiative Category	WMP Activity Code	Initiative	WSD Definitions	Risk Reduction Scale (1 - 10)	Rationale for Risk Rating (for incremental work associated with Wildfire Mitigation activities for 2020).	Risk Reduction Rating
Grid design and system hardening	**5.3.3.7**	19. Expulsion fuse replacement	Installations of new and CAL FIRE-approved power fuses to replace existing expulsion fuse equipment.	9	Traditional expulsive fuses can emit hot gases and molten metal which can ignite fires.	High
Asset management and inspections	**5.3.4.1**	30. Detailed inspections of distribution electric lines and equipment	In accordance with GO 165, careful visual inspections of overhead electric distribution lines and equipment where individual pieces of equipment and structures are carefully examined, visually and through use of routine diagnostic test, as appropriate, and (if practical and if useful information can be so gathered) opened, and the condition of each rated and recorded.	9	Failure to regularly inspect distribution equipment can lead to equipment failure, especially under weather stressors, which creates significant wildfire risk.	High
Grid operations and protocols	**5.3.6.1**	65. Automatic recloser operations	Designing and executing protocols to deactivate automatic reclosers based on local conditions for ignition probability and wildfire consequence.	9	Reclosing relays automatically reclose after a set number of cycles/duration following a fault. If the fault is caused by debris on a line/equipment and the circuit recloses the debris may ignite.	High

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Initiative Category	WMP Activity Code	Initiative	WSD Definitions	Risk Reduction Scale (1 - 10)	Rationale for Risk Rating (for incremental work associated with Wildfire Mitigation activities for 2020).	Risk Reduction Rating
Grid design and system hardening	**5.3.3.9**	21. Installation of system automation equipment	Installation of electric equipment that increases the ability of the utility to automate system operation and monitoring, including equipment that can be adjusted remotely such as automatic reclosers (switching devices designed to detect and interrupt momentary faults that can reclose automatically and detect if a fault remains, remaining open if so).	9	System automation can automatically respond or rapidly prompt a system operator to respond to changing system and weather conditions. This not only improves situational awareness but also allows for remote disabling of reclosers, activation of PSPS actions, and more. All of these may reduce fire risk and reduce safety risks to field personnel that would otherwise be required in the field.	High
Emergency planning and preparedness	**5.3.9.5**	82. Preparedness and planning for service restoration	Development of plans to prepare the utility to restore service after emergencies, such as developing employee and staff trainings, and to conduct inspections and remediation necessary to re-energize lines and restore service to customers.	9	Proper restoration planning and orders will require patrol inspections before re-energizing following wind, fire, or PSPS events, allow for synchronization and balancing of	High

Appendix

Initiative Category	WMP Activity Code	Initiative	WSD Definitions	Risk Reduction Scale (1 - 10)	Rationale for Risk Rating (for incremental work associated with Wildfire Mitigation activities for 2020).	Risk Reduction Rating
					resources to promote grid stability. These measures reduce fire, personnel safety, and equipment damage risks	
Asset management and inspections	**5.3.4.2**	31. Detailed inspections of transmission electric lines and equipment	Careful visual inspections of overhead electric transmission lines and equipment where individual pieces of equipment and structures are carefully examined, visually and through use of routine diagnostic test, as appropriate, and (if practical and if useful information can be so gathered) opened, and the condition of each rated and recorded.	8	Failure to regularly inspect transmission equipment can lead to equipment failure, especially under weather stressors, which creates significant wildfire risk.	High
Vegetation management and inspections	**5.3.5.2**	46. Detailed inspections of vegetation around distribution electric lines and equipment	Careful visual inspections of vegetation around the right-of-way, where individual trees are carefully examined, visually, and the condition of each rated and recorded.	8	Vegetation contact with energized equipment poses a very high fire risk. Inspections ensure that proper clearances are maintained, and hazard trees are removed.	High

Appendix

Initiative Category	WMP Activity Code	Initiative	WSD Definitions	Risk Reduction Scale (1 - 10)	Rationale for Risk Rating (for incremental work associated with Wildfire Mitigation activities for 2020).	Risk Reduction Rating
Vegetation management and inspections	**5.3.5.3**	47. Detailed inspections of vegetation around transmission electric lines and equipment	Careful visual inspections of vegetation around the right-of-way, where individual trees are carefully examined, visually, and the condition of each rated and recorded.	8	Vegetation contact with energized equipment poses a very high fire risk. Inspections ensure that proper clearances are maintained, and hazard trees are removed.	High
Vegetation management and inspections	**5.3.5.16**	60. Removal and remediation of trees with strike potential to electric lines and equipment	Actions taken to remove or otherwise remediate trees that could potentially strike electrical equipment, if adverse events such as failure at the ground-level of the tree or branch breakout within the canopy of the tree, occur.	8	Vegetation contact with energized equipment poses a very high fire risk. Inspections ensure that proper clearances are maintained, and hazard trees are removed.	High
Stakeholder cooperation and community engagement	**5.3.10.4**	87. Forest service and fuel reduction cooperation and joint roadmap	Strategy and actions taken to engage with local, state, and federal entities responsible for or participating in forest management and fuel reduction activities; and design utility cooperation strategy and joint stakeholder roadmap (plan for coordinating stakeholder efforts for forest management and fuel reduction activities).	8	Vegetation contact with energized equipment poses a very high fire risk. Inspections ensure that proper clearances are maintained, and hazard trees are removed. A substantial portion of the vegetation	High

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Initiative Category	WMP Activity Code	Initiative	WSD Definitions	Risk Reduction Scale (1 - 10)	Rationale for Risk Rating (for incremental work associated with Wildfire Mitigation activities for 2020).	Risk Reduction Rating
					which may contact energized lines/equipment is growing on land not owned/maintained by the utility therefore cooperation with outside groups is necessary.	
Asset management and inspections	**5.3.4.13**	42. Pole loading assessment program to determine safety factor	Calculations to determine whether a pole meets pole loading safety factor requirements of GO 95, including planning and information collection needed to support said calculations. Calculations shall consider many factors including the size, location, and type of pole; types of attachments; length of conductors attached; and number and design of supporting guys, per D.15-11-021.	8	Pole failure due to loading or wind contributes to a substantial wildfire risk	High
Stakeholder cooperation and community engagement	**5.3.10.3**	86. Cooperation with suppression agencies	Coordination with CAL FIRE, federal fire authorities, county fire authorities, and local fire authorities to support planning and operations, including support of aerial and ground firefighting in real-time, including information-sharing, dispatch of resources, and dedicated staff.	8	Coordination with outside agencies for fire suppression and incident command is essential. Utility suppression capabilities are minimal or non-existent.	High

Appendix

Initiative Category	WMP Activity Code	Initiative	WSD Definitions	Risk Reduction Scale (1 - 10)	Rationale for Risk Rating (for incremental work associated with Wildfire Mitigation activities for 2020).	Risk Reduction Rating
Grid design and system hardening	**5.3.3.5**	17. Crossarm maintenance, repair, and replacement	Remediation, adjustments, or installations of new equipment to improve or replace existing crossarms, defined as horizontal support attached to poles or structures generally at right angles to the conductor supported in accordance with GO 95.	7	Crossarm failure can lead to energized wire contacts with other wires, equipment, or vegetation and create ignitions.	High
Grid design and system hardening	**5.3.3.10**	22. Maintenance, repair, and replacement of connectors, including hotline clamps	Remediation, adjustments, or installations of new equipment to improve or replace existing connector equipment, such as hotline clamps.	7	Failure to regularly maintain, repair, and replace damaged equipment can lead to equipment failure, especially under weather stressors, which creates significant wildfire risk.	High
Grid design and system hardening	**5.3.3.14**	26. Transformers maintenance and replacement	Remediation, adjustments, or installations of new equipment to improve or replace existing transformer equipment.	7	Failure to regularly maintain, repair, and replace transformers can lead to equipment failure, especially under weather stressors, which creates significant wildfire risk.	High

Appendix

Initiative Category	WMP Activity Code	Initiative	WSD Definitions	Risk Reduction Scale (1 - 10)	Rationale for Risk Rating (for incremental work associated with Wildfire Mitigation activities for 2020).	Risk Reduction Rating
Asset management and inspections	**5.3.4.7**	36. LiDAR inspections of distribution electric lines and equipment	Inspections of overhead electric transmission lines, equipment, and right-of-way using LiDAR (Light Detection and Ranging, a remote sensing method that uses light in the form of a pulsed laser to measure variable distances).	7	Failure to regularly inspect equipment can lead to equipment failure, especially under weather stressors, which creates significant wildfire risk.	High
Vegetation management and inspections	**5.3.5.7**	51. LiDAR inspections of vegetation around distribution electric lines and equipment	Inspections of right-of-way using LiDAR (Light Detection and Ranging, a remote sensing method that uses light in the form of a pulsed laser to measure variable distances).	7	Vegetation contact with energized equipment poses a very high fire risk. Inspections ensure that proper clearances are maintained, and hazard trees are removed.	High
Vegetation management and inspections	**5.3.5.8**	52. LiDAR inspections of vegetation around transmission electric lines and equipment	Inspections of right-of-way using LiDAR (Light Detection and Ranging, a remote sensing method that uses light in the form of a pulsed laser to measure variable distances).	7	Vegetation contact with energized equipment poses a very high fire risk. Inspections ensure that proper clearances are maintained, and hazard trees are removed.	High

Appendix

Initiative Category	WMP Activity Code	Initiative	WSD Definitions	Risk Reduction Scale (1 - 10)	Rationale for Risk Rating (for incremental work associated with Wildfire Mitigation activities for 2020).	Risk Reduction Rating
Vegetation management and inspections	**5.3.5.11**	55. Patrol inspections of vegetation around distribution electric lines and equipment	Visual inspections of vegetation along rights-of-way that is designed to identify obvious hazards. Patrol inspections may be carried out in the course of other company business.	7	Vegetation contact with energized equipment poses a very high fire risk. Inspections ensure that proper clearances are maintained, and hazard trees are removed.	High
Vegetation management and inspections	**5.3.5.12**	56. Patrol inspections of vegetation around transmission electric lines and equipment	Visual inspections of vegetation along rights-of-way that is designed to identify obvious hazards. Patrol inspections may be carried out in the course of other company business.	7	Vegetation contact with energized equipment poses a very high fire risk. Inspections ensure that proper clearances are maintained, and hazard trees are removed.	High
Vegetation management and inspections	**5.3.5.15**	59. Remediation of at-risk species	Actions taken to reduce the ignition probability and wildfire consequence attributable to at-risk vegetation species, such as trimming, removal, and replacement.	7	Vegetation contact with energized equipment poses a very high fire risk. At risk species tend to increase fire risk more than others. Therefore, special care must be provided to attain and maintain proper clearances through	High

Initiative Category	WMP Activity Code	Initiative	WSD Definitions	Risk Reduction Scale (1 - 10)	Rationale for Risk Rating (for incremental work associated with Wildfire Mitigation activities for 2020).	Risk Reduction Rating
					removal/replacement or trimming.	
Grid operations and protocols	**5.3.6.5**	69. PSPS events and mitigation of PSPS impacts	Designing, executing, and improving upon protocols to conduct PSPS events, including development of advanced methodologies to determine when to use PSPS, and to mitigate the impact of PSPS events on affected customers and local residents.	7	PSPS can significantly reduce the risk of wildfire ignition but increase other risks to the community due to lack of power for traffic lights, healthcare needs, gas pumps, water pumps, etc. Therefore, utilities must have clearly articulated triggers for implementing PSPS, communicate the imposition and expected duration of a PSPS event (with regular updates), and actions in place to mitigate the community impacts of PSPS events.	High

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Initiative Category	WMP Activity Code	Initiative	WSD Definitions	Risk Reduction Scale (1 - 10)	Rationale for Risk Rating (for incremental work associated with Wildfire Mitigation activities for 2020).	Risk Reduction Rating
Asset management and inspections	**5.3.4.8**	37. LiDAR inspections of transmission electric lines and equipment	Inspections of overhead electric transmission lines, equipment, and right-of-way using LiDAR (Light Detection and Ranging, a remote sensing method that uses light in the form of a pulsed laser to measure variable distances).	6	Failure to regularly inspect equipment can lead to equipment failure, especially under weather stressors, which creates significant wildfire risk. Transmission generally poses a lower risk than distribution due to larger rights of way, among other factors.	Medium
Grid design and system hardening	**5.3.3.2**	14. Circuit breaker maintenance and installation to de-energize lines upon detecting a fault	Remediation, adjustments, or installations of new equipment to improve or replace existing fast switching circuit breaker equipment to improve the ability to protect Electrical circuits from damage caused by overload of electricity or short circuit.	6	Failure to regularly maintain equipment can lead to equipment failure, especially under weather stressors, which creates significant wildfire risk.	Medium

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Initiative Category	WMP Activity Code	Initiative	WSD Definitions	Risk Reduction Scale (1 - 10)	Rationale for Risk Rating (for incremental work associated with Wildfire Mitigation activities for 2020).	Risk Reduction Rating
Grid design and system hardening	**5.3.3.4**	16. Covered conductor maintenance	Remediation and adjustments to installed covered or insulated conductors. In accordance with GO 95, conductor is defined as a material suitable for: (1) carrying electric current, usually in the form of a wire, cable or bus bar, or (2) transmitting light in the case of fiber optics; insulated conductors as those which are surrounded by an insulating material (in accordance with Rule 21.6), the dielectric strength of which is sufficient to withstand the maximum difference of potential at normal operating voltages of the circuit without breakdown or puncture; and suitable protective covering as a covering of wood or other non-conductive material having the electrical insulating efficiency (12kV/in. dry) and impact strength (20ft.-lbs) of 1.5 inches of redwood or other material meeting the requirements of Rule 22.8-A, 22.8-B, 22.8-C or 22.8-D.	6	Failure to regularly maintain equipment can lead to equipment failure, especially under weather stressors, which creates significant wildfire risk.	Medium
Grid design and system hardening	**5.3.3.8**	20. Grid topology improvements to mitigate or reduce PSPS events	Plan to support and actions taken to mitigate or reduce PSPS events in terms of geographic scope and number of customers affected, such as installation and operation of electrical equipment to sectionalize or island portions of the grid, microgrids, or local generation.	6	PSPS can significantly reduce the risk of wildfire ignition but increase other risks to the community due to lack of power for traffic lights, healthcare needs, gas pumps, water pumps, etc. Therefore, if utilities can reduce the size of the area or the period of time an	Medium

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Initiative Category	WMP Activity Code	Initiative	WSD Definitions	Risk Reduction Scale (1 - 10)	Rationale for Risk Rating (for incremental work associated with Wildfire Mitigation activities for 2020).	Risk Reduction Rating
					area is affected by a PSPS to only the area with the risk requiring a PSPS action, the harm to the community from lack of power is reduced.	
Grid design and system hardening	**5.3.3.17**	29. Updates to grid topology to minimize risk of ignition in HFTDs	Changes in the plan, installation, construction, removal, or undergrounding to minimize the risk of ignition due to the design, location, or configuration of utility electric equipment in HFTDs.	6	Reducing the number of energized line miles and pieces of equipment in HFTDs through topology changes reduces the likelihood of ignition, the likelihood of PSPS events, and impact to equipment from wildfires.	Medium
Situational awareness and forecasting	**5.3.2.1**	07. Advanced weather monitoring and weather stations	Purchase, installation, maintenance, and operation of weather stations. Collection, recording, and analysis of weather data from weather stations and from external sources.	6	Use of advanced weather monitoring stations enhances system operators' situational awareness of critical fire conditions in the service territory that may be	Medium

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Initiative Category	WMP Activity Code	Initiative	WSD Definitions	Risk Reduction Scale (1 - 10)	Rationale for Risk Rating (for incremental work associated with Wildfire Mitigation activities for 2020).	Risk Reduction Rating
					significantly different from the larger area. High winds and low humidity need to be closely monitored to decide whether mitigating grid operations need to be implemented such as disabling reclosers or enacting PSPS.	
Situational awareness and forecasting	**5.3.2.3**	09. Fault indicators for detecting faults on electric lines and equipment	Installation and maintenance of fault indicators.	6	Enhances situational awareness of system operators of faults which may be due to contact with bare line or energized equipment.	Medium
Emergency planning and preparedness	**5.3.9.6**	83. Protocols in place to learn from wildfire events	Tools and procedures to monitor effectiveness of strategy and actions taken to prepare for emergencies and of strategy and actions taken during and after emergencies, including based on an accounting of the outcomes of wildfire events.	6	Identifying what went wrong from previous utility wildfire events can help the utility prevent recurrence and prevent others from creating similar dangerous conditions. Continuous	Medium

Appendix

Initiative Category	WMP Activity Code	Initiative	WSD Definitions	Risk Reduction Scale (1 - 10)	Rationale for Risk Rating (for incremental work associated with Wildfire Mitigation activities for 2020).	Risk Reduction Rating
					improvement and continuous risk reduction should be the goal. This can also reduce or eliminate wasteful spending on initiatives that don't successfully reduce risk.	
Situational awareness and forecasting	**5.3.2.6**	12. Weather forecasting and estimating impacts on electric lines and equipment	Development methodology for forecast of weather conditions relevant to utility Operations, forecasting weather conditions, and conducting analysis to incorporate into utility decision-making, learning, and updates to reduce false positives and false negatives of forecast PSPS conditions.	5	Understanding detailed weather forecasts and integrating them into system planning and operations can reduce fire risk events and influence whether to implement PSPS events.	Medium
Grid design and system hardening	**5.3.3.1**	13. Capacitor maintenance and replacement program	Remediation, adjustments, or installations of new equipment to improve or replace existing capacitor equipment.	5	Failure to regularly maintain equipment can lead to equipment failure, especially under weather stressors, which creates significant wildfire risk.	Medium

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Initiative Category	WMP Activity Code	Initiative	WSD Definitions	Risk Reduction Scale (1 - 10)	Rationale for Risk Rating (for incremental work associated with Wildfire Mitigation activities for 2020).	Risk Reduction Rating
Grid design and system hardening	**5.3.3.11**	23. Mitigation of impact on customers and other residents affected during PSPS event	Actions taken to improve access to electricity for customers and other residents during PSPS events, such as installation and operation of local generation equipment (at the community, household, or other level).	5	PSPS events significantly reduce fire risks but introduce other risks to the community especially for vulnerable populations. Local generation can mitigate these risks.	Medium
Grid design and system hardening	**5.3.3.13**	25. Pole loading infrastructure hardening, and replacement program based on pole loading assessment program	Actions taken to remediate, adjust, or install replacement equipment for poles that the utility has identified as failing to meet safety factor requirements in accordance with GO 95 or additional utility standards in the utility's pole loading assessment program.	5	Pole failure due to loading or wind contributes to a substantial wildfire risk. More resilient poles can reduce or eliminate this risk.	Medium
Grid design and system hardening	**5.3.3.15**	27. Transmission tower maintenance and replacement	Remediation, adjustments, or installations of new equipment to improve or replace existing transmission towers (e.g., structures such as lattice steel towers or tubular steel poles that support lines at or above 65 kV).	5	Transmission tower failure due to loading or wind contributes to a substantial wildfire risk. More resilient poles can reduce or eliminate this risk.	Medium
Asset management and inspections	**5.3.4.11**	40. Patrol inspections of distribution electric lines and equipment	In accordance with GO 165, simple visual inspections of overhead electric distribution lines and equipment that is designed to identify obvious structural problems and hazards. Patrol inspections may be carried out in the course of other company business.	5	Failure to regularly inspect equipment can lead to equipment failure, especially under weather stressors,	Medium

Appendix

Initiative Category	WMP Activity Code	Initiative	WSD Definitions	Risk Reduction Scale (1 - 10)	Rationale for Risk Rating (for incremental work associated with Wildfire Mitigation activities for 2020).	Risk Reduction Rating
					which creates significant wildfire risk.	
Asset management and inspections	**5.3.4.12**	41. Patrol inspections of transmission electric lines and equipment	Simple visual inspections of overhead electric transmission lines and equipment that is designed to identify obvious structural problems and hazards. Patrol inspections may be carried out in the course of other company business.	5	Failure to regularly inspect equipment can lead to equipment failure, especially under weather stressors, which creates significant wildfire risk.	Medium
Vegetation management and inspections	**5.3.5.5**	49. Fuel management and reduction of “slash” from vegetation management activities	Plan and execution of fuel management activities that reduce the availability of fuel in proximity to potential sources of ignition, including both reduction or adjustment of live fuel (in terms of species or otherwise) and of dead fuel, including "slash" from vegetation management activities that produce vegetation material such as branch trimmings and felled trees.	5	Removing vegetation and fuel sources from vegetation management activities reduces the likelihood that if an ignition occurs that such ignition will sustain itself and spread to create a wildfire.	Medium

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Initiative Category	WMP Activity Code	Initiative	WSD Definitions	Risk Reduction Scale (1 - 10)	Rationale for Risk Rating (for incremental work associated with Wildfire Mitigation activities for 2020).	Risk Reduction Rating
Vegetation management and inspections	**5.3.5.14**	58. Recruiting and training of vegetation management personnel	Programs to ensure that the utility is able to identify and hire qualified vegetation management personnel and to ensure that both full-time employees and contractors tasked with vegetation management responsibilities are adequately trained to perform vegetation management work, according to the utility wildfire mitigation plan, in addition to rules and regulations for safety.	5	It is important to use and retain qualified vegetation management personnel so that they can understand and implement proper clearances based upon the management cycles and the growth potential of the vegetation, identify and treat at risk species, identify hazard trees, appropriately clear around poles, treat/remove slash, and ensure vegetation management actions are performed safely.	Medium

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Initiative Category	WMP Activity Code	Initiative	WSD Definitions	Risk Reduction Scale (1 - 10)	Rationale for Risk Rating (for incremental work associated with Wildfire Mitigation activities for 2020).	Risk Reduction Rating
Vegetation management and inspections	**5.3.5.18**	62. Substation vegetation management	Based on location and risk to substation equipment only, actions taken to reduce the ignition probability and wildfire consequence attributable to contact from vegetation to substation equipment.	5	Vegetation contact with energized equipment poses a very high fire risk. Inspections ensure that proper clearances are maintained, and hazard trees are removed. Substations typically have wide clearances and thick layers of gravel between electrified equipment and outside vegetation but encroachments from the outside and growth from the inside must be controlled.	Medium
Data governance	**5.3.7.4**	74. Tracking and analysis of risk event data	Tools and procedures to monitor, record, and conduct analysis of data on near miss events.	5	Tracking outages and events, their causes, and whether any ignitions took place as a result is key to forming lessons learned and promoting	Medium

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Initiative Category	WMP Activity Code	Initiative	WSD Definitions	Risk Reduction Scale (1 - 10)	Rationale for Risk Rating (for incremental work associated with Wildfire Mitigation activities for 2020).	Risk Reduction Rating
					continuous improvement.	
Emergency planning and preparedness	**5.3.9.3**	80. Customer support in emergencies	Resources dedicated to customer support during emergencies, such as website pages and other digital resources, dedicated phone lines, etc.	5	Customer support during emergencies can, among other things, prevent distractions for essential personnel, maintain order, and speed evacuation orders.	Medium
Situational awareness and forecasting	**5.3.2.2**	08. Continuous monitoring sensors	Installation, maintenance, and monitoring of sensors and associated equipment used to monitor the condition of electric lines and equipment.	4	Continuous monitoring sensors can detect equipment problems before inspection or regular maintenance discovers the issue. This increases the margin for safety and prevents equipment failures which may create ignitions.	Medium

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Initiative Category	WMP Activity Code	Initiative	WSD Definitions	Risk Reduction Scale (1 - 10)	Rationale for Risk Rating (for incremental work associated with Wildfire Mitigation activities for 2020).	Risk Reduction Rating
Situational awareness and forecasting	**5.3.2.4**	10. Forecast of a fire risk index, fire potential index, or similar	Index that uses a combination of weather parameters (such as wind speed, humidity, and temperature), vegetation, and fuel conditions, and other factors to judge current fire risk and to create a forecast indicative of fire risk. A sufficiently granular index shall inform operational decision-making.	4	Knowledge of fire risk indexes can inform daily operation planning, require the disabling of reclosers, halt maintenance activities, and indicate the need for a PSPS event.	Medium
Situational awareness and forecasting	**5.3.2.5**	11. Personnel monitoring areas of electric lines and equipment in elevated fire risk conditions	Personnel position within utility service territory to monitor system conditions and weather on site. Field observations shall inform operational decisions.	4	Increases response time and informs operational decision making by providing real-time observations to system operators.	Medium
Asset management and inspections	**5.3.4.3**	32. Improvement of inspections	Identifying and addressing deficiencies in inspections protocols and implementation by improving training and the evaluation of inspectors.	4	Continuous improvement to existing procedures. As gaps and deficiencies are uncovered, reassessment of activities will enable more risk reduction value in future inspection practices	Medium

Appendix

Initiative Category	WMP Activity Code	Initiative	WSD Definitions	Risk Reduction Scale (1 - 10)	Rationale for Risk Rating (for incremental work associated with Wildfire Mitigation activities for 2020).	Risk Reduction Rating
Asset management and inspections	**5.3.4.4**	33. Infrared inspections of distribution electric lines and equipment	Inspections of overhead electric distribution lines, equipment, and right-of-way using infrared (heat-sensing) technology and cameras that can identify "hot spots", or conditions that indicate deterioration or potential equipment failures, of electrical equipment.	4	Above baseline of risk establishment, allows for real-time determination of electrical equipment that is at risk of failure	Medium
Asset management and inspections	**5.3.4.15**	44. Substation inspections	In accordance with GO 175, inspection of substations performed by qualified persons and according to the frequency established by the utility, including record-keeping.	4	Failure to inspect and maintain equipment creates unnecessary risk. Adhering to General Orders and technical requirements ensures baseline state of equipment management	Medium
Vegetation management and inspections	**5.3.5.4**	48. Emergency response vegetation management due to red flag warning or other urgent conditions	Plan and execution of vegetation management activities, such as trimming or removal, executed based upon and in advance of forecast weather conditions that indicate high fire threat in terms of ignition probability and wildfire consequence.	4	Establishing operational procedures for high risk conditions, which may include de-accelerating work or setting limitations based on ignition potential index. This is above baseline risk determination	Medium

Appendix

Initiative Category	WMP Activity Code	Initiative	WSD Definitions	Risk Reduction Scale (1 - 10)	Rationale for Risk Rating (for incremental work associated with Wildfire Mitigation activities for 2020).	Risk Reduction Rating
Vegetation management and inspections	**5.3.5.6**	50. Improvement of inspections	Identifying and addressing deficiencies in inspections protocols and implementation by improving training and the evaluation of inspectors.	4	Continuous improvement to existing procedures. As gaps and deficiencies are uncovered, reassessment of activities will enable more risk reduction value in future inspection practices	Medium
Vegetation management and inspections	**5.3.5.17**	61. Substation inspections	Inspection of vegetation surrounding substations, performed by qualified persons and according to the frequency established by the utility, including record-keeping.	4	Failure to inspect and maintain equipment creates unnecessary risk. Adhering to General Orders and technical requirements ensures baseline state of equipment management	Medium
Grid operations and protocols	**5.3.6.2**	66. Crew-accompanying ignition prevention and suppression resources and services	Those firefighting staff and equipment (such as fire suppression engines and trailers, firefighting hose, valves, and water) that are deployed with construction crews and other electric workers to provide site-specific fire prevention and ignition mitigation during on-site work	4	Continual assessment of utility resource and personnel sufficiency year over year. Greater emphasis on emergencies and service restoration, reducing time and	Medium

Appendix

Initiative Category	WMP Activity Code	Initiative	WSD Definitions	Risk Reduction Scale (1 - 10)	Rationale for Risk Rating (for incremental work associated with Wildfire Mitigation activities for 2020).	Risk Reduction Rating
					scale of impact. Small ignitions are less destructive but can quickly spread if unmanaged.	
Grid operations and protocols	**5.3.6.3**	67. Personnel work procedures and training in conditions of elevated fire risk	Work activity guidelines that designate what type of work can be performed during operating conditions of different levels of wildfire risk. Training for personnel on these guidelines and the procedures they prescribe, from normal operating procedures to increased mitigation measures to constraints on work performed.	4	Establishing operational procedures for high risk conditions, which may include de-accelerating work or setting limitations based on ignition potential index. This is above baseline risk determination	Medium
Grid operations and protocols	**5.3.6.6**	70. Stationed and on-call ignition prevention and suppression resources and services	Firefighting staff and equipment (such as fire suppression engines and trailers, firefighting hose, valves, firefighting foam, chemical extinguishing agent, and water) stationed at utility facilities or standing by to respond to calls for fire suppression assistance.	4	Continual assessment of utility resource and personnel sufficiency year over year. Greater emphasis on emergencies and service restoration, reducing time and scale of impact. Small ignitions are less destructive but	Medium

Appendix

Initiative Category	WMP Activity Code	Initiative	WSD Definitions	Risk Reduction Scale (1 - 10)	Rationale for Risk Rating (for incremental work associated with Wildfire Mitigation activities for 2020).	Risk Reduction Rating
					can quickly spread if unmanaged.	
Emergency planning and preparedness	**5.3.9.1**	78. Adequate and trained workforce for service restoration	Actions taken to identify, hire, retain, and train qualified workforce to conduct service restoration in response to emergencies, including short-term contracting strategy and implementation.	4	Continual assessment of utility resource and personnel sufficiency year over year. Greater emphasis on emergencies and service restoration, reducing time and scale of impact.	Medium
Asset management and inspections	**5.3.4.5**	34. Infrared inspections of transmission electric lines and equipment	Same as above, but with transmission requirements	4	Above baseline of risk establishment, allows for real-time determination of electrical equipment that is at risk of failure	Medium

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Initiative Category	WMP Activity Code	Initiative	WSD Definitions	Risk Reduction Scale (1 - 10)	Rationale for Risk Rating (for incremental work associated with Wildfire Mitigation activities for 2020).	Risk Reduction Rating
Risk assessment and mapping	**5.3.1.1**	01. A summarized risk map showing the overall ignition probability and estimated wildfire consequence along electric lines and equipment	Development and use of tools and processes to develop and update risk map and simulations and to estimate risk reduction potential of initiatives for a given portion of the grid (or more granularly, e.g., circuit, span, or asset). May include verification efforts, independent assessment by experts, and updates.	3	This activity establishes a baseline of risk to measure fire/ignition potential with current and planned system upgrades, additions, and removals.	Low
Risk assessment and mapping	**5.3.1.2**	02. Climate-driven risk map and modeling based on various relevant weather scenarios	Development and use of tools and processes to estimate incremental risk of foreseeable climate scenarios, such as drought, across a given portion of the grid (or more granularly, e.g., circuit, span, or asset). May include verification efforts, independent assessment by experts, and updates.	3	This activity establishes a baseline of risk to measure fire/ignition potential with current and planned system upgrades, additions, and removals.	Low
Risk assessment and mapping	**5.3.1.3**	03. Ignition probability mapping showing the probability of ignition along the electric lines and equipment	Development and use of tools and processes to assess the risk of ignition across regions of the grid (or more granularly, e.g., circuits, spans, or assets).	3	This activity establishes a baseline of risk to measure fire/ignition potential with current and planned system upgrades, additions, and removals.	Low

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Initiative Category	WMP Activity Code	Initiative	WSD Definitions	Risk Reduction Scale (1 - 10)	Rationale for Risk Rating (for incremental work associated with Wildfire Mitigation activities for 2020).	Risk Reduction Rating
Risk assessment and mapping	**5.3.1.4**	04. Initiative mapping and estimation of wildfire and PSPS risk-reduction impact	Development of a tool to estimate the risk reduction efficacy (for both wildfire and PSPS risk) and risk-spend efficiency of various initiatives.	3	This activity establishes a baseline of risk to measure fire/ignition potential with current and planned system upgrades, additions, and removals.	Low
Risk assessment and mapping	**5.3.1.5**	05. Match drop simulations showing the potential wildfire consequence of ignitions that occur along the electric lines and equipment	Development and use of tools and processes to assess the impact of potential ignition and risk to communities (e.g., in terms of potential fatalities, structures burned, monetary damages, area burned, impact on air quality and greenhouse gas, or GHG, reduction goals, etc.).	3	This activity establishes a baseline of risk to measure fire/ignition potential with current and planned system upgrades, additions, and removals.	Low
Grid design and system hardening	**5.3.3.12**	24. Other corrective action	Other maintenance, repair, or replacement of utility equipment and structures so that they function properly and safely, including remediation activities (such as insulator washing) of other electric equipment deficiencies that may increase ignition probability due to potential equipment failure or other drivers.	3	A standardized assessment on categories with "other" require more assumptions to rank higher	Low
Asset management and inspections	**5.3.4.6**	35. Intrusive pole inspections	In accordance with GO 165, intrusive inspections involve movement of soil, taking samples for analysis, or using more sophisticated diagnostic tools beyond visual inspections or instrument reading.	3	GO rules and regulations apply. Establishes baseline of risk reduction for	Low

Initiative Category	WMP Activity Code	Initiative	WSD Definitions	Risk Reduction Scale (1 - 10)	Rationale for Risk Rating (for incremental work associated with Wildfire Mitigation activities for 2020).	Risk Reduction Rating
					incremental activities	
Vegetation management and inspections	**5.3.5.19**	63. Vegetation inventory system	Inputs, operation, and support for centralized inventory of vegetation clearances updated based upon inspection results, including (1) inventory of species, (2) forecasting of growth, (3) forecasting of when growth threatens minimum right-of-way clearances ("grow-in" risk) or creates fall-in/fly-in risk.	3	Should be an ongoing effort to establish the baseline for vegetation fuel and fuel type inventory	Low
Resource allocation methodology	**5.3.8.2**	76. Risk reduction scenario development and analysis	Development of modeling capabilities for different risk reduction scenarios based on wildfire mitigation initiative implementation; analysis and application to utility decision-making.	3	Risk reduction modeling is spearheaded by RAMP and S-MAP proceedings as well as expectation of enhancements to risk spend efficiency modeling approaches and the WSD data schema. Utilities will vary in subjectivity to this activity standard and thus ranked lower as this activity establishes more of a baseline determination	Low

Initiative Category	WMP Activity Code	Initiative	WSD Definitions	Risk Reduction Scale (1 - 10)	Rationale for Risk Rating (for incremental work associated with Wildfire Mitigation activities for 2020).	Risk Reduction Rating
					based on the utility's applicability.	
Resource allocation methodology	**5.3.8.3**	77. Risk spend efficiency analysis	Tools, procedures, and expertise to support analysis of wildfire mitigation initiative risk-spend efficiency, in terms of MAVF or MARS methodologies.	3	Risk reduction modeling is spearheaded by RAMP and S-MAP proceedings as well as expectation of enhancements to risk spend efficiency modeling approaches and the WSD data schema. Utilities will vary in subjectivity to this activity standard and thus ranked lower as this activity establishes more of a baseline determination based on the utility's applicability.	Low

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Initiative Category	WMP Activity Code	Initiative	WSD Definitions	Risk Reduction Scale (1 - 10)	Rationale for Risk Rating (for incremental work associated with Wildfire Mitigation activities for 2020).	Risk Reduction Rating
Asset management and inspections	**5.3.4.9**	38. Other discretionary inspection of distribution electric lines and equipment, beyond inspections mandated by rules and regulations	Inspections of overhead electric distribution lines, equipment, and right-of-way that exceed or otherwise go beyond those mandated by rules and regulations, including GO 165, in terms of frequency, inspection checklist requirements or detail, analysis of and response to problems identified, or other aspects of inspection or records kept.	2	A standardized assessment on categories with "other" require more assumptions to rank higher	Low
Asset management and inspections	**5.3.4.10**	39. Other discretionary inspection of transmission electric lines and equipment, beyond inspections mandated by rules and regulations	Inspections of overhead electric transmission lines, equipment, and right-of-way that exceed or otherwise go beyond those mandated by rules and regulations, including GO 165, in terms of frequency, inspection checklist requirements or detail, analysis of and response to problems identified, or other aspects of inspection or records kept.	2	A standardized assessment on categories with "other" require more assumptions to rank higher	Low
Asset management and inspections	**5.3.4.14**	43. Quality assurance / quality control of inspections	Establishment and function of audit process to manage and confirm work completed by employees or subcontractors, including packaging QA/QC information for input to decision-making and related integrated workforce management processes.	2	Data verification in support of data management and repository/database development and contributes to other activities. Means of execution has less than medium impact on risk of ignition events.	Low

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Initiative Category	WMP Activity Code	Initiative	WSD Definitions	Risk Reduction Scale (1 - 10)	Rationale for Risk Rating (for incremental work associated with Wildfire Mitigation activities for 2020).	Risk Reduction Rating
Vegetation management and inspections	**5.3.5.1**	45. Additional efforts to manage community and environmental impacts	Plan and execution of strategy to mitigate negative impacts from utility vegetation management to local communities and the environment, such as coordination with communities to plan and execute vegetation management work or promotion of fire-resistant planting practices	2	Coordination efforts must run in parallel and may develop over the course of the executed WMP cycle.	Low
Vegetation management and inspections	**5.3.5.9**	53. Other discretionary inspection of vegetation around distribution electric lines and equipment, beyond inspections mandated by rules and regulations	Inspections of rights-of-way and adjacent vegetation that may be hazardous, which exceeds or otherwise go beyond those mandated by rules and regulations, in terms of frequency, inspection checklist requirements or detail, analysis of and response to problems identified, or other aspects of inspection or records kept.	2	A standardized assessment on categories with "other" require more assumptions to rank higher	Low
Vegetation management and inspections	**5.3.5.10**	54. Other discretionary inspection of vegetation around transmission electric lines and equipment, beyond inspections mandated by rules and regulations	Same as above, but with transmission requirements	2	A standardized assessment on categories with "other" require more assumptions to rank higher	Low
Vegetation management and inspections	**5.3.5.13**	57. Quality assurance / quality control of inspections	Establishment and function of audit process to manage and confirm work completed by employees or subcontractors, including packaging QA/QC information for input to decision-making and related integrated workforce management processes.	2	Data verification in support of data management and repository/database development and contributes to other activities. Means of execution has	Low

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					minimal impact on risk of ignition events.	
Data governance	**5.3.7.1**	71. Centralized repository for data	Designing, maintaining, hosting, and upgrading a platform that supports storage, processing, and utilization of all utility proprietary data and data compiled by the utility from other sources.	2	Data management and schema development will be an iterative process and crucial in parallel activities to reducing risk of wildfire consequence and PSPS impacts.	Low
Data governance	**5.3.7.3**	73. Documentation and disclosure of wildfire-related data and algorithms	Design and execution of processes to document and disclose wildfire-related data and algorithms to accord with rules and regulations, including use of scenarios for forecasting and stress testing.	2	Data management and schema development will be an iterative process and crucial in parallel activities to reducing risk of wildfire consequence and PSPS impacts. Disclosure of resources are structured by WSD compliance guidelines until a centralized	Low

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Initiative Category	WMP Activity Code	Initiative	WSD Definitions	Risk Reduction Scale (1 - 10)	Rationale for Risk Rating (for incremental work associated with Wildfire Mitigation activities for 2020).	Risk Reduction Rating
					repository for all wildfire information is generated amongst respondent entities	
Resource allocation methodology	**5.3.8.1**	75. Allocation methodology development and application	Development of prioritization methodology for human and financial resources, including application of said methodology to utility decision-making.	2	Continual assessment of utility resource and personnel sufficiency year over year.	Low
Emergency planning and preparedness	**5.3.9.2**	79. Community outreach, public awareness, and communications efforts	Actions to identify and contact key community stakeholders; increase public awareness of emergency planning and preparedness information; and design, translate, distribute, and evaluate effectiveness of communications taken before, during, and after a wildfire, including Access and Functional Needs populations and Limited English Proficiency populations in particular.	2	Assessment of customer needs and criteria for communications support. This activity does not directly reduce wildfire consequence but does reduce impacts from PSPS activation and restoration activities	Low

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Risk assessment and mapping	**5.3.1.6**	06. Weather-driven risk map and modeling based on various relevant weather scenarios	Removed for 2021	1	This initiative activity has been removed in 2021 and provides the justification for the lower risk rating	Low
Data governance	**5.3.7.2**	72. Collaborative research on utility ignition and/or wildfire	Developing and executing research work on utility ignition and/or wildfire topics in collaboration with other non-utility partners, such as academic institutions and research groups, to include data-sharing and funding as applicable.	1	In comparison to initiative activities, utilities have little control over the sphere of technological advancements. Shared knowledge has been an implicit practice throughout the development of WMP guidelines and compliance requirements and thus, iterative.	Low
Stakeholder cooperation and community engagement	**5.3.10.1**	84. Community engagement	Strategy and actions taken to identify and contact key community stakeholders; increase public awareness and support of utility wildfire mitigation activity; and design, translate, distribute, and evaluate effectiveness of related communications. Includes specific strategies and actions taken to address concerns and serve needs of Access and Functional Needs populations and Limited English Proficiency populations in particular.	1	While this greatly increases customer awareness to the threats of wildfire and PSPS impacts, the onus is on the utility to ensure activities are executed properly and inform the public of	Low

Initiative Category	WMP Activity Code	Initiative	WSD Definitions	Risk Reduction Scale (1 - 10)	Rationale for Risk Rating (for incremental work associated with Wildfire Mitigation activities for 2020).	Risk Reduction Rating
					developments and project implementation. Third-party risk reduction is valued under this activity, though deemed out of scope of measuring utility risk reduction of wildfire consequence and PSPS impact	
Stakeholder cooperation and community engagement	**5.3.10.2**	85. Cooperation and best practice sharing with agencies outside CA	Strategy and actions taken to engage with agencies outside of California to exchange best practices both for utility wildfire mitigation and for stakeholder cooperation to mitigate and respond to wildfires.	1	Collaboration with adjacent communities and local public safety partners have proven successful in comparison to exploring opportunities outside of the state. In the current WMP cycle, there has been minimum examples of interstate development apart from West Coast Commission gatherings and	Low

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					developed technologies vetted from countries like Australia	

5.3 Liberty Data Request Log

SUBMITTAL DATE	SUBMITTAL TITLE	Files Submitted	SUBMITTED BY	DUE DATE	DATE RETURNED
5/20/2021	**Liberty Data Request 1_210520**	Liberty Data Request 1_210520 Transmittal_LIB1002	Adam Daly	5/24/2021	
	DR Responses	Liberty Response to NV5-Liberty-WMP-01_5.25.21.docx	Jordan Parillo		5/25/2021
	Q1	2020 WMP - DR's Attachment 5.xlsx 2020 WMP - Metrics & Underlying Data - Attach1.xlsx 2020 WMP Attachment 5 - Narrative Tables 2, 5, 7, 9.pdf WMP Performance Metrics Data_20210305_FINAL.xlsx WSD_GIS_DataSchema_StatusReport_20210305_FINAL.xlsx	Jordan Parillo		
		gdb files			
		gdb files			
		gdb files			
		gdb files			
	Q2	WSD_GIS_DataSchema_StatusReport_20200909_FINAL.xlsx	Jordan Parillo		
	Q3	R1810007 - LU CalPeco Electric's Data Collection for Wildfire Mitigation Plans.pdf	Jordan Parillo		
	Q5	Liberty 2020 Q4 QIU_04.01.2021.xlsx	Jordan Parillo		
	Q6 and Q7	5 Yr SAIFI and SAIDI through CY20.xlsx	Jordan Parillo		
	Q8	Question 1 Part #8 - NV5 Data Request (as filed).xlsx	Jordan Parillo		
	Q10	Vegetation Management Plan_V2018_w_Attachments.pdf VM-03_Hazard_Tree_Plan_1.0.pdf VM-04_Post_Work_Verification_1.0.pdf VM-05_Vegetation_Threat_Procedure_1.0.pdf	Jordan Parillo		
5/21/2021	**Liberty Data Request 2_210521**	Liberty Data Request 2_210521 Transmittal_LIB_1003	Andrew Dressel	5/26/2021	

	DR Responses	Liberty Response to NV5-Liberty-WMP-02_05.26.2021 Liberty Utilities Pole Clearing and Tree Work Audit Report - 2020 FINAL VM-04_Post_Work_Verification_1.0	Eliot Jones		5/27/2021
5/21/2021	**Liberty Data Request 3_210521**	Liberty Data Request 3_210521 Transmittal_LIB_1004	Andrew Dressel	5/26/2021	
	Response	Liberty Response to NV5-Liberty-WMP-03_5.25.21	Eliot Jones		5/27/2021
	Covered Conductor	NV5_Liberty03_2020_Covered_Conductor.shp NV5_Liberty03_2020_Covered_Cond.shp.xml NV5_Liberty03_2020_Covered_Conductor.dbf NV5_Liberty03_2020_Covered_Conductor.prj NV5_Liberty03_2020_Covered_Conductor.sbn NV5_Liberty03_2020_Covered_Conductor.sbx NV5_Liberty03_2020_Covered_Conductor.shp NV5_Liberty03_2020_Covered_Conductor.shx			
	Pole Replacements	NV5_Liberty03_2020_Pole_Replacements.dbf NV5_Liberty03_2020_Pole_Replacements.sbn NV5_Liberty03_2020_Pole_Replacements.sbx NV5_Liberty03_2020_Pole_Replacements.shp NV5_Liberty03_2020_Pole_Replacements.shx NV5_Liberty03_2020_Weather_Stations.dbf NV5_Liberty03_2020_Weather_Stations.prj NV5_Liberty03_2020_Weather_Stations.sbn NV5_Liberty03_2020_Weather_Stations.sbx NV5_Liberty03_2020_Weather_Stations.shp NV5_Liberty03_2020_Weather_Stations.shx			
	Sectionalizing Devices	NV5_Liberty03_2020_Sectionalizing_Devices.dbf NV5_Liberty03_2020_Sectionalizing_Devices.prj NV5_Liberty03_2020_Sectionalizing_Devices.sbn NV5_Liberty03_2020_Sectionalizing_Devices.sbx NV5_Liberty03_2020_Sectionalizing_Devices.shp NV5_Liberty03_2020_Sectionalizing_Devices.shx			
	Tree Attachments	Combine Drawing -AMF_OH_Rbld-8800-0120-0395-12.20.20.pdf			

	Vegetation Management	NV5_Liberty03_2020_Veg_Data.dbf NV5_Liberty03_2020_Veg_Data.prj NV5_Liberty03_2020_Veg_Data.sbn NV5_Liberty03_2020_Veg_Data.sbx NV5_Liberty03_2020_Veg_Data.shp NV5_Liberty03_2020_Veg_Data.shx NV5_Liberty03_2020_Veg_FRC_Fuels.prj NV5_Liberty03_2020_Veg_FRC_Fuels.sbn NV5_Liberty03_2020_Veg_FRC_Fuels.sbx NV5_Liberty03_2020_Veg_FRC_Fuels.shp NV5_Liberty03_2020_Veg_FRC_Fuels.shp.xml NV5_Liberty03_2020_Veg_FRC_Fuels.shx			
5/27/2021	**Liberty Data Request 4_210527**	Liberty Data Request 4_210527 Transmittal_LIB_1005	Andrew Dressel	6/2/2021	
	Response	Liberty Response to NV5-Liberty-WMP-04_6.2.21			6/4/2021
	(R) 1752 (P) 291450-260 Fallen Leaf Rd	BOM 0120-0387 - (R) 1752 (P) 291450.pdf Drawing-(R) 1752 (P) 291450-260 Fallen Leaf Rd.pdf			
	_Ocalc	OCalc-(R) 1752 (P) 291450-260 Fallen Leaf Rd.pdf OCalc-(R) 1752 (P) 291450-260 Fallen Leaf Rd.pplx			

	_Pictures	2020-09-28 12.01.52.jpg 2020-09-28 12.03.53.jpg 2020-09-28 12.03.56.jpg 2020-09-28 12.04.07.jpg 2020-09-28 12.04.23.jpg 2020-09-28 12.04.26.jpg 2020-09-28 12.04.44.jpg 2020-09-28 12.04.53.jpg 2020-09-28 12.04.55.jpg 2020-09-28 12.04.58.jpg 2020-09-28 12.05.25.jpg 2020-09-28 12.05.28.jpg 2020-09-28 12.05.32.jpg 2020-09-28 12.08.55.jpg 2020-09-28 12.09.41.jpg 2020-09-28 12.10.39.jpg 2020-09-28 12.10.57.jpg 2020-09-28 12.11.01.jpg 2020-09-28 12.11.50.jpg 2020-09-28 12.11.53.jpg 2020-09-28 12.12.11.jpg 2020-09-28 12.12.15.jpg 2020-09-28 12.12.19.jpg 2020-09-28 12.12.35.jpg 2020-09-28 12.12.38.jpg 2020-09-28 12.13.05.jpg 2020-09-28 12.13.09.jpg 2020-09-28 12.13.31.jpg			
		2020-09-28 12.14.08.jpg 2020-09-28 12.14.24.jpg 2020-09-28 12.15.47.jpg 2020-09-28 12.16.02.jpg 2020-09-28 12.16.40.jpg 2020-09-28 12.16.50.jpg 2020-09-28 12.17.50.jpg 2020-09-28 12.17.53.jpg 2020-09-28 12.18.20.jpg 2020-09-28 12.20.21.jpg			
	__Fulcrum Pictures	Pole 1752 - frame.jpg Pole 1752.jpg			
	Approved MFR Drawings	EB2A22144Y6JR01.pdf			
	Fusing Project	Appendix E Fusing Project SOW.DOCX			

	Material Specifications	_TOC.pdf MATERIAL SPECS - ELE01X.pdf MATERIAL SPECS - ELE02X.pdf MATERIAL SPECS - ELE03X.pdf MATERIAL SPECS - ELE04X.pdf MATERIAL SPECS - ELE05X.pdf MATERIAL SPECS - ELE06X.pdf MATERIAL SPECS - ELE07X.pdf MATERIAL SPECS - ELE08X.pdf MATERIAL SPECS - ELE09X.pdf MATERIAL SPECS - GMT01X.pdf MATERIAL SPECS - GMT02X.pdf MATERIAL SPECS - GMT03X.pdf MATERIAL SPECS - GMT04X.pdf MATERIAL SPECS - GMT05X.pdf MATERIAL SPECS - GMT06X.pdf MATERIAL SPECS - GMT07X.pdf MATERIAL SPECS - GMT08X.pdf MATERIAL SPECS - GMT09X.pdf MATERIAL SPECS - GMT10X.pdf MATERIAL SPECS - OCD01X.pdf MATERIAL SPECS - OCD02X.pdf MATERIAL SPECS - OCD03X.pdf MATERIAL SPECS - PTF01X.pdf MATERIAL SPECS - PTF02X.pdf MATERIAL SPECS - PTF03X.pdf MATERIAL SPECS - PTF04X.pdf MATERIAL SPECS - PTF05X.pdf			
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	Overhead	Overhead TOC.pdf			
	_Assembly PDFs	01-AR-H 02-CON-H 03-CBC-H 04-EB-H 05-GD-H 07-IAP-H 08-IBP_H 09-IDC-H 10-IDS_H 11-IPC_H 12-ISB-H 13-ITP-H 14-LAR-H 16-LSS-H 18-SCA-H 19-SDE-H 20-XAB-H 21-XAM-H 22-XAW-H			
	_Favorite PDFs	30-ANG_H 32-DEA_H 33-FUS_H 37-RIS_H 39-TAN_H 40-TAP_H 41-TRA_H			

	_Techincal PDFs	ANC03T.pdf ANC04T.pdf ANC05T.pdf ARR01T.pdf ARR06T.pdf CAP01T.pdf CAP03T.pdf CLE01T.pdf CLE05T.pdf CON01T.pdf CON03T.pdf CON04T.pdf CON05T.pdf CON06T.pdf CON07T.pdf FUS05T.pdf GEN02T.pdf HAR03T.pdf HAR04T.pdf HAR05T.pdf HAR06T.pdf HAR07T.pdf HAR09T.pdf HAR10T.pdf HAR11T.pdf HAR13T.pdf HAR15T.pdf INS01T.pdf			
		POL01T.pdf POL03T.pdf POL05T.pdf REG01T.pdf TRA01T.pdf TRA02T.pdf TRA05T.pdf			
	Protection System Maintenance	CalPeco - Protection System Maintenance.pdf Commissioning Checklist Template.xlsx			

	Substructures	Substructures - TOC.pdf Substructures - Section 1.pdf Substructures - Section 2.pdf Substructures - Section 3.pdf Substructures - Section 4.pdf Substructures - Section 5.pdf Substructures - Section 6.pdf Substructures - Section 7.pdf Substructures - Section 8.pdf			
	Tree Attach	Combine Drawing -AMF_OH_Rbld-8800-0120-0395-12.20.20.pdf			
	Underground	CBR02U-04U.pdf CBR10U.pdf CDS01U-04U&11U-14U.pdf Electric_Map-Apache_Ave_Rule_20-Liberty-8800-0118-0105-12-15-18.pdf GD01U-03U&09U.pdf MAR01U.pdf PCR01U.pdf PCR02U.pdf PCR03U.pdf PCR04U.pdf PCR05U.pdf PCR06U.pdf PCR11U.pdf PCR12U.pdf PCR13U.pdf PCR14U.pdf PCR15U.pdf PCR16U.pdf PCR20U.pdf PCR21U.pdf PCR23U.pdf PCR24U.pdf PCS01U.pdf PCS19U-20U.pdf PET10U.pdf PET11U.pdf PET12U.pdf			

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	Weather Stations	Draft DOH.PDF Weather Station-Weather Station Installation-JA.PDF			
6/1/2021	**Liberty Data Request 5_210601**	Liberty Data Request 5_210601 Transmittal_LIB_1006	Andrew Dressel	6/3/2021	
	DR 5 Response	LU CalPeCo Safety Handbook -2021 Final NV5-Liberty-WMP-05_6.2.21	Eliot Jones		6/3/2021
6/2/2021	**Liberty Data Request 6_210602**	Liberty Data Request 6_210602 Transmittal_LIB_1007	Andrew Dressel	6/7/2021	
	NV5-Liberty-06 DR Response - Liberty Utilities_IE	NV5-Liberty-WMP-06 Response Tier 3 Inspections	Eliot Jones		6/8/2021
	_2020 Tier 3 Invoices	INVOICE 28841.pdf INVOICE 28842.pdf INVOICE 28847.pdf INVOICE 28888.pdf INVOICE 29076.pdf INVOICE 29641.pdf INVOICE 29978.pdf			
6/2/2021	**Liberty Data Request 7_210602**	Liberty Data Request 7_210602 Transmittal_LIB_1008	Andrew Dressel	6/7/2021	

	Response	Liberty Response to NV5-Liberty-WMP-07.docx Ocalc-8800-0218-0354 7300 Line Ph 4-Reconductor Liberty.pdf Ocalc-8800-0218-0355 7300 Line Ph 5-Reconductor Liberty.pdf	Eliot Jones		6/9/2021
	_Covered Conductor	8800-0117-0114 - Topaz PH 2 - As Built Map.pdf 8800-0119-0100 - Topaz PH 4 - As Built Map.pdf 8800-0120-0348 - Topaz PH 5 - As Built Map.pdf Electric Map-8800-0218-0355 7300 Line Ph 5-Reconductor Liberty_Revised.pdf Electric Map-8800-0218-0354 7300 Line Ph 4-Reconductor Liberty_Revised.pdf Map-8800-0218-0261 Vikingsholm Tap-OH Rebuild-Liberty_4-20-2020.pdf			
	_Detailed Inspections	2020 Detailed Inspection Data.xlsx			
	_Fuse Install	2020 liberty_fuse_install.xlsx			
	_Pole Replacement	Q4_2020_PolesReplaced.xlsx			
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	__Topaz Phase2 O-Calcs	Reports_Pole_Pole_128752.pdf Reports_Pole_Pole_266793.pdf Reports_Pole_Pole_266797.pdf Reports_Pole_Pole_293140.pdf Reports_Pole_Pole_293528.pdf Reports_Pole_Pole_293529.pdf Reports_Pole_Pole_293530.pdf Reports_Pole_Pole_293531.pdf Reports_Pole_Pole_293532.pdf Reports_Pole_Pole_293533.pdf Reports_Pole_Pole_293534.pdf Reports_Pole_Pole_293535.pdf Reports_Pole_Pole_293538.pdf Reports_Pole_Pole_293539.pdf Reports_Pole_Pole_293540.pdf Reports_Pole_Pole_293541.pdf Reports_Pole_Pole_293542.pdf Reports_Pole_Pole_293589.pdf Reports_Pole_Pole_72597.pdf Reports_Pole_Pole_98588.pdf			

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	_Underground	Electric_Map-Apache_Ave_Rule_20-Liberty-8800-0118-0105-12-15-18.pdf			
6/9/2021	**Liberty Data Request 8_210608**	Liberty Data Request 8_210608 Transmittal_LIB_1010	Adam Daly	6/11/2021	
	Response	Liberty Response to NV5-Liberty-WMP-08.docx Patrol Inspections.pdf Tree Failure Investigation Data.csv	Eliot Jones		6/9/2021

5.4 IE Findings Summary

SOW Category	2020 Initiative Number	Initiative Name	Finding	Detail on finding
WMP Activity Completion	5.3.3.7	Expulsion fuse replacement	Based on the available information and discussion with Liberty, the IE has reasonable assurance Liberty performed the obligation of this initiative.	
WMP Activity Completion	5.3.5.15	Remediation of at-risk species	Based on the WMP, documentation reviewed, and live demonstration interviews, the IE has reasonable assurance Liberty did not meet the full obligation of this initiative.	Insufficient evidence was provided, and deficiencies identified in the Field Inspections led to this finding.
WMP Activity Completion	5.3.5.16	Removal and remediation of trees with strike potential to electric lines and equipment	Based on the WMP, documentation reviewed, and live demonstration interviews, the IE has reasonable assurance Liberty did not meet the full obligation of this initiative.	Insufficient evidence was provided, and deficiencies identified in the Field Inspections led to this finding.
WMP Activity Completion	5.3.5.20	Vegetation management to achieve clearances around electric lines and equipment	Based on the WMP, documentation reviewed, and live demonstration interviews, the IE has reasonable assurance Liberty did not meet the full obligation of this initiative.	Insufficient evidence was provided, and deficiencies identified in the Field Inspections led to this finding.
WMP Activity Completion	5.3.4.6	Intrusive pole inspections	Based on the available information and discussion with Liberty, the IE is not able to confirm with reasonable assurance Liberty has performed the obligation of this initiative.	.
WMP Activity Completion	5.3.5.11 & 12	Patrol Inspections of vegetation around distribution electric lines and equipment	Based on the WMP, documentation reviewed, and live demonstration interviews, the IE has reasonable assurance Liberty has performed the obligation of this initiative.	
WMP Activity Completion	5.3.4.11 & 12	Patrol inspections of distribution and transmission electric lines and equipment	Based on the available information and discussion with Liberty, the IE is not able to confirm with reasonable assurance Liberty has performed the obligation of this initiative.	The IE suggest that the WSD conduct additional inquiry with Liberty and request additional supporting evidence.
WMP Activity Completion	5.3.4.1 & 2	Detailed inspections of distribution and	Based on the available information and discussion with Liberty, the IE has reasonable assurance Liberty	

Appendix

SOW Category	2020 Initiative Number	Initiative Name	Finding	Detail on finding
		transmission electric lines and equipment	has performed the obligation of this initiative.	
WMP Activity Completion	5.3.3.18	Detailed inspections of vegetation around distribution and transmission electric lines and equipment	Based on the WMP, documentation reviewed, and live demonstration interviews, the IE has reasonable assurance Liberty has performed this initiative as described in the 2020 WMP.	
WMP Activity Completion	5.3.3.12.1	Other / not listed Wire Upgrade Program	Based on the Initiative's lack of measurable targets or quantifiable results, available information and discussion with Liberty, the IE cannot verify Liberty performed the obligation of this initiative.	The IE did not have sufficient time to verify activities through the sampled field inspection and did not include these types of assets in the proposed inspection list.
WMP Activity Completion	5.3.5.5	Overhead Asset Repairs from Asset Survey/GIS Update	Based on the available information, discussion with Liberty and the demonstration, the IE has reasonable assurance Liberty is met the obligation of this initiative.	
WMP Activity Completion	5.3.2.1	Advanced weather monitoring and weather stations	Given the timeline of this review, the IE was not able to review any additional evidence associated with this initiative to verify work performed	The IE recommends that the WSD follow up with Liberty and request additional supporting evidence.
WMP Activity Completion	5.3.5.1	Additional efforts to manage community and environmental impacts	Given the timeline of this review, the IE was not able to review any additional evidence associated with this initiative to verify work performed	The IE recommends that the WSD follow up with Liberty and request additional supporting evidence.
WMP Activity Completion	5.3.4.9	Stationed and on-call ignition prevention and suppression resources and services	Given the timeline of this review, the IE was not able to review any additional evidence associated with this initiative to verify work performed	The IE recommends that the WSD follow up with Liberty and request additional supporting evidence.
WMP Activity Completion	5.3.3.3	Covered Conductor Installation	Based on the available information, the IE was able to have a reasonable assurance that Liberty had exceeded its projected "Annual Quantity Target" of 5-line miles by completing the installation of the 6.8 lines of covered conductor.	
WMP Activity Completion	5.3.3.4	Covered Conductor Maintenance	Given the timeline of this review, the IE was not able to review any additional evidence associated with	The IE recommends that the WSD follow up with Liberty and request additional supporting evidence.

Appendix

SOW Category	2020 Initiative Number	Initiative Name	Finding	Detail on finding
			this initiative to verify Liberty performed the objective of this initiative.	
WMP Activity Completion	5.3.3.16	Undergrounding of electric lines and/or equipment	Based on the available information and discussion with Liberty, the IE has reasonable assurance Liberty has performed the obligation of this initiative but suggests that Liberty may need to take a more comprehensive approach to undergrounding beyond Rule 20.	
WMP Activity Completion	5.3.3.9	Installation of system automation equipment	Based on the available information, discussion with Liberty and the demonstration, the IE has reasonable assurance Liberty performed obligation of this initiative.	
WMP Activity Completion	5.3.3.18	Other corrective action – Tree attachment removal	Given the timeline of this review, the IE was not able to review any additional evidence associated with this initiative to verify work performed.	The IE suggest that the WSD conduct additional inquiry with Liberty and request additional supporting evidence.
WMP Activity Completion	5.3.3.6	Distribution pole replacement and reinforcement, including with composite poles	Based on the available information and discussion with Liberty, the IE has reasonable assurance Liberty has performed the obligation of this initiative.	
WMP Activity Completion	5.3.3.5	Crossarm maintenance, repair, and replacement	Based on the documentation provided for this initiative, the IE was unable to determine with reasonable assurance that the objective of this initiative was met.	The IE believes that that these types of repairs are being done under the 2020 Revised WMP 5.3.3.18: Other / not listed: Overhead Asset Repairs from Asset Survey/GIS Update, but was not able to verify the completion of this week due to time limitations. In the future, it would be helpful if Liberty addressed the initiatives separately under the specific initiatives instead of the combining all the repairs into a single initiative.
WMP Activity Completion	5.3.3.10	Maintenance, repair, and replacement of connectors, including hotline clamps.	The IE was not able to make determination regarding this initiative due to time limitations.	The IE recommends the WSD follow up with Liberty regarding the applicability of the Grid Design & System Hardening 5.3.3.11 & 2 Asset survey results and the Grid Design & System Hardening 5.3.3.18 – Other corrective action initiative.

Appendix

SOW Category	2020 Initiative Number	Initiative Name	Finding	Detail on finding
WMP Activity Completion	5.3.3.3	Pole loading infrastructure hardening and replacement program	Based on the available information and discussion with Liberty, the IE has reasonable assurance Liberty has performed the obligation of this initiative.	
WMP Activity Completion	5.3.3.14	Transformers maintenance and replacement	The IE was not able to make determination regarding this initiative due to time limitations. recommends the WSD follow up with Liberty regarding the applicability of the Grid Design & System Hardening 5.3.3.1 & 2 Asset survey results and the Grid Design & System Hardening 5.3.3.18 – Other corrective action initiative.	The IE recommends the WSD follow up with Liberty regarding the applicability of the Grid Design & System Hardening 5.3.3.1 & 2 Asset survey results and the Grid Design & System Hardening 5.3.3.18 – Other corrective action initiative.
WMP Activity Completion	5.3.4.13	Pole loading assessment program to determine safety factor	With the provided documentation, the IE has reasonable assurance that Liberty is has performed the obligations of this initiative	The IE recommends that Liberty evaluate the benefit of separating this program out from the Covered Conductor Installation Program for purposes of tracking and presentation in future WMP submissions.
WMP Activity Completion	5.3.4.7	LiDAR inspections of distribution and transmission electric lines and equipment (Vegetation Management & Inspections and Asset Management & Inspections)	The IE confirmed that LiDAR was not used for this initiative in 2020. No additional evidence or evaluation performed.	The IE reviewed the LIB 2020 Q4 QIU, [rows 20-21,32] that reported no "Annual Quantity Targets" but cited "Quantity Actual Progress Q1-Q4" of 328 line miles inspected using LIDAR Inspection for Vegetation around distribution electric lines.