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PAC_006

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking to Implement
Electric Utility Wildfire Mitigation Plans Pursuant
to Senate Bill 901 (2018).

Rulemaking 18-10-007
(filed October 25, 2018)

**LIBERTY UTILITIES (CALPECO ELECTRIC) LLC'S (U 933-E) 2020 WILDFIRE
MITIGATION PLAN ANNUAL REPORT ON COMPLIANCE**

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March 31, 2021

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Pursuant to the Wildfire Safety Division (“WSD”) Compliance Operational Protocols issued on February 16, 2021, associated with Rulemaking (“R.”) 18-10-007, Liberty Utilities (“CalPeco Electric”) LLC (“Liberty”) hereby files this Annual Report on Compliance (“ARC”) regarding Liberty’s 2020 Wildfire Mitigation Plan (“2020 WMP”). This ARC follows the guidance in Table 4 (Section 2) of the WSD Compliance Operational Protocols.

I. ASSESSMENT OF LIBERTY’S 2020 WMP INITIATIVES

WSD Guidance: Submit an assessment of whether Liberty met the risk reduction intent by implementing all of their approved WMP initiatives, i.e., the degree to which initiative activities have reduced ignition probabilities. If Liberty fails to achieve the intended risk reduction, EC shall provide a detailed explanation of why and a reference to where associated corrective actions are incorporated into their most recently submitted WMP.

A. Overall 2020 WMP

In accordance with Cal. Pub. Util. Code § 8386(a), Liberty constructs, maintains, and operates its electric system in a manner that minimizes the risk of catastrophic wildfire posed by its electric power lines and equipment. Liberty’s overarching WMP goal is to prevent and mitigate the risk of wildfires caused by utility equipment. In 2020, Liberty continued to identify ways to enhance its wildfire prevention

and mitigation efforts through enhancing or expanding existing programs and developing and implementing new programs. Liberty's overall progress in 2020 implementing its WMP met the risk reduction intent of its 2020 WMP to reduce ignition probabilities and minimize the societal consequences (with specific consideration to the impact on Access and Functional Needs populations and marginalized communities) of both wildfires and the mitigations employed to reduce them, including Public Safety Power Shutoff ("PSPS") events.

B. Risk Assessment and Mapping

Liberty's progress in 2020 related to the Risk Assessment and Mapping WMP initiatives 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.

In 2020, Liberty advanced from no risk model or mapping capabilities to a first-generation wildfire risk model and fire risk mapping tools that cover Liberty's entire service area. The establishment of Liberty's risk mapping and wildfire risk models will allow the company to incorporate objective, quantitative analysis into its decision-making regarding all wildfire risk drivers.

C. Situational Awareness and Forecasting

Liberty's progress in 2020 related to the Situational Awareness and Forecasting WMP initiatives 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.

Specifically, Liberty accomplished the following related to Situational Awareness and Forecasting WMP initiatives in 2020:

- Installed 19 weather stations equipped with fuel moisture sensors in and across High Fire Threat Districts. Prioritization was given to installations based on Reax risk mapping designated high wildfire areas. Liberty's advanced weather monitoring program improves situational awareness by providing weather information to operations and allows for the

safe operation of the electric grid during extreme weather events. Continuation of this program reduces the likelihood of avoidable customer outages and probability of ignitions risk with continuous weather monitoring. Enhanced real-time weather monitoring data provides an important tool to help Liberty plan for operating activities during such extreme events. In 2020, Liberty installed 19 out of 20 targeted weather stations, bringing the total number of weather stations to 29. Fuel moisture sensors were also added to weather stations installed in 2020 and retrofitted to several of the locations installed in 2019. Fuel moisture sensors can help to validate fuel moisture conditions, which is crucial to accurately predict wildfire risk in local areas. The data from these weather stations provides much needed support for Liberty's PSPS and FPI tools.

- Liberty installed SCADA controls to four additional reclosers, deployed Tripsavers to one feeder, and is finalizing the implementation of the ALERTWildfire camera network partnership. The primary benefit of continuous monitoring sensors is to enhance visibility of the system and system reliability. The ability to quickly determine fault and outage locations allows dispatchers to quickly deploy resources to evaluate and resolve system issues. Another benefit of continuous monitoring systems is providing a faster response to an ignition event. Aclara sensors (SCADA controls) record continuous line disturbances, which can be analyzed and repaired before an issue leads to an ignition. Tripsavers are an effective tool during high fire threat days with their one-shot (fire mode) capability. AlertWildfire cameras provide opportunity for early detection of ignitions and provide opportunity to view areas where a fault may have occurred. The AlertWildfire Camera network has grown significantly throughout California and other western states in large part due to partnerships with electric utilities. Over the last few years, these cameras have

proven their value and have become an integral part of fire detection and monitoring during fire season in California. With more cameras, improving technology, and more partnerships, the capabilities of the AlertWildfire network will continue to improve on an already successful platform.

- Liberty developed and implemented its Fire Potential Index (“FPI”) assessment tool in late 2020. Liberty’s FPI is a comprehensive assessment tool designed to heighten awareness of daily forecast fire conditions to aid in operational decision making. FPI converts environmental, statistical, and scientific data into an easily understood forecast of short-term fire threat for Liberty’s service territory. FPI forecasts up to seven days of fire threat potential. Liberty uses FPI for fire threat awareness and operational decision making. The FPI provides a seven-day fire risk condition forecast for 11 geographic zones within the service territory. FPI condition forecasts include five risk conditions (Low, Moderate, High, Very High, and Extreme) that are used as a means to determine operating procedures, by zone, depending on the forecast fire risk. FPI condition forecasts are communicated to field staff on a daily basis to inform operational decisions when work restrictions are in place due to fire risk. Prior to the development of FPI, Liberty did not have any specialized fire risk prediction tools, which meant less overall awareness of day-to-day fire risk. There are 11 FPI zones, covering Liberty’s entire service territory, with individual fire risk forecasts for each zone. This forecasting granularity provides a better understanding of the overall fire risk throughout the service area and allows for better decision-making in scheduling work by zone. FPI was developed for Liberty’s service territory based on SDG&E and Pacific Gas & Electric Company (“PG&E”) methodologies. Factors considered include climatological, geographical, and fuel source

conifer and timber understory fuels in Liberty's service territory. FPI calculations include fuel moisture (both dead and live), "green-up" factor, ambient temperature, relative humidity, Fosberg Fire Weather Index, and Burning Index, among other factors. This work led to the establishment of the number of FPI classes as well as the fuel and weather criteria that delineate FPI classes.

D. Grid Design and System Hardening

Liberty's progress in 2020 related to the Grid Design and System Hardening WMP initiatives 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.

In 2020, Liberty conducted a system-wide inventory of all overhead assets that included enhanced G.O. 165 inspections. From this survey, Liberty now has a third-party assessment of the entire overhead system that can be used to develop programs to proactively replace its aging infrastructure. This information, although in its early development, will be used to measure future wildfire risk reductions.

Grid hardening efforts also include replacing overhead lines with covered conductor to protect high fire risk areas during volatile weather events and building resiliency corridors. Liberty's overall resiliency program is still in its conceptual phase, but initial plans also include installation of microgrids in targeted high fire risk areas. The combination of covered conductor installations, resiliency corridors, and microgrids will greatly reduce impacts and frequency of PSPS events and service interruptions.

E. Asset Management and Inspections

Liberty's progress in 2020 related to the Asset Management and Inspections WMP initiatives 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.

As mentioned above related to Grid Design and System Hardening WMP initiatives, in 2020, Liberty 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 to be utilized for improving accuracy of the GIS. Liberty purchased licenses for the Fulcrum mobile application to transition from paper-based to electronic inspection records. The system-wide survey data has generated a significant number of G.O. 95-related repairs that Liberty is working to complete. The survey also revealed that not all field changes had been tracked in an accurate or timely manner and that improvements to those processes need to be made so the system maintains a high level of accuracy.

F. Vegetation Management and Inspections

Liberty's progress in 2020 related to the Vegetation Management and Inspections WMP initiatives 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.

Liberty's vegetation management program made tremendous progress toward achieving program targets in 2020. In addition to maintaining growth in its existing initiatives, Liberty piloted and implemented new vegetation management and inspection initiatives to continue to enhance its contribution to wildfire mitigation efforts. Key achievements include:

- Implementing the first Forest Resilience Corridors project in cooperation with the USFS on parts of the Lake Tahoe Basin Management Unit and Tahoe National Forest;
- Performing supplemental vegetation risk inspection and mitigation of all overhead lines in Liberty's Tier 3 High Fire Threat District;
- Beginning the implementation of fuel management projects and biomass removal; and
- Piloting the use of LiDAR to perform vegetation inspections along approximately half of overhead electric lines.

G. Grid Operations and Operating Protocols

Liberty's progress in 2020 related to the Grid Operations and Operating Protocols WMP initiatives 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.

In 2020, Liberty developed and implemented PSPS operations and communications protocols. These protocols, in combination with the development of the FPI and PSPS forecasting tools have helped to inform day-to-day operational decision-making. Liberty's newly developed FPI has been incorporated into its Fire Prevention Plan, which details work procedures that must be followed based on fire risk conditions. The plan is utilized daily during fire season to inform operational decisions. Developing PSPS protocols, holding table top exercises, and training for PSPS events helped Liberty prepare for potential future PSPS events.

H. Data Governance

Liberty's progress in 2020 related to the Data Governance WMP initiatives 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.

The System Survey asset inventory completed in 2020 provides the basis of a fully functioning asset management system that can be used for prioritizing future work based on Reax mapping and level findings. Design and testing of cloud-based forms for data collection was implemented for this purpose in addition to the establishment of the wildfire risk SharePoint dedicated location and utilization of other visual mapping applications. Utilization of digitally distributed field collection forms in 2020 allowed Liberty to collect, store and analyze more System Survey results than in the previous five years combined. This moved Liberty closer to total digital systems adoption for surveys and is providing a means of responding to infractions with increased speed, volume, and improved accuracy. During this process, Liberty recognized that training initiatives, increased integration of data sources, and workflow

advancement would assist Liberty to further leverage data governance upgrades and adoption of new technologies. Furthermore, the ability to maximize high quality business information based on key performance measures at Liberty promotes continual process improvement, change management, and more technology-based awareness/skills programs.

I. Resource Allocation Methodology

Liberty's progress in 2020 related to the Resource Allocation Methodology WMP initiatives 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.

Liberty has not developed its first generation wildfire risk model in the same framework as the larger IOUs. While Liberty certainly faces limitations in terms of data and resources, the company has spent the past year forming a team of analysts and a consultant to establish risk modeling capabilities. The wildfire risk model finished its development only shortly before Liberty's 2021 WMP Update filing. However, Liberty was able to incorporate its risk mapping information into its G.O.95 inspection targets as well as use information from that initiative to inform decisions at a high-level. The Liberty RBDM modeling team has laid the foundation for quantitative analysis to be used in forward-looking capital and O&M decision-making.

J. Emergency Planning and Preparedness

Liberty's progress in 2020 related to the Emergency Planning and Preparedness WMP initiatives 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.

In 2020, Liberty achieved the following related to Emergency Planning and Preparedness WMP initiatives:

- Filled the key positions of Emergency Manager and Fire Protection Specialist in early 2020. The Emergency Manager oversees all emergency response-related activities and

public safety partnership engagements. The Fire Protection Specialist oversees fire prevention initiatives, serving as the company liaison for first responders, and public safety partners, and coordinating training for all employees and contractors.

- Liberty developed comprehensive operations and communications PSPS playbooks that detail operational and communications protocols to be undertaken in each of the five stages of response to extreme wildfire threat conditions, including de-energization and re-energization.
- Liberty hosted 29 meetings with public safety partners to provide details on Liberty's wildfire mitigation, PSPS preparedness, and community outreach efforts.
- Liberty held nine regional PSPS workshops and three PSPS tabletop exercises.
- Liberty hosted seven regional virtual town halls to provide a localized update on wildfire safety work happening in respective communities.
- Liberty conducted training and updated personnel work procedures in conditions of elevated fire risk for field personnel.
- Liberty executed comprehensive wildfire safety and PSPS preparedness outreach, using lessons learned and feedback received from other IOUs, customers, the Commission, and other stakeholders. Liberty also conducts community outreach to educate public safety partners, customers, and the general public on aspects of its wildfire mitigation practices, such as vegetation management and system hardening, and the role they play in helping to reduce wildfire risks in their communities.
- Liberty made improvements and conducted training in the office and field related to existing personnel work procedures in conditions of elevated fire risk.

K. Stakeholder Cooperation and Community Engagement

Liberty's progress in 2020 related to the Stakeholder Cooperation and Community Engagement WMP initiatives 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.

In 2020, Liberty expanded its public education and outreach efforts associated with its WMP. Safety and resiliency communications were part of Liberty's territory-wide public education campaign. These communications focused on personal preparedness and community resiliency. Additionally, Liberty:

- Hosted 29 meetings with public safety partners to share information related to Liberty's wildfire mitigation efforts, PSPS preparedness, and community outreach;
- Held nine regional PSPS workshops and three PSPS tabletop exercises;
- Hosted seven regional virtual town halls to provide a localized update on wildfire safety work happening in respective communities;
- Placed 112 posts on Liberty's social media channels;
- Sent three bill inserts and direct mailers to customers; and
- Conducted three customer e-mail outreach campaigns.

II. 2020 WMP CHANGE ORDERS AND OTHER OPERATIONAL CHANGES

WSD Guidance: Submit a full and complete listing of all change orders and any other operational changes, such as initiative location changes, made to WMP initiatives, with an explanation of why the changes were necessary, and an assessment of whether the changes achieved the same risk reduction intent.

A. Change Orders

Liberty did not file any change orders in 2020 for its 2020 WMP.

B. Operational Changes

In 2020, Liberty contracted with Reax Engineering (“Reax”) to conduct a comprehensive fire spread and consequence model. Reax began its fire mapping analysis in May 2020 and the study was completed in September 2020. The study resulted in a fire risk mapping tool to be utilized as the baseline for Liberty’s wildfire risk assessment. Reax identified and designated wildfire risk areas in regionalized “polygons” that were mapped with an overlay of Liberty’s overhead distribution lines. The designated high Reax wildfire areas are used by operations and engineering for planning of wildfire mitigation work. The Reax mapping will meet the risk reduction intent of Liberty’s 2020 WMP because it will inform the work to be performed to reduce wildfire risk and will prioritize efforts within each major category.

III. 2020 WMP INITIATIVE SPEND

WSD Guidance: Submit descriptions of all planned WMP initiative spend vs. actual WMP initiative spend and an explanation of any differentials between the planned and actual spends.

A. Planned 2020 WMP Initiative Spend vs. Actual 2020 WMP Initiative Spend

Table 1: Planned 2020 WMP Initiative Spend vs. Actual 2020 WMP Initiative Spend

2021 WMP Initiative #	Initiative Activity	Planned 2020 Spend	Actual 2020 Spend	Explanation of Differential
7.3.1.1	A summarized risk map that shows the overall ignition probability and estimated wildfire consequence along the electric lines and equipment	\$0	\$67,465	Costs were planned for 7.3.7.1.
7.3.1.2	Climate-driven risk map and modelling based on various relevant weather scenarios	\$0	\$0	-
7.3.1.3	Ignition probability mapping showing the probability of ignition along the electric lines and equipment	\$0	\$0	-
7.3.1.4	Initiative mapping and estimation of wildfire and PSPS risk-reduction impact	\$0	\$0	-
7.3.1.5	Match drop simulations showing the potential wildfire consequence of ignitions that occur along the electric lines and equipment	\$0	\$0	-
7.3.2.1	Advanced weather monitoring and weather stations	\$300,000	\$242,879	One less station installed; contingency not met.
7.3.2.2	Continuous monitoring sensors	\$80,000	\$158,125	Accelerated DFA timeline.

2021 WMP Initiative #	Initiative Activity	Planned 2020 Spend	Actual 2020 Spend	Explanation of Differential
7.3.2.3	Fault indicators for detecting faults on electric lines and equipment	\$0	\$0	-
7.3.2.4	Forecast of a fire risk index, fire potential index, or similar	\$70,000	\$44,313	Actual costs were less than originally anticipated.
7.3.2.5	Personnel monitoring areas of electric lines and equipment in elevated fire risk conditions	\$0	\$0	-
7.3.2.6	Weather forecasting and estimating impacts on electric lines and equipment	\$0	\$0	-
7.3.3.1	Capacitor maintenance and replacement program	\$0	\$0	-
7.3.3.2	Circuit breaker maintenance and installation to de-energize lines upon detecting a fault	\$0	\$0	-
7.3.3.3	Covered conductor installation	\$3,198,000	\$7,820,185	More covered conductor completed than originally planned. Design costs and amount of pole replacements were higher than anticipated.
7.3.3.4	Covered conductor maintenance	\$0	\$0	-
7.3.3.5	Crossarm maintenance, repair, and replacement	\$0	\$94,572	2020 actual costs were incorrectly categorized here. They should be captured under section 7.3.3.12.
7.3.3.6	Distribution pole replacement and reinforcement, including with composite poles	\$0	\$3,651,519	Costs were not originally forecast for pole replacement, however, inspection results warranted pole replacements.
7.3.3.7	Expulsion fuse replacement	\$1,544,000	\$737,939	Cost incurred in late 2020 but not paid until early 2021.
7.3.3.8	Grid topology improvements to mitigate or reduce PSPS events	\$616,000	\$671,872	Actual costs were slightly higher than originally anticipated.
7.3.3.9	Installation of system automation equipment	\$360,000	\$453,588	Estimate for four reclosers based on historical spend; actual costs were higher due to factors such as availability of materials.

2021 WMP Initiative #	Initiative Activity	Planned 2020 Spend	Actual 2020 Spend	Explanation of Differential
7.3.3.10	Maintenance, repair, and replacement of connectors, including hotline clamps	\$0	\$0	-
7.3.3.11	Mitigation of impact on customers and other residents affected during PSPS event	\$0	\$0	-
7.3.3.12	Other corrective action	\$750,000	\$1,372,552	More work was performed than originally planned.
7.3.3.13	Pole loading infrastructure hardening and replacement program based on pole loading assessment program	\$1,515,000	\$0	Projected costs were not incurred.
7.3.3.14	Transformers maintenance and replacement	\$0	\$0	-
7.3.3.15	Transmission tower maintenance and replacement	\$0	\$0	-
7.3.3.16	Undergrounding of electric lines and/or equipment	\$1,757,500	\$522,414	Actual costs were less than originally anticipated; not all project costs were incurred in 2020.
7.3.3.17	Updates to grid topology to minimize risk of ignition in HFTDs	\$0	\$0	-
7.3.4.1	Detailed inspections of distribution electric lines and equipment	\$3,500,000	\$837,622	GO 165 repair costs were lower than anticipated and some of the repairs are carrying into 2021.
7.3.4.2	Detailed inspections of transmission electric lines and equipment	\$0	\$0	-
7.3.4.3	Improvement of inspections	\$890,000	\$0	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.
7.3.4.4	Infrared inspections of distribution electric lines and equipment	\$0	\$0	-
7.3.4.5	Infrared inspections of transmission electric lines and equipment	\$0	\$0	-

2021 WMP Initiative #	Initiative Activity	Planned 2020 Spend	Actual 2020 Spend	Explanation of Differential
7.3.4.6	Intrusive pole inspections	\$118,554	\$10,404	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.
7.3.4.7	LiDAR inspections of distribution electric lines and equipment	\$250,000	\$0	LiDAR was utilized for Vegetation Management but not asset inspections in 2020.
7.3.4.8	LiDAR inspections of transmission electric lines and equipment	\$0	\$0	-
7.3.4.9	Other discretionary inspection of distribution electric lines and equipment, beyond inspections mandated by rules and regulations	\$0	\$0	-
7.3.4.10	Other discretionary inspection of transmission electric lines and	\$6,000,000	\$2,994,266	Costs to complete the System Survey were significantly lower than the initial estimate due to competitive bid process.
7.3.4.11	Patrol inspections of distribution electric lines and equipment	\$0	\$0	-
7.3.4.12	Patrol inspections of transmission electric lines and equipment	\$0	\$0	-
7.3.4.13	Pole loading assessment program to determine safety factor	\$0	\$0	-
7.3.4.14	Quality assurance / quality control of inspections	\$0	\$0	-

2021 WMP Initiative #	Initiative Activity	Planned 2020 Spend	Actual 2020 Spend	Explanation of Differential
7.3.4.15	Substation inspections	\$0	\$0	-
7.3.5.1	Additional efforts to manage community and environmental impacts	\$660,000	\$771,043	More work required than originally anticipated. USFS permitting delays create inefficiencies.
7.3.5.2	Detailed inspections of vegetation around distribution electric lines and equipment	\$610,000	\$555,763	Actual costs were less than originally anticipated.
7.3.5.3	Detailed inspections of vegetation around transmission electric lines and equipment	\$0	\$0	-
7.3.5.4	Emergency response vegetation management due to red flag warning or other urgent conditions	\$0	\$0	-
7.3.5.5	Fuel management and reduction of "slash" from vegetation management activities	\$2,000,000	\$354,689	Program development took longer than expected and less work was performed than originally anticipated.
7.3.5.6	Improvement of inspections	\$0	\$0	-
7.3.5.7	LiDAR inspections of vegetation around distribution electric lines and equipment	\$0	\$369,298	LiDAR inspection was captured under Asset inspections section for 2020. It was more appropriate to capture this project under the vegetation management section.
7.3.5.8	LiDAR inspections of vegetation around transmission electric lines and equipment	\$0	\$0	-
7.3.5.9	Other discretionary inspections of vegetation around distribution electric lines and equipment	\$450,000	\$85,139	Work was just performed in the Tier 3 area where inspections took place, therefore costs of inspection and tree work were less.
7.3.5.10	Other discretionary inspections of vegetation around transmission electric lines and equipment	\$0	\$0	-
7.3.5.11	Patrol inspections of vegetation around distribution electric lines and equipment	\$300,000	\$420,800	More inspection miles were completed than originally anticipated.

2021 WMP Initiative #	Initiative Activity	Planned 2020 Spend	Actual 2020 Spend	Explanation of Differential
7.3.5.12	Patrol inspections of vegetation around transmission electric lines and equipment	\$0	\$0	-
7.3.5.13	Quality assurance / quality control of vegetation inspections	\$250,000	\$67,033	Program development for QA/QC processes was lower cost than originally anticipated.
7.3.5.14	Recruiting and training of vegetation management personnel	\$0	\$0	-
7.3.5.15	Remediation of at-risk species	\$4,500,000	\$7,338,323	Primary driver was increase in tree work costs due to Senate Bill 247.
7.3.5.16	Removal and remediation of trees with strike potential to electric lines and equipment	\$0	\$2,722,530	The planned cost was captured under initiative number 7.3.5.15 for 2020 and was moved to this section of the 2021 plan for better tracking.
7.3.5.17	Substation inspection	\$0	\$0	-
7.3.5.18	Substation vegetation management	\$0	\$0	-
7.3.5.19	Vegetation inventory system	\$0	\$0	-
7.3.5.20	Vegetation management to achieve clearances around electric lines and equipment	\$0	\$0	-
7.3.6.1	Automatic recloser operations	\$0	\$0	-
7.3.6.2	Crew-accompanying ignition prevention and suppression resources and services	\$0	\$0	-
7.3.6.3	Personnel work procedures and training in conditions of elevated fire risk	\$0	\$278,576	Labor costs were not originally projected in 2020. However, costs dedicated to this initiative were incurred on fire weather monitoring and proactive line patrols.
7.3.6.4	Protocols for PSPS re-energization	\$0	\$0	-
7.3.6.5	PSPS events and mitigation of PSPS impacts	\$0	\$0	-
7.3.6.6	Stationed and on-call ignition prevention and suppression resources and services	\$0	\$92,731	Costs for two vehicles were not projected for 2020.

2021 WMP Initiative #	Initiative Activity	Planned 2020 Spend	Actual 2020 Spend	Explanation of Differential
7.3.7.1	Centralized repository for data	\$465,000	\$0	Costs are captured in 7.3.1.1; no other costs incurred.
7.3.7.2	Collaborative research on utility ignition and/or wildfire	\$200,000	\$1,138	DFA costs were initially projected for this initiative but are captured in 7.3.2.2.
7.3.7.3	Documentation and disclosure of wildfire-related data and algorithms	\$0	\$0	-
7.3.7.4	Tracking and analysis of near miss data	\$0	\$0	-
7.3.8.1	Allocation methodology development and application	\$0	\$0	-
7.3.8.2	Risk reduction scenario development and analysis	\$0	\$0	-
7.3.8.3	Risk spend efficiency analysis	\$0	\$0	-
7.3.9.1	Adequate and trained workforce for service restoration	\$240,000	\$502,233	More labor costs than projected.
7.3.9.2	Community outreach, public awareness, and communications efforts	\$0	\$0	-
7.3.9.3	Customer support in emergencies	\$0	\$0	-
7.3.9.4	Disaster and emergency preparedness plan	\$0	\$0	-
7.3.9.5	Preparedness and planning for service restoration	\$0	\$0	-
7.3.9.6	Protocols in place to learn from wildfire events	\$0	\$0	-
7.3.10.1	Community engagement	\$75,000	\$92,084	Actual costs were slightly higher than originally anticipated.
7.3.10.2	Cooperation and best practice sharing with agencies outside CA	\$0	\$0	-
7.3.10.3	Cooperation with suppression agencies	\$0	\$0	-
7.3.10.4	Forest service and fuel reduction cooperation and joint roadmap	\$0	\$0	-
TOTAL		\$30,699,054	\$33,331,095	-

IV. 2020 WMP INITIATIVE IMPACT ON PSPS

WSD Guidance: Submit a description of whether the implementation of WMP initiatives changed the threshold(s) for triggering a PSPS event and/or reduced the frequency, scale, scope and duration of PSPS events.

A. 2020 WMP Initiative Impact on PSPS Thresholds

Liberty’s PSPS thresholds are currently fixed and do not change based on initiative progress. Liberty anticipates that, as these initiatives progress, more data can be used to evaluate wildfire risk reduction impacts. Liberty may find a different way to combine existing fire and weather based threshold modeling with initiative risk reduction.

B. WMP Initiative Impact on Frequency, Scale, Scope and Duration of PSPS Events

Most WMP initiatives generally support Liberty’s vision for mitigating PSPS events and customer impacts resulting from PSPS events. Specifically, the combination of covered conductor installations, resiliency corridors, and microgrids will greatly reduce impacts and frequency of PSPS events and service interruptions.

It is important to note that Liberty, in its history, has had only one PSPS event. Since that event, Liberty has taken many steps to establish its PSPS program through the development of protocols, procedures, and the establishment of PSPS thresholds detailed throughout its 2021 WMP Update. The PSPS work over the last two years, in combination with an anticipated increase in fire weather events (i.e. RFW, longer fire season, high winds, etc.), may lead to more frequent use of PSPS in the next 10 years. Therefore, the information presented in Table 2 below evaluates how implementation of Liberty’s 2020 WMP initiatives are anticipated to affect a given PSPS characteristic, rather than whether a PSPS characteristic will increase/decrease in the next 10 years when compared to historic use of PSPS.

Table 2: Anticipated Impact of 2020 WMP Initiatives on PSPS Event Characteristics

PSPS characteristic	Anticipated Impact of 2020 WMP Initiatives	Comments
Number of customers affected by PSPS events (total)	Decrease	In time, grid hardening efforts such as covered conductor, microgrids, and the addition of sectionalizing devices will help to reduce the number of customers affected by PSPS.

PSPS characteristic	Anticipated Impact of 2020 WMP Initiatives	Comments
Number of customers affected by PSPS events (normalized by fire weather, e.g., Red Flag Warning line mile days)	Decrease	In time, grid hardening efforts such as covered conductor, microgrids, and the addition of sectionalizing devices will help to reduce the number of customers affected by PSPS.
Frequency of PSPS events in number of instances where utility operating protocol requires de-energization of a circuit or portion thereof to reduce ignition probability (total)	Decrease	Weather is the primary factor that drives PSPS frequency. In time, grid hardening efforts, such as covered wire and microgrids, will eventually lead to higher thresholds for de-energization, which would potentially reduce the frequency of PSPS events.
Frequency of PSPS events in number of instances where utility operating protocol requires de-energization of a circuit or portion thereof to reduce ignition probability (normalized by fire weather, e.g., Red Flag Warning line mile days)	Decrease	Weather is the primary factor that drives PSPS frequency. In time, grid hardening efforts, such as covered wire and microgrids, will eventually lead to higher thresholds for de-energization, which would potentially reduce the frequency of PSPS events.
Scope of PSPS events in circuit- events, measured in number of events multiplied by number of circuits targeted for de-energization (total)	Decrease	The work that results in reducing impact to customers and the frequency of events will also reduce the scope of PSPS events.
Scope of PSPS events in circuit- events, measured in number of events multiplied by number of circuits targeted for de-energization (normalized by fire weather, e.g., Red Flag Warning line mile days)	Decrease	The work that results in reducing impact to customers and the frequency of events will also reduce the scope of PSPS events.
Duration of PSPS events in customer hours (total)	Decrease	Weather events determine the length of time circuits need to be de-energized. If scope and number of customers are being reduced over time, then re-energization time should decrease which is a factor in the duration of PSPS events.
Duration of PSPS events in customer hours (normalized by fire weather, e.g., Red Flag Warning line mile days)	Decrease	Weather events determine the length of time circuits need to be de-energized. If scope and number of customers are being reduced over time, then re-energization time should decrease which is a factor in the duration of PSPS events.

V. 2020 WMP WSD DEFICIENCIES AND LIBERTY CORRECTIVE ACTIONS

WSD Guidance: Submit a summary of all defects identified by the WSD within the annual compliance period, the corrective actions taken and the completion and/or estimated completion date.

A. 2020 WMP Deficiencies Identified by WSD in 2020

Table 3: 2020 WMP Deficiencies Identified by WSD in 2020

Deficiency Number	Deficiency Title	Corrective Actions Taken	Completion and/or Estimated Completion Date
Guidance-3, Class A	Lack of Risk Modeling to inform Decision-Making	<p>Liberty established an interim risk modeling approach designed to inform management of various risk factors (tree risk, asset risk, wildfire risk, and performance risk) used to profile risk by circuit and target areas of concern. This modeling approach uses quantitative metrics (asset condition, tracking ignition drivers, and tree hazards) that will also be utilized in the RBDM model.</p> <p>Reax developed a fire consequence model to map Liberty’s service territory into 33 sections or polygons that displayed similar wildfire risk profiles. Each polygon was assigned a Reax wildfire risk rating of low, moderate, high, or very high wildfire risk.</p> <p>The Reax model simulated the fire spread impact of hundreds of thousands of ignitions along Liberty’s overhead lines using historical weather data, layering terrain and topography maps, fire suppression factors, and population/structure density data to analyze and group areas of concern.</p> <p>Mapped polygons were discussed and evaluated with Liberty’s wildfire risk team and the report and maps were completed in October 2020.</p> <p>Liberty utilized Reax maps to compare and present to management the differences between current HFTD ratings with Reax ratings. The Reax wildfire consequence fire model assigned a very high fire risk polygon that completely covered the current HFTD 3 area in South Lake Tahoe. In addition to identifying more areas of concern in South Lake Tahoe, the Reax mapping also identified areas in North Lake Tahoe as high wildfire risk and thus expanded Liberty’s area of concern. Management is still processing the effects of this new analysis on current operations and is dedicated to incorporating the expanded regions of increased wildfire risk from the Reax study into work practices. The planned initiatives include and reference the Reax study when applied.</p> <p>Liberty utilized PowerBI to import various data sets including the results of the System Survey and tree inspection and work identified layered with the Reax maps to assess asset risk of failure and tree risk on an interim basis. This analysis visually displays for management areas of highest risk of probability of ignition using asset condition factors and tree risk of falling on power lines until remediation work is complete.</p> <p>Liberty has finished its first generation wildfire risk model as of February 2021.</p>	<p>Mapped polygons and the associated report were completed in October 2020.</p> <p>Liberty finished its first generation wildfire risk model as of February 2021.</p>
Guidance-1, Class B	Lack of risk spend efficiency	Liberty built its wildfire risk model with the support of its wildfire engineering consultant. The wildfire risk model resembles those of the larger IOUs, utilizing methods such as MARS/MAVF and RSE.	

Deficiency Number	Deficiency Title	Corrective Actions Taken	Completion and/or Estimated Completion Date
	(RSE) information	<p>The following initiatives have RBDM RSEs in place but have not informed decision-making since their completion in February 2021:</p> <ul style="list-style-type: none"> • Covered conductor • Undergrounding • Targeted G.O.95 intrusive inspection and remediation (replace/repair schedules) • Enhanced vegetation management • Microgrid • Fuse Expulsion Replacement Program • Distribution fault anticipation technology <p>Other initiatives that were evaluated but did not use or have RBDM RSEs include:</p> <ul style="list-style-type: none"> • Quality assurance/quality control and tree inventory database efforts were considered more foundational to risk reduction and hard to quantify reductions in ignitions. • Asset management and inspection will use RBDM for only the enhanced inspections and remediation work initiative. • Automatic reclosers and weather stations are currently under evaluation but were not modeled. They were evaluated using subject matter expert judgment about the system and budgeting constraints because many of the decisions were made prior to the RBDM wildfire risk model completion. 	
Guidance-4, Class B	Lack of discussion on PSPS impacts	Liberty discusses the impact of WMP Initiatives throughout its 2021 WMP Update. Most WMP initiatives generally support Liberty's vision for mitigating PSPS events and customer impacts resulting from PSPS events. Liberty's PSPS thresholds are currently fixed and do not change based on initiative progress. Liberty anticipates that, as these initiatives progress, more data can be used to evaluate wildfire risk reduction impacts. Liberty may find a different way to combine existing fire and weather based threshold modeling with initiative risk reduction.	Liberty filed its 2021 WMP Update on March 5, 2021.
Guidance-6, Class B	Failure to disaggregate WMP initiatives from standard operations	Liberty completed the WSD Performance Metrics Table 12 with the submission of its 2021 WMP Update and Q4 WMP Quarterly Report. Table 12 includes 2020 spend for each WMP initiative and indicates the Memorandum Account used for new WMP initiatives.	Liberty filed its 2021 WMP Update on March 5, 2021.
Guidance-9, Class B	Insufficient discussion of pilot programs	Liberty calculated RSE's related to four of its pilot programs, Distribution Fault Anticipation (DFA), Light Detection and Ranging ("LiDAR") within the Vegetation Management initiative category, the Sagehen Microgrid project within the Grid Topology improvements initiative, and the Covered Wire program. Liberty presents the RSE's in its 2021 WMP Update as Attachment C: WMP	Liberty filed its 2021 WMP Update on March 5, 2021.

Deficiency Number	Deficiency Title	Corrective Actions Taken	Completion and/or Estimated Completion Date
		Risk Spend Efficiency Calculations, as well as in Table 12 of Attachment A. Liberty also discusses its pilot projects within the detailed initiative description section (7.3) of its 2021 WMP Update.	
Guidance-11, Class B	Lack of detail on plans to address personnel shortages	<p>Liberty discusses the workforce requirements for WMP initiative categories in Section 5.4 of its 2021 WMP Update.</p> <p>Liberty provides the metrics it uses to track the effectiveness of its recruiting programs in Section 4.6 of its 2021 WMP Update.</p> <p>Liberty describes the data that is captured as “applicant source information,” and provides the percentage of recruits that were working for another California utility immediately prior to being hired in Section 4.6 of its 2021 WMP Update.</p>	Liberty filed its 2021 WMP Update on March 5, 2021.
LIB-1, Class B	Liberty did not describe methods for tracking effectiveness of its covered conductor initiative	Liberty describes its methods for tracking the effectiveness of its covered conductor initiative in its 2021 WMP Update. Liberty is pursuing a targeted approach for its future covered conductor projects that involves the following steps: identify at-risk wildfire areas, gather and organize risk-related data by circuit and analyze data, develop a plan for each circuit, track performance of covered conductor program by circuit or segment using visualization applications. Liberty’s project scope and design for all covered conductor projects includes replacing and installing new overhead assets, in addition to new crossarms, lightning arrestors, fuses, and other hardware. The vegetation management group also inspects the proposed line installation route for all capital jobs to evaluate need for additional tree work.	Liberty filed its 2021 WMP Update on March 5, 2021.
LIB-2, Class B	Liberty reports inspection frequencies that raise concerns about effectiveness	Liberty addresses the WSD concern about inspection frequencies in Section 7.3.5 of its 2021 WMP Update.	Liberty filed its 2021 WMP Update on March 5, 2021.

VI. CONCLUSION

Liberty appreciates this opportunity to provide this 2020 WMP Annual Report on Compliance and looks forward to working with the Commission and other stakeholders to advance Liberty’s wildfire mitigation planning efforts.

Respectfully submitted,

/s/ Dan Marsh

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