Bear Valley Electric Service

Wildfire Mitigation Plan

2020 Final Action Statement Refiling

Bear Valley
Electric Service, Inc.
A Subsidiary of American States Water Company

September 18, 2020

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BACKGROUND

The state of California (CA) and the California Public Utilities Commission (Commission or CPUC) mandated in Order Instituting Rulemaking (OIR) 18-10-007 that the electric utilities develop Wildfire Mitigation Plans (WMPs) pursuant to Senate Bill (SB) 901 with inaugural filings required in early 2019. The utilities' WMPs aim to reduce risk of utility-posed ignitions or threats as well as mitigate the need for public safety power shutoff (PSPS) events in the future. This is achieved through investments and enhanced operational practices that consider risk spend efficiency and trackable metrics, and measured outcomes along with collaborative engagement and communication procedures for emergency response and recovery. The CPUC provided a specific outline for the original 2019 WMPs establishing a framework to address utility equipment-involved ignition or spark risk. Electric utilities and transmission owners under CPUC-jurisdiction filed their first WMP iterations on February 6, 2019. The CPUC approved these initial WMPs on May 30, 2019.

Phase 2 of the OIR launched mid-2019. WMPs in 2020 were structured with enhancements and additional requirements pursuant to Assembly Bill (AB) 1054, AB 111, and the findings from the CPUC's determination of 2019 WMP approvals. The Administrative Law Judge (ALJ) Ruling on WMP templates and related material for the 2020 filings guidelines, issued on December 16, 2019, also provided a series of attachments that identified critical elements of wildfire data tracking to allow for detailed evaluation of the WMP's comprehensiveness and for public and Wildfire Safety Division (WSD) use.[1] On January 16, 2020, Resolution WSD-001 ordered that investor-owned utilities (IOUs) use templates and data collection requirements described in the guidelines and file their respective WMPs on February 7, 2020 (February 7 filing).

Bear Valley Electric Service, Inc. (BVES), a subsidiary of American States Water Company (ASWC), revised and refiled its February 7 filing on March 6, 2020 (March 6 refile). On May 22, 2020, BVES submitted a WMP errata filing (May 22 errata). The WSD issued Draft Resolution WSD-010 on July 22, 2020 and Final Action Statement on August 26, 2020. The WSD directed BVES to refile its 2020 WMP incorporating updates from identified deficiencies in Attachment B and C of the Resolution. BVES's approach in updating its previous May 22 errata include:

- **Updated and Revised Data:** BVES prepared data, reports, and project updates to be incorporated into the 2020 WMP refiling and responded to Decision (D.) 19-05-036, D.19-05-040, WSD-001, WSD-002, WSD-006, Draft Resolution WSD-010 and ultimately, the Final Action Statement. Updates include metrics and programmatic milestones as of May 2020 aligning to the utility's existing 2019 WMP metrics tracking schedule.

- **Incorporation of Remedial Compliance Plan Deficiencies**: This 2020 WMP refiling update presents the response to BVES's Class A deficiency conditions pursuant to the WSD Final Action Statement.

- **Incorporation of Quarterly Report Deficiencies**: This 2020 WMP refiling update presents the responses to Class B deficiency conditions pursuant to the WSD Final Action Statement.

[1] CPUC. "ALJ's Ruling on Wildfire Mitigation Plan Templates and Related Material and Allowing Comment," https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M322/K215/322215834.PDF. December 16, 2019.

GLOSSARY OF DEFINED TERMS

Term	Definition
10-hour dead fuel moisture content	Moisture content of small dead vegetation (e.g. grass, leaves, which burn quickly but not intensely), which can respond to changes in atmospheric moisture content within 10 hours.
Access and functional needs populations	Per Government Code § 8593.3 and D.19-05-042, individuals who have developmental or intellectual disabilities, physical disabilities, chronic conditions, injuries, limited English proficiency or who are non-English speaking, older adults, children, people living in institutionalized settings, or those who are low income, homeless, or transportation disadvantaged, including, but not limited to, those who are dependent on public transit or those who are pregnant.
Authority Having Jurisdiction	AHJ, party with assigned responsibility, depending on location and circumstance.
Asset (utility)	Electric lines, equipment, or supporting hardware.
At-risk species	Species of vegetation that are particularly likely to contact power lines in the event of high winds and/or ignite if they catch a spark.
Baseline (ignition probability, maturity)	A measure, typically of the current state, to establish a starting point for comparison.
Carbon dioxide equivalent	Tons of greenhouse gases (GHG) emitted, multiplied by the global warming potential relative to carbon dioxide.
Contractor	Any individual in the temporary and/or indirect employ of the utility whose limited hours and/or time-bound term of employment are not considered as “full-time” for tax and/or any other purposes.
Critical facilities and infrastructure	In accordance with the interim definition adopted in D.19-05-042, those facilities and infrastructure that are essential to the public safety and that require additional assistance and advance planning to ensure resiliency during de energization events, namely: emergency services sector (police stations, fire stations, emergency operations centers), government facilities sector (schools, jails, prisons), healthcare and public health sector (public health departments, medical facilities, including hospitals, skilled nursing facilities, nursing homes, blood banks, health care facilities, dialysis centers and hospice facilities), energy sector (public and private utility facilities vital to maintaining or restoring normal service, including, but not limited to, interconnected publicly owned utilities and electric cooperatives), water and wastewater systems sector (facilities associated with the provision of drinking water or processing of wastewater including facilities used to pump, divert, transport, store, treat and deliver water or wastewater), communications sector (communication carrier infrastructure including selective routers, central offices, head ends, cellular switches, remote terminals and cellular sites), and chemical sector (facilities associated with the provision of manufacturing, maintaining, or distributing hazardous materials and chemicals).
Customer hours	Total number of customers, multiplied by the average number of hours (e.g. of power outage).
Data cleaning	Calibrating raw data to remove errors (including typographical and numerical mistakes).
Dead fuel moisture content	Moisture content of dead vegetation, which responds solely to current environmental conditions and is critical in determining fire potential.

Term	Definition
Detailed inspection	In accordance with GO 165, an inspection 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.
Enhanced inspection	Inspection whose frequency and thoroughness exceeds the requirements of the detailed inspection, particularly if driven by risk calculations.
Evacuation impact	Number of people evacuated, with the duration for which they are evacuated, from homes and businesses, due to wildfires.
Evacuation zone	Areas designated by CAL FIRE and local fire agency evacuation orders, to include both "voluntary" and "mandatory" in addition to other orders such as "precautionary" and "immediate threat".
Fuel density	Mass of fuel (vegetation) per area which could combust in a wildfire.
Fuel management	Removing or thinning vegetation to reduce the potential rate of propagation or intensity of wildfires.
Fuel moisture content	Amount of moisture in a given mass of fuel (vegetation), measured as a percentage of its dry weight.
Full-time employee	Any individual in the ongoing and/or direct employ of the utility whose hours and/or term of employment are considered as "full-time" for tax and/or any other purposes.
GO 95 nonconformance	Condition of a utility asset that does not meet standards established by General Order 95.
Greenhouse gas (GHG) emissions	Health and Safety Code 38505 identifies seven greenhouse gases that Air Resources Board is responsible to monitor and regulate in order to reduce emissions: carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), sulfur hexafluoride (SF6), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and nitrogen trifluoride (NF3).
Grid hardening	Actions (such as equipment upgrades, maintenance, and planning for more resilient infrastructure) taken in response to the risk of undesirable events (such as outages) or undesirable conditions of the electrical system in order to reduce or mitigate those events and conditions, informed by an assessment of the relevant risk drivers or factors.
Grid topology	General design of an electric grid, whether looped or radial, with consequences for reliability and ability to support de-energization (e.g., being able to deliver electricity from an additional source).
High Fire Threat District (HFTD)	Per D.17-01-009, areas of the State designated by the CPUC and CAL FIRE to have elevated wildfire risk, indicating where utilities must take additional action (per GO 95, GO 165, and GO 166) to mitigate wildfire risk.
Highly rural region	In accordance with 38 CFR 17.701, "highly rural" shall be defined as those areas with a population of less than 7 persons per square mile.
Ignition probability	The relative possibility that an ignition will occur, probability is quantified as a number between 0% and 100% (where 0% indicates impossibility and 100% indicates certainty). The higher the probability of an event, the more certainty there is that the event will occur. (Often informally referred to as likelihood or chance).
Ignition-related deficiency	Any condition which may result in ignition or has previously resulted in ignition, even if not during the past five years.
Impact/consequence of ignitions	The effect or outcome of a wildfire ignition, affecting objectives, which may be expressed by terms including, although not limited to health, safety, reliability, economic and/or environmental damage.
Initiative	Measure or activity proposed or in process designed to reduce the consequences and/or probability of wildfire or PSPS.

Term	Definition
Inspection protocol	Documented procedures to be followed in order to validate that a piece of equipment is in good condition and expected to operate safely and effectively.
Invasive species	Non-native species whose proliferation increases the risk of wildfires.
Level 1 finding	In accordance with GO 95, an immediate safety and/or reliability risk with high probability for significant impact.
Level 2 finding	In accordance with GO 95, a variable (non-immediate high to low) safety and/or reliability risk.
Level 3 finding	In accordance with GO 95, an acceptable safety and/or reliability risk.
Life expectancy	Anticipated years that a piece of equipment can be expected to meet safety and performance requirements.
Limited English Proficiency (LEP)	Populations with limited English working proficiency based on the International Language Roundtable scale.
Live fuel moisture content	Moisture content within living vegetation, which can retain water longer than dead fuel.
Lost energy	Energy that would have been delivered were it not for an outage.
Major roads	Interstate highways, U.S. highways, state and county routes.
Match drop simulation	Wildfire simulation method that takes an arbitrary ignition and forecasts propagation and consequence/impact.
Member of the public	Any individual not employed by the utility.
Multi-attribute value function	Risk calculation methodology introduced during CPUC's S-MAP and RAMP proceedings.
Near miss	An event with significant probability of ignition, including wires down, contacts with objects, line slap, events with evidence of significant heat generation, and other events Awes cause sparking or have the potential to cause ignition.
Near-miss simulation	Simulation of what the consequence would have been of an ignition had it occurred.
Need for PSPS	When utilities' criteria for utilizing PSPS are met.
Noncompliant clearance	Rights-of-way whose vegetation is not trimmed in accordance with the requirements of GO 95.
Outages of the type that could ignite a wildfire	Outages that, in the judgement of the utility, could have ignited a wildfire.
Outcome metrics	Measurements of the performance of the utility and its service territory in terms of both leading and lagging indicators of wildfire, PSPS, and other consequences of wildfire risk, including the potential unintended consequences of wildfire mitigation work, such as acreage burned by utility-ignited wildfire.
Overcapacity	When the energy transmitted by utility equipment exceeds that of its nameplate capacity.
Patrol inspection	In accordance with GO 165, a simple visual inspection of applicable utility equipment and structures that is designed to identify obvious structural problems and hazards. Patrol inspections may be carried out in the course of other company business.
Percentile conditions	Top X% of a particular set (e.g. wind speed), based on a historical data set with sufficient detail.

Term	Definition
Planned outage	Electric outage announced ahead of time by the utility.
Preventive maintenance (PM)	The practice of maintaining equipment on a regular schedule, based on risk, elapsed time, run-time meter readings, or number of operations. The intent of PM is to “prevent” maintenance problems or failures before they take place by following routine and comprehensive maintenance procedures. The goal is to achieve fewer, shorter, and more predictable outages.
Priority essential services	Critical first responders, public safety partners, critical facilities and infrastructure, operators of telecommunications infrastructure, and water utilities/agencies.
Program targets	The terms of volume or scope of work, such as number trees trimmed or miles of power lines hardened.
Progress metrics	Measurements that track how much utility wildfire mitigation activity has changed the conditions of utility wildfire risk exposure or utility ability to manage wildfire risk exposure, in terms of leading indicators of ignition probability and wildfire consequences.
Property	Private and public property, buildings and structures, infrastructure, and other items of value that were destroyed by wildfire, including both third-party property and utility assets.
PSPS risk	The potential for the occurrence of a PSPS event expressed in terms of a combination of various outcomes of the event and their associated probabilities.
PSPS weather	Weather that exceeds a utility's risk threshold for initiating a PSPS.
Red Flag Warning	RFW, level of wildfire risk from weather as declared by the National Weather Service.
RFW Circuit Mile Day	Sum of miles of utility grid subject to Red Flag Warning each day. For example, if 100 circuit miles were under an RFW for 1 day, and 10 of those miles were under RFW for an additional day, then the total RFW circuit mile days would be 110.
Risk-spend efficiency	An estimate of the cost-effectiveness of initiatives, calculated by dividing the mitigation risk reduction benefit by the mitigation cost estimate based on the full set of risk reduction benefits estimated from the incurred costs.
Rule	Section of public utility code requiring a particular activity or establishing a particular threshold.
Run-to-failure	A maintenance approach that replaces equipment only when it fails.
Rural region	In accordance with GO 165, "rural" shall be defined as those areas with a population of less than 1,000 persons per square mile as determined by the United States Bureau of the Census.
Safety Hazard	A condition that poses a significant threat to human life or property.
Simulated wildfire	Propagation and impact/consequence of a wildfire ignited at a particular point ('match drop'), as simulated by fire spread software.
Span	The space between adjacent supporting poles or structures on a circuit consisting of electric line and equipment. "Span level" refers to asset-scale granularity.
System Average Interruption Duration Index (SAIDI)	System-wide total number of minutes per year of sustained outage per customer served.
Third-party contact	Contact between a piece of electrical equipment and another object, whether natural (tree branch) or human (vehicle).

Term	Definition
Time to expected failure	Time remaining on the life expectancy of a piece of equipment.
Top 30% of proprietary fire potential index	Top 30% of FPI or equivalent scale (e.g., “Extreme” on SCE’s FPI; “extreme”, 15 or greater, on SDG&E’s FPI; and 4 or above on PG&E’s FPI).
Trees with strike potential / hazard trees	Trees that could either 'fall in' to a power line, or have branches detach and 'fly in' to contact a power line in high-wind conditions.
Unplanned outage	Electric outage that occurs with no advance notice from the utility (e.g. blackout).
Urban region	In accordance with GO 165, "urban" shall be defined as those areas with a population of more than 1,000 persons per square mile as determined by the United States Bureau of the Census.
Utility-ignited wildfire	Wildfires ignited by utility infrastructure or employees, including all wildfires determined by AHJ investigation to originate from ignition caused by utility infrastructure.
Vegetation management	Trimming and clearance of trees, branches, and other vegetation that poses the risk of contact with electric equipment.
Vegetation risk index	Risk index indicating the probability of vegetation-related outages along a particular circuit, based on the vegetation species, density, height, and growth rate.
Weather normalization	Adjusting metrics based on relative weather risk, with RFW circuit mile days as the normalization factor.
Wildfire impact/ consequence	The effect or outcome of a wildfire affecting objectives, which may be expressed, by terms including, although not limited to health, safety, reliability, economic and/or environmental damage.
Wildfire risk	The potential for the occurrence of a wildfire event expressed in terms of a combination of various outcomes of the wildfire and their associated probabilities.
Wildfire-only WMP programs	Activities, practices, and strategies that are only necessitated by wildfire risk, unrelated to or beyond that required by minimum reliability and/or safety requirements. Such programs are not indicated or in common use in areas where wildfire risk is minimal (e.g., territory with no vegetation or fuel) or under conditions where wildfires are unlikely to ignite or spread (e.g., when rain is falling).
Wildland urban interface (WUI)	A geographical area identified by the state as a “Fire Hazard Severity Zone”, or other areas designated by the enforcing agency to be a significant risk from wildfires, established pursuant to Title 24, Part 2, Chapter 7A.
Wire down	Instance where an electric transmission or distribution conductor is broken and falls from its intended position to rest on the ground or a foreign object.

1. PERSONS RESPONSIBLE FOR EXECUTING THE WMP

Wildfire Mitigation Plan Overview

In response to recent, catastrophic wildfires in California, Senate Bill (SB) 901 was signed into law in September 2018, amending Public Utilities Code (PUC) Section 8386. This bill required investor-owned utilities (IOUs) to prepare and file Wildfire Mitigation Plans (WMPs), the requirements of which were developed under regulatory discretion of the California Public Utilities Commission (Commission or CPUC). In response to SB 901, the Commission issued an Order Instituting Rulemaking (OIR) in the Utility Wildfire Mitigation Plans (SB 901) filed under docket Rulemaking (R.) 18-10-007. The OIR provides guidance to the utilities it governs about the framework and content of the WMP and a timeline and process for review and implementation.[2] In Phase 1 of the OIR, the Commission required that utilities submit their initial WMPs on February 6, 2019. The Commission reviewed the WMPs and considered party reply comments, issuing approval decisions on May 30, 2019. Revisions and recommendations for improvement through the issued decisions guide the IOUs to enhance their WMPs for the next filing cycle.

Phase 2 of the OIR investigated areas for further development in seeking to standardize utilities' data collection methods related to the WMPs' content, metrics to be applied under standardized risk indicator definitions, and a process to consider the independent evaluation process. In addition, the Commission discussed the implications of the amendment of PUC Section 8386 by Assembly Bill (AB) 1054 and AB 111, both of which were signed into law on July 12, 2019.[3,4] Several important mandates resulted from these bills. The filing cycles for the WMPs will be on a three-year projection, with mitigation strategies and programs reflecting that timeframe as well as a 10-year outlook for future opportunities. Effective July 1, 2021, the Office of Energy Infrastructure Safety (OEIS) will be established within the Natural Resources Agency overseeing the Wildfire Safety Advisory Board (WSAB). The CPUC and OEIS will execute a memorandum of understanding to achieve consistent approaches in reviewing WMPs.

R.18-10-007 remains open through December 31, 2020.

Bear Valley Electric Service, Inc. (BVES), a subsidiary of American States Water Company (ASWC), has applied a thoughtful approach in developing a holistic strategy to mitigate utility-posed wildfire risks pursuant to PUC Section 8386.[5] The process included a strategic, risk-based evaluation that resulted in efforts to improve operational practices, enhance existing preventative and response plans, and coordinate responsibilities within the utility to monitor and enhance the WMP over time. In addition to its 2020 WMP narrative, a comprehensive data request and series of guidelines comprised of five attachments resulted from Decision (D.) 19-05-036, the *Administrative Law Judge's Ruling on Wildfire Mitigation Plan Templates and Related Material and Allowing Comment*, (ALJ Ruling) issued on

[2] The Commission calls for the following respondents: Pacific Gas & Electric Company (PG&E), Southern California Edison Company (SCE), San Diego Gas & Electric Company (SDG&E), Liberty CalPeco, BVES, Pacific Power, Trans Bay Cable, and Horizon West.

[3] California Assembly Bill No. 1054. https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201920200AB1054. Signed into law on July 12, 2019.

[4] California Assemble Bill No. 111. https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201920200AB111. Signed into law on July 12, 2019.

[5] On December 14, 2018, BVES submitted Application 18-12-019 for authorization of Golden State Water Company to implement a corporate reorganization of Bear Valley Electric Service Division to Bear Valley Electric Service, Incorporated. This application also transfers all company assets to BVES now as a standalone subsidiary of American States Water Company. The CPUC granted this application for authorization to implement on December 30, 2019 under D.19-12-039. BVES effectuated this corporate reorganization on July 1, 2020.

December 16, 2019.[6] IOUs were instructed to submit responses for several of the *Attachments* to the Wildfire Safety Division (WSD) by February 7, 2020[7] to aid in the detailed evaluation of the WMP by frontloading the supporting elements of the WMP and associated underlying data.[8] *Attachment 2* depicts a methodology to create a baseline and measure the maturity of the utility's WMP efforts over time. *Attachment 4* serves as the new prescribed metrics for utilities to begin tracking upon WMP approval that target progress and outcome-based metrics.

Pursuant to the *WMP Guidelines* established by the January 16, 2020 Resolution WSD-001, BVES has restructured its WMP to align with the attachment to enable ease of information interpretation as readers cross reference areas of the WMP with the data request responses while ensuring statutory requirements are captured and addressed appropriately. In addition to a robust mitigation strategy, BVES developed performance metrics to monitor their efforts and the WMP's effectiveness over time. The goal of these metrics is to provide a data-driven evaluation of performance to help BVES determine the effectiveness of the wildfire plan and identify areas of improvement. The process to evaluate performance plan is comprised of: Roles and Responsibilities, Metrics Reporting, Application of Metrics, Planning Processes, and Procedures.

BVES filed its 2020 WMP on February 7, 2020 with a subsequent refiling on March 6, 2020 and errata filing on May 22, 2020. This WMP update responds to the WSD Final Action Statement and ruling on BVES's 2020 WMP, dated August 26, 2020, directing BVES to, among other things, refile its 2020 WMP correcting deficiencies and incorporating response requirements prompted in the supporting attachments for quarterly reports.

Roles and Responsibilities for Plan Execution

Pursuant to *Attachment 1* Section 1, the following sections and subsections address the following:

> **1 Persons responsible for executing the WMP**
> **Provide an accounting of the responsibilities of the responsible person(s) executing the plan, including:**
> **1. Executive level with overall responsibility**
> **2. Program owners specific to each component of the plan**
>
> **Ensure that the plan components described in (2) include an accounting for each of the WMP sections and subsections.**

The roles and responsibilities for the performance metrics align closely to those outlined in the broader plan. This 2020 WMP update notes several title changes and new positions targeting wildfire mitigation initiative implementation as a result of the corporate change on July 1, 2020. The President & Treasurer oversees project implementation, ensuring staff follow procedures and protocols. The Utility Manager manages the execution of the performance monitoring including providing guidance to staff and leading the development of reports. The staff responsible for each metric area will aggregate relevant metrics at the direction of the Utility Manager, who manages the expenditure tracking and planning arrangements of initiatives. The Customer Service Supervisor holds responsibility for tracking customer-related metrics.

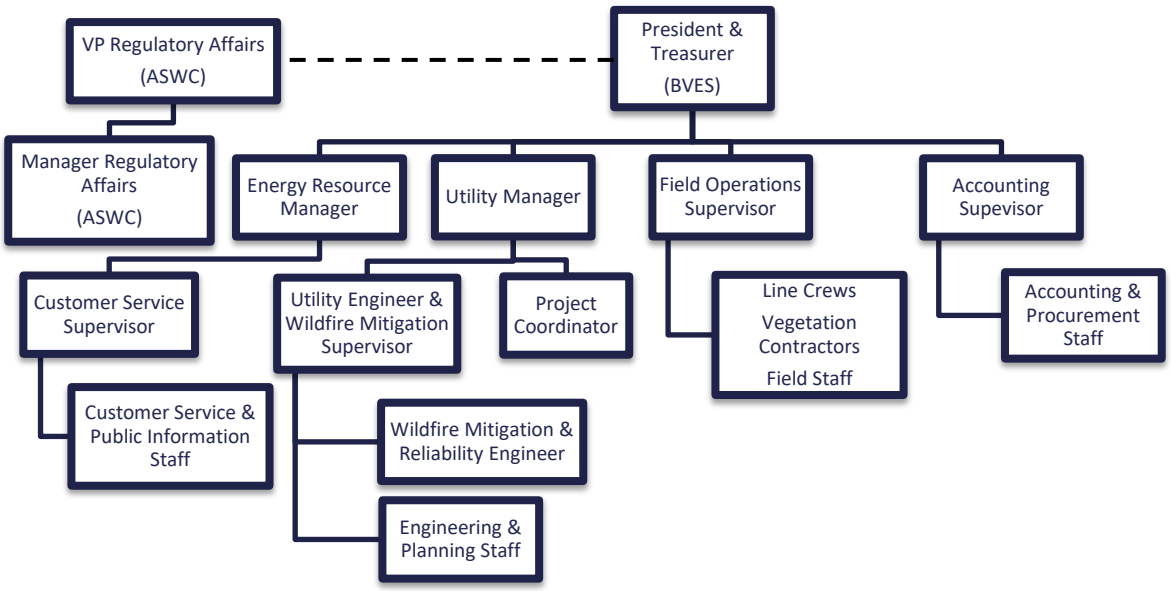
[6] The full set of materials listed in the ALJ Ruling includes the following documents: *Attachment 1: WMP Guidelines (Attachment 1)*; *Attachment 2: Utility Wildfire Mitigation Maturity Model (Attachment 2)*; *Attachment 3: Utility Survey (Attachment 3)*; *Attachment 4: WMP Metrics (Attachment 4)*; and *Attachment 5: Supplemental Data Request (Attachment 5)*.

[7] Pursuant to Resolution WSD-001 issued January 16, 2020.

[8] *Attachment 3* responses were submitted through a web-based portal in February 2020.

Notable updates to this WMP regarding resource staffing sufficiency include the job description of detailed oversight roles to help ensure components of the WMP are executed and tracked under the Utility Manager and President & Treasurer (formerly titled the Operations & Planning Manager and Director, respectively). Additional changes include the reclassification of the Engineering Supervisor to Utility Engineer & Wildfire Mitigation Supervisor and the recruitment of a new System Safety & Reliability Engineer. Figure 1-1 below outlines the BVES WMP organization. Further descriptions of the roles and responsibilities are provided below.

Figure 1-1: BVES Wildfire Mitigation Plan Organization



Source: BVES

Executive Level Responsibilities

The following Executive Level persons are responsible for execution of the BVES WMP:

- **Paul Marconi, President & Treasurer, BVES** is responsible for the overall management of BVES and is directly responsible for ensuring all of the WMP elements are executed as intended. The President & Treasurer is accountable for its proper execution and shall provide the Board of Directors' Safety Committee periodic updates on safety issues, plan execution; identify any problems, delays in schedule, and resource shortfalls; and propose solutions to issues and problems. The President & Treasurer shall also keep the Vice President, Regulatory Affairs (ASWC) informed of all compliance and regulatory affairs issues regarding the plan. The President & Treasurer shall communicate the WMP to BVES staff and hold staff accountable for executing their portions of the WMP. The President & Treasurer shall ensure the applicable portions of the WMP is communicated to local government and agencies, key stakeholders, customers, and the general public. The President & Treasurer is responsible for ensuring lessons learned and metrics from the current WMP are incorporated into future WMPs as appropriate.
- **Keith Switzer, Vice President, Regulatory Affairs** is responsible for ensuring regulatory compliance on all matters concerning BVES, including the WMP.

- **Nguyen Quan, Manager, Regulatory Affairs** is directly responsible to the Vice President, Regulatory Affairs for ensuring regulatory compliance on all matters concerning the WMP. The Manager, Regulatory Affairs shall work closely with BVES President & Treasurer and Managers to ensure regulatory compliance issues are promptly identified and resolved. The Manager, Regulatory Affairs is also directly responsible for any communications between BVES and the Commission on any matter regarding the WMP including required reports.

Program Owners

Execution will be implemented by key utility staff, working closely with public safety partners, local agencies and governments, fire and forestry management, first responders, and customers to enable information dissemination to vested stakeholders to the utility. The staff providing oversight of the program elements to the WMP include the Utility Manager, Energy Resource Manager, Field Operations Supervisor, Utility Engineer & Wildfire Mitigation Supervisor, Customer Service Supervisor, Accounting Supervisor, and Wildfire Mitigation & Reliability Engineer. All implementation staff are well qualified and will work to ensure prompt communications and restoration of service. These members will be critical to maintaining customer and system safety.

Securing experienced, qualified personnel and third-party affiliates has been identified as a principal resource need within this current WMP update cycle. Three vacancies are listed below that are currently available for qualified applicants at the time of this WMP update. While new staff roles and responsibilities adjust to formal arrangement of duties to execute WMP initiatives, BVES will rely on existing staff, contractors and subcontractors, where needed, with respect to vegetation management activities, electrical and engineering practices, general management, and planning of the WMP updates and compliance submissions. Supporting Table 1-1 outlines leadership roles regarding implementation and monitoring of the WMP and their relevant responsibilities.

Supporting Table 1-1. Plan Implementation Roles and Responsibilities

Staff Member	Role
Paul Marconi President & Treasurer	• Directly responsible for ensuring all of the WMP elements are executed as intended • Provides the Board of Directors' Safety and Operations Committee periodic updates on plan execution; identifies any problems, delays in schedule, and resource shortfalls; and proposes solutions to issues and problems • Keeps the Vice President, Regulatory Affairs informed of all compliance and regulatory affairs issues regarding the WMP • Communicates the plan to BVES staff and holds them accountable for executing their portions of the WMP • Ensures the applicable portions of the plan is communicated to local government and agencies, key stakeholders, customers, and the general public • Ensures lessons learned and metrics from the current WMP are incorporated into future WMPs as appropriate • Ensures Field Operations, Planning Department, and Customer Service Group are adequately resourced to execute their assigned activities per the WMP
Vacant (Interim Paul Marconi), Utility Manager	• Responsible for overall development and execution of wildfire prevention strategy and programs and emergency operations • Ensures timely and accurate communications with other BVES staff performing WMP functions • Collaborates with counterparts at local governments and agencies during proactive de-energization procedures and emergency events • Ensures Engineering & Planning Supervisor is adequately resourced to execute engineering and planning activities per the WMP • Manages all wildfire recovery activities • Reports on events and statuses as required by General Order (GO) 166 and Resolution ESRB-8 reporting requirements and those presented by R.18-12-005 • Provides periodic updates to the President & Treasurer on the status of the WMP initiatives • Identifies plan problems, delays in schedule, and resource shortfalls to the President & Treasurer • Proposes solutions to issues and problems • Fully supports internal and external audits of the plan including the future independent third-party audit required by SB 901 • Evaluates the WMP annually and proposes future updates • Develops periodic and situational WMP reports • Reviews and provides input to public engagement media and content prior to its release • Reviews WMP and associated reports to ensure accuracy of content and compliance with guidelines, regulations, laws, and other directives

Nguyen Quan, Manager, Regulatory Affairs	• Responsible for ensuring regulatory compliance on all matters concerning the WMP • Responsible for all filings regarding the WMP and associated reports • Responsible for ensuring all data requests are fully addressed in a timely manner • Conducts compliance review before filing WMP, updates to the WMP and associated WMP reports • Coordinates legal review and counsel on all WMP filings and associated reports
Sean Matlock, Energy Resources Manager	• Responsible for Customer and Stakeholder engagement and programs • Ensures Customer Service Supervisor is adequately resourced to execute Customer and Stakeholder engagement per the WMP • Ensures all customer support and communications during wildfire recovery are conducted per the WMP • Ensure all customer and stakeholder support and communications during PSPS events are conducted per the PSPS plan • Reviews content for all customer communications posted on the Company's website, social media, IVR, press releases, or other mass message delivery systems • Provides periodic updates to the President & Treasurer on the status of WMP initiatives • Supports internal and external audits of the WMP, including the future independent third-party audit required by SB 901 • Evaluates the WMP annually and submits recommendations to Utility Manager

Jeff Barber, Field Operations Supervisor	• Responsible for directing operations in the field • Monitors weather advisories and fire threat indexes and manages operational system line-ups based on fire threat and system status in accordance with the Company's operational guidance • Reviews WMP and associated reports and data requests for accuracy and compliance • Ensures timely and accurate communications with other BVES staff performing WMP and PSPS functions • Schedules and controls construction work on the distribution system by BVES and contracted crews in support of the WMP initiatives • Manages GO 165 inspections and patrols and other field inspection programs, document results, and follows-up as needed for corrective action • Manages vegetation management program execution to ensure contractor maintains program clearances • Provides periodic updates to the Utility Manager and President & Treasurer on the status of WMP initiatives • Directs all field operations (BVES crews, contracted crews, and mutual aid crews) during wildfire recovery efforts • Identifies WMP problems, delays in schedule, and resource shortfalls to the Utility Manager and President & Treasurer • Proposes solutions to issues and problems • Collects relevant data and documentation and provides it to the Wildfire Mitigation & Reliability Engineer • Evaluates WMP annually and submits recommendations to Utility Manager
Vacant (Interim Tom Chou), Utility Engineer & Wildfire Mitigation Supervisor	• Responsible for wildfire mitigation technical planning and engineering design • Reviews engineering inputs to WMP, associated reports, and data requests from accuracy and compliance with requirements • Issues and manages Work Orders to support mitigation initiatives • Reviews and approves as applicable engineering design work performed by contractors in support of initiatives • Supports Field Operations and broader Emergency Response Team (ERT) as directed • Manages proactive system-related elements of WMP, including implementing design standards, policies, and procedures to mitigate fire risk drivers • Directs all engineering and planning activities during wildfire recovery • Provides periodic updates to the Utility Manager on the status of WMP initiatives • Identifies to the Utility Manager implementation problems, delays in schedule, and resource shortfalls • Proposes solutions to issues and problems • Evaluates the WMP annually and submits recommendations to Utility Manager

Vacant (Interim Tom Chou), Wildfire Mitigation and Reliability Engineer	• Collects relevant data, metrics, other quantitative information, and documentation to support WMP development, implementation progress, and evaluation • Ensures accuracy of inputs to the WMP, associated reports, and data requests • Provides oversight of geographic information system (GIS) utilization and overlays in support of the WMP • Maintains an updated risk register and model in support of the WMP • Maintains BVES reliability indices and makes the information available for staff use in WMP development • Gathers results of inspection and maintenance programs in support of the WMP and provides evaluation of effectiveness of these programs • Evaluates plan annually and submits recommendations to Utility Manager
Roseana Portillo, Customer Service Supervisor	• Responsible for implementing communications plan and customer service programs • Notifies stakeholders, including local governments, agencies, and customers • Creates pre-planned statements to support PSPS actions • Establishes and maintains customer communication methods, systems, and equipment to support the policies and procedures laid out in the WMP • Trains staff to perform customer and public information functions • Develops and maintains contact list of local governments and agencies • Directs customer education strategy to inform customers about BVES's fire mitigation and emergency plans • Directs all customer support and communications during wildfire recovery per the WMP • Evaluates the WMP annually and submits recommendations to Utility Manager • Provides periodic updates to the Energy Resource Manager on the status of plan initiatives • Identifies to the Energy Resource Manager any implementation problems, delays in schedule, and resource shortfalls • Proposes solutions to issues and problems • Collects relevant data and documentation • Evaluates the WMP annually and submits recommendations to Energy Resource Manager

Kimberly Hauer, Accounting Supervisor	• Responsible for ensuring budgets are developed to support the WMP's expenses (O&M) and capital investments • Processes Work Orders in support of the WMP in accordance with utility procedures • Ensures procurement of material, equipment, and services in support of the WMP and in compliance with utility policies • Orders material and equipment to support the WMP and alerts applicable Supervisor when received • Issues contracts to support WMP initiatives as approved by Managers • Documents expenses in support of the WMP in accordance with Company procedures • Provides President & Treasurer and Managers reports of the status of execution of expense and capital project budgets in support of the WMP • Identifies to the President & Treasurer and Managers any resource shortfalls

Plan components as described in Supporting Table 1-1 will also have unique responsible parties for each of *Attachment 1's* WMP sections and subsections as presented in Supporting Table 1-2.

Supporting Table 1-2. Program Owners Specific to Each Component of the Plan

WMP COMPONENT	ACCOUNTABLE UTILITY PERSONNEL
1. EXECUTIVE LEVEL WITH OVERALL RESPONSIBILITY	Paul Marconi, President & Treasurer
2. PROGRAM OWNERS SPECIFIC TO EACH COMPONENT OF THE PLAN	Various; Oversight: Paul Marconi, President & Treasurer
1 PERSONS RESPONSIBLE FOR EXECUTING THE WMP	Various; Oversight: Paul Marconi, President & Treasurer
1.1 VERIFICATION	Paul Marconi, President & Treasurer
2 METRICS AND UNDERLYING DATA	Various; Oversight: Utility Manger (interim Paul Marconi)
2.1 LESSONS LEARNED: HOW TRACKING METRICS ON THE 2019 PLAN HAS INFORMED THE 2020 PLAN	vacant, Utility Manger (interim Paul Marconi)
2.2 RECENT PERFORMANCE ON PROGRESS METRICS, LAST 5 YEARS	vacant, Wildfire Mitigation and Reliability Engineer (interim Tom Chou)
2.3 RECENT PERFORMANCE ON OUTCOME METRICS, ANNUAL AND NORMALIZED FOR WEATHER, LAST 5 YEARS	vacant, Wildfire Mitigation and Reliability Engineer (interim Tom Chou)
2.4 DESCRIPTION OF ADDITIONAL METRICS	vacant, Wildfire Mitigation and Reliability Engineer (interim Tom Chou)
2.5 DESCRIPTION OF PROGRAM TARGETS	vacant, Utility Manger (interim Paul Marconi)
2.6 DETAILED INFORMATION SUPPORTING OUTCOME METRICS	vacant, Wildfire Mitigation and Reliability Engineer (interim Tom Chou)
2.7 MAPPING RECENT, MODELLED, AND BASELINE CONDITIONS	vacant, Wildfire Mitigation & Reliability Engineer (interim Tom Chou)
3 BASELINE IGNITION PROBABILITY AND WILDFIRE RISK EXPOSURE	vacant, Wildfire Mitigation and Reliability Engineer (interim Tom Chou)
3.1 RECENT WEATHER PATTERNS, LAST 5 YEARS	vacant, Wildfire Mitigation & Reliability Engineer (interim Tom Chou)
3.2 RECENT DRIVERS OF IGNITION PROBABILITY, LAST 5 YEARS	vacant, Wildfire Mitigation and Reliability Engineer (interim Tom Chou)
3.3 RECENT USE OF PSPS, LAST 5 YEARS	Jeff Barber, Field Operations Supervisor
3.4 BASELINE STATE OF EQUIPMENT AND WILDFIRE AND PSPS EVENT RISK REDUCTION PLANS	Jeff Barber, Field Operations Supervisor

3.4.1 CURRENT BASELINE STATE OF SERVICE TERRITORY AND UTILITY EQUIPMENT	Jeff Barber, Field Operations Supervisor
3.4.2 PLANNED ADDITIONS, REMOVAL, AND UPGRADE OF UTILITY EQUIPMENT BY END OF 3-YEAR PLAN TERM	vacant, Utility Engineer & Wildfire Mitigation Supervisor (interim Tom Chou)
3.4.3 STATUS QUO IGNITION PROBABILITY DRIVERS BY SERVICE TERRITORY	vacant, Utility Engineer & Wildfire Mitigation Supervisor (interim Tom Chou)
4 INPUTS TO THE PLAN AND DIRECTIONAL VISION FOR WILDFIRE RISK EXPOSURE	vacant, Utility Manager (interim Paul Marconi)
4.1 THE OBJECTIVES OF THE PLAN	vacant, Utility Manager (interim Paul Marconi)
4.2 UNDERSTANDING MAJOR TRENDS IMPACTING IGNITION PROBABILITY AND WILDFIRE CONSEQUENCE	vacant, Utility Engineer & Wildfire Mitigation Supervisor (interim Tom Chou)
4.2.1 SERVICE TERRITORY FIRE THREAT EVALUATION AND IGNITION RISK TRENDS	vacant, Utility Engineer & Wildfire Mitigation Supervisor (interim Tom Chou)
4.3 CHANGE IN IGNITION PROBABILITY DRIVERS	vacant, Utility Engineer & Wildfire Mitigation Supervisor (interim Tom Chou)
4.4 DIRECTIONAL VISION FOR NECESSITY OF PUBLIC SAFETY POWER SHUTOFF (PSPS)	vacant, Utility Manager (interim Paul Marconi)
5.1 WILDFIRE MITIGATION STRATEGY	vacant, Utility Manager (interim Paul Marconi)
5.2 WILDFIRE MITIGATION PLAN IMPLEMENTATION	Jeff Barber, Field Operations Supervisor
5.3 DETAILED WILDFIRE MITIGATION PROGRAMS	vacant, Utility Engineer & Wildfire Mitigation Supervisor (interim Tom Chou)
5.3.1 RISK ASSESSMENT AND MAPPING	vacant, Utility Engineer & Wildfire Mitigation Supervisor (interim Tom Chou)
5.3.2 SITUATIONAL AWARENESS AND FORECASTING	vacant, Utility Manager (interim Paul Marconi)
5.3.3 GRID DESIGN AND SYSTEM HARDENING	vacant, Utility Manager (interim Paul Marconi)
5.3.4 ASSET MANAGEMENT AND INSPECTIONS	Jeff Barber, Field Operations Supervisor
5.3.5 VEGETATION MANAGEMENT AND INSPECTIONS	Jeff Barber, Field Operations Supervisor
5.3.6 GRID OPERATIONS AND PROTOCOLS	Jeff Barber, Field Operations Supervisor
5.3.7 DATA GOVERNANCE	vacant, Wildfire Mitigation & Reliability Engineer (interim Tom Chou)
5.3.8 RESOURCE ALLOCATION METHODOLOGY	Jeff Barber, Field Operations Supervisor
5.3.9 EMERGENCY PLANNING AND PREPAREDNESS	Jeff Barber, Field Operations Supervisor
5.3.10 STAKEHOLDER COOPERATION AND COMMUNITY ENGAGEMENT	Sean Matlock, Energy Resource Manager
5.3.11 DEFINITIONS OF INITIATIVE ACTIVITIES BY CATEGORY	vacant, Utility Engineer & Wildfire Mitigation Supervisor (interim Tom Chou)
5.4 METHODOLOGY FOR ENTERPRISE-WIDE SAFETY RISK AND WILDFIRE-RELATED RISK ASSESSMENT	vacant, Utility Engineer & Wildfire Mitigation Supervisor (interim Tom Chou)
5.5 PLANNING FOR WORKFORCE AND OTHER LIMITED RESOURCES	Jeff Barber, Field Operations Supervisor
5.6 EXPECTED OUTCOMES OF 3-YEAR PLAN	vacant, Utility Manager (interim Paul Marconi)
5.6.1 PLANNED UTILITY INFRASTRUCTURE CONSTRUCTION AND UPGRADES	Tom Chou, Regulatory Compliance Project Engineer
5.6.2 PROTOCOLS ON PUBLIC SAFETY POWER SHUT-OFF	Jeff Barber, Field Operations Supervisor
6.1 RECENT WEATHER PATTERNS	vacant, Wildfire Mitigation & Reliability Engineer (interim Tom Chou)
6.2 RECENT DRIVERS OF IGNITION PROBABILITY	vacant, Utility Engineer & Wildfire Mitigation Supervisor (interim Tom Chou)
6.3 RECENT USE OF PSPS	Jeff Barber, Field Operations Supervisor
6.4 CURRENT BASELINE STATE OF SERVICE TERRITORY AND UTILITY EQUIPMENT	Jeff Barber, Field Operations Supervisor
6.5 LOCATION OF PLANNED UTILITY EQUIPMENT ADDITIONS OR REMOVAL	Tom Chou, Regulatory Compliance Project Engineer
6.6 PLANNED 2020 WMP INITIATIVE ACTIVITY BY END-2022	vacant, Utility Manager (interim Paul Marconi)

1.1 Verification

Complete the following verification for the WMP submission:

(See Rule 1.11)

(Where Applicant is a Corporation)

I am an officer of the applicant corporation herein and am authorized to make this verification on its behalf. The statements in the foregoing document are true of my own knowledge, except as to matters which are therein stated on information or belief, and as to those matters, I believe them to be true. I have reviewed this WMP and attest to its completeness and accuracy.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on September 18th (Date) at Big Bear Lake (Name of city), California.

Paul Marconi Digitally signed by Paul Marconi Date: 2020.09.18 04:55:06 -07'00'

Paul Marconi, President and Treasurer of Bear Valley Electric Service, Inc.

2. METRICS AND UNDERLYING DATA

The following section responds to *Attachment 1* Section 2.

Metrics play a critical role in BVES's WMP and its successful implementation. In order to improve upon or add emerging initiatives, BVES intends to leverage the data supporting the metrics to inform them about their progress on wildfire risk reduction and determine potential gaps that may arise over time as conditions change. The metrics presented in Supporting Table 2-1 reflect the approved tracking criteria from BVES's first 2019 WMP. As a result of D.19-05-036, the WSD and the Commission developed overarching principles in tracking relevant data that is designed to have measurable results for progress updates. The new metrics are designed with a series of progress-based and outcome-based risk indicators. The following section describes the 2019 metrics and results as well as presents the new metrics BVES will be tracking to better align and standardize BVES's results among the other IOUs upon approval or related decision of this WMP 2020 refiling.

BVES considered the 2019 metrics tracking and program implementation periods from approval of the 2019 WMPs on and for a 12-month duration. This period spans June 2019 – May 2020 with annual targets presented in Supporting Table 2-1.

Supporting Table 2-1. 2019 Wildfire Prevention Plan Metrics

Metric Category	Metric	Rationale
Overall Plan	Number of utility-caused fires	Assess overall effectiveness of the WMP
Infrastructure	Number of bare-line contact with vegetation	Assess if plan has reduced risk events
	Number of live-wire down events	Assess if plan has reduced risk events
	Number of conventional blown fuse events	Assess if plan has reduced risk events
	Number of Poles Tested & Assessed	Determine if plan is on schedule
	Number of Tree Attachments Removed	Determine if plan is on schedule
	Length of Covered Bare Wire (Circuit Miles)	Determine if plan is on schedule
	Number of conventional fuses replaced by current limiting fuses *or fused trip savers (vacuum style)*	Determine if plan is on schedule
Operations	Average Time for Tree Clearance Permissions from Local Agencies	Assess mitigation Plan Constraints and timelines
Customer Service	Number of Customer Service Calls about Tree Trimming	Assess if vegetation management and communications plan has reduced customer concerns and risk events
	SAIDI due to PSPS	Assess outage duration as a result of PSPS

Weather Conditions	Number of NFDRS "Very Dry" and "Dry" Days	Monitor changing climatic and weather patterns
PSPS	Number of PSPS Events	Monitor the need for PSPS events over time as an indicator of changing climatic and weather patterns
	Maximum recorded sustained winds and wind gusts	Monitor the need for PSPS events over time as an indicator of changing climatic and weather patterns
	Frequency of sustained high winds and wind gusts	Monitor the need for PSPS events over time as an indicator of changing climatic and weather patterns

Source: BVES

BVES tracks the metrics presented in Table 3 below on a monthly basis with quarterly or formal reports generated for department leads that evaluate progress in reducing risk drivers. BVES will aggregate the monthly metrics and update objectives as necessary and submit them for review by the President & Treasurer and other executives on an annual basis. The reports will evaluate whether the metrics are below, meeting, or exceeding their targets. The reports will also include brief updates and correction plans for metrics below target. The President & Treasurer will provide feedback and additional guidance as necessary.

2.1 Lessons Learned: How Tracking Metrics on the 2019 WMP Has Informed the 2020 Plan

Attachment 1 Section 2.1 Lessons learned: how tracking metrics on the 2019 plan has informed the 2020 plan

Describe how the utility's plan has evolved since the 2019 WMP submission. Outline any major themes and lessons learned from the 2019 plan and subsequent implementation of the initiatives. In particular, focus on how utility performance against the metrics used has informed the utility's 2020 WMP.

Several challenges and successes arose from the first year of implementing BVES's 2019 WMP. BVES understands that this process will continue to evolve as the WSD and IOUs aim to refine utility best practices to contribute to a statewide approach in reducing wildfire risk. Major themes of lessons learned include resource/personnel planning for new and enhanced initiatives such as recordkeeping practices, external constraints related to materials procurement, siting constraints, weather impacts shortening work order windows, and ensuring sufficient collaboration is made with community members and public safety partners ahead of each fire season. BVES strives to address controllable threats and risks to enable continued execution of planned initiatives by bolstering internal tracking and reporting protocols along with hiring additional personnel with direct roles and responsibilities related to the WMP's success.

BVES's service territory is characterized by mountainous high-altitude terrain. The entirety of its service area is above the 3,000-foot elevation threshold (requiring heavy pole loading construction standards) and has a high density of trees in a mostly dry environment. Certain remote and heavily forested regions of BVES's service territory contain critical infrastructure and are difficult to access – some primarily

accessible by foot, which creates challenges to upgrading infrastructure and maintaining situational awareness. Infrastructure changes to the Radford Area, for example, require the use of helicopters and specially trained linemen to work in the challenging environment. BVES identified this power line for proactive de-energization in the summer due to the high fire risk. Due to lower system demand in the fire season, BVES is able to meet customer demand with this line de-energized. BVES's unique local conditions require it to go beyond the regulated minimum specified vegetation clearance standards, the details of which are included in Section 5 of BVES's WMP.

In evaluating the targets set out in this filing, BVES brings to the Commission and WSD considerations of unique seasonal constraints (e.g. heavy snow loading, reduced access) that it faces when performing the necessary grid upgrades and allowing for more leeway in meeting the 2020 milestone targets. While these service limitations will continue to restrict BVES's flexibility, the need for system and process upgrades to reduce risk of wildfires remains clear. As such, in 2020, BVES is working toward expeditiously addressing design and permitting needs of projects that typically incur seasonal constraints for years 2021 and beyond.

BVES continues to refine its PSPS protocols beyond the depiction in this WMP to ensure compliance with Phase 1 and 2 of R.18-12-005, the docketed proceeding operating in parallel with the WMP OIR, and other PSPS guidance provided by the Commission. BVES began evaluating gaps in personnel sufficiency necessary to execute all elements of the WMP and prioritize the resolution of the gaps to align with the WSD's unveiled data schema for addressing initiative impact to reducing wildfire and PSPS related risks.[9] BVES also plans to revamp its data collection architecture and governance practices to better align with the ongoing material now required by the WSD and other parties in late 2020.

In preparation for this filing, BVES also reviewed its successful project targets for the 2019 year. As an example, deploying the iRestore Responder application for inspections and future response needs has been a successful initiative to prepare for emergency events and identify at-risk elements of the electric system and should be in full use in late 2020 or early 2021. Data records associated with this software can be easily reviewed and compiled for subsequent evaluation, giving more direct visibility into all electrical assets and hazardous surrounding vegetation.

2.2 Recent Performance on Progress Metrics, Last 5 Years

BVES examined past data and used insights and lessons learned from the data to inform the development of the new WMP.

While BVES initiated several efforts immediately where possible in 2019, formal tracking for metrics to illustrate the risk reduction impact began to be collected from June 2019, with the intention of continuing to track through 2020. The June 2019 – May 2020 timeframe effectively would capture the 12-month span. Metrics from 2019 were tracked on a monthly basis, with a central record-keeping file presented to departments to enable ease of tracking and mid-year program evaluations.

[9] On August 11 – 12, 2020, the WSD held a remote workshop under R.18-10-007 to discuss the vision for future WMP filings and previewed its roadmap to bridge anticipated data gaps, collection, and reporting informed by lessons learned captured through the 2020 WMP filing process.

Supporting Table 2-2. 2019 WMP Metric Records

Metric Category	Metric	June 2019 – May 2020 Metrics Reporting / Lessons Learned
Overall WMP	Number of utility-caused fires	0 events identified in 2019. BVES did not experience a wildfire or ignition during the 2019 year or first half of 2020 and therefore has no direct lessons learned to apply to future practices.
Infrastructure	Number of bare-line contact with vegetation	5 risk events identified in 2019.
	Number of live-wire down events	3 risk events identified in 2019.
	Number of conventional blown fuse events	4 blown fuse events recorded in 2019.
	Number of Poles Tested & Assessed	2,512 out of 8,737 poles were tested and assessed to date in this 5-year project (2018-2022). While BVES has experienced several logistics challenges in this endeavor, it has steadily progressed and essentially remains on track.
	Number of Tree Attachments Removed	430 out 1,207 tree attachment were removed to date in this 5-year project (2018 - 2022). This activity has presented additional challenges in access and resource availability. Throughout 2019 and 2020, BVES predominately removed tree attachments over the spring and summer months.
	Length of Bare Wire Covered (Circuit Miles)	BVES has replaced 2.16 circuit miles as of July 31, 2020. BVES plans on replacing an additional 2.5 circuit miles by January 2021 and an additional 2.5 circuit miles by June 2021. BVES understands that several utilities have experienced postponements with deploying covered conductor due to issues that range from procurement arrivals, resource adequacy, operating windows, access to rough terrain, and permitting delays. BVES will keep these concerns in mind for future covered conductor projects.
	Number of conventional fuses replaced by current limiting fuses *or fused trip savers (vacuum style)*	BVES has replaced 1,400 out of a target of 1,602 conventional fuses with current limiting fuses and fused trip savers through July 31, 2020.

Metric Category	Metric	June 2019 – May 2020 Metrics Reporting / Lessons Learned
Operations	Average Time for Tree Clearance Permissions from Local Agencies	An averaged time was not determined over 2019, because this has not been an issue. BVES will remove this metric.
Customer Service	Number of Customer Service Calls about Tree Trimming	0
	SAIDI due to PSPS	0 BVES has not had to initiate a PSPS event from June 2019 – May 2020.
Weather Conditions	Number of NFDRS "Very Dry" and "Dry" Days	150 days of these categories combined occurred between June 2019 and May 2020.
PSPS	Number of PSPS Events	0 BVES did not have an initiated PSPS event from June 2019 to date. However, SCE de-energized or placed SCE supply lines under PSPS consideration that could have resulted in a complete or partial loss of supply to BVES's customers had SCE de-energized additional lines to BVES.
	Maximum recorded sustained winds and wind gusts	For sustained winds: 41.0 mph as recorded by the National Weather Service (NWS) and 77.8 mph as recorded by BVES weather stations. For wind gusts: 53.0 mph for three second wind gusts as recorded by NSW and 77.8 mph[10] as recorded by BVES's weather stations.
	Frequency of high sustained high winds and wind gusts	BVES's weather stations captured 5 separate days in which the sustained wind exceeded 50 mph for brief periods while the NWS recorded 0 day of this indicator. BVES's weather stations captured 5 separate days in which the wind gusts exceeded 50 mph for brief periods while the NWS recorded 1 day of this indicator.

[10] The BVES weather station reading for a sustained gust reading of 77.8 mph occurred during a winter storm event, which coincides with very low wildfire risk conditions

A comprehensive table for recent performance on progress metrics for the last five years is located in the accompanying excel workbook for *Attachment 1*, also reflected below in Table 1.[11]

Table 1. Recent Performance on Progress Metrics: 2015 - 2019

#	Progress metric name				Annual performance[12] 2015	2016	2017	2018	2019	Unit(s)	Comments
1	Grid condition findings from inspection	Findings per mile of circuit in HFTD	Level 1		N/A[1]	N/A[1]	0.000000	0.018974	0.023718	Number of Level 1, 2, and 3 findings per mile of circuit in HFTD, and per total miles of circuit for each of the following inspection types: 1. Patrol inspections 2. Detailed inspections 3. Other inspection types	Prior to 2017, inspection and other data which had been being maintained in a database system called Automated Line Patrol System (ALPS) were migrated to a new database system called "Partner." While the old database has been archived and retained, data prior to 2017 is not readily available. During that transition all level 1, 2 or 3 deficiencies had either been corrected or were entered into the new Partner system for tracking and remediation.
			Level 2		N/A[1]	N/A[1]	0.000000	1.456288	2.224752		
			Level 3		N/A[1]	N/A[1]	3.168730	0.289360	10.127603		
		Findings per total circuit miles by inspection type	Patrol Inspections	Level 1	N/A[1]	N/A[1]	0.000000	0.009487	0.000000		
				Level 2	N/A[1]	N/A[1]	0.000000	0.602438	0.066411		
				Level 3	N/A[1]	N/A[1]	3.168730	1.285518	1.560647		
			Detailed Inspections[13]	Level 1	N/A[1]	N/A[1]	0.000000	0.018974	0.014231		
				Level 2	N/A[1]	N/A[1]	0.000000	1.456288	1.176415		
				Level 3	N/A[1]	N/A[1]	0.000000	0.289360	0.635643		
			Other Inspection Types	Level 1	N/A[1]	N/A[1]	0.000000	0.009487	0.000000		
				Level 2	N/A[1]	N/A[1]	0.000000	0.602438	0.066411		
				Level 3	N/A[1]	N/A[1]	0.000000	1.285518	1.560647		
2	Vegetation clearance findings from inspection		N/A[1]		N/A[1]		N/A[1]	N/A[1]	0.02	Percentage of right-of-way with noncompliant clearance based on applicable rules and regulations at the time of inspection, as a percentage of all right-of-way inspected	2019 figure is from October to December. Unable to locate any data prior to October 2019 with the granularity needed to respond.

[11] The supporting workbook: *BVES 2020 WMP Attachment 1* is filed as accompanying material to the WMP narrative with Tables 1 – 31 in a spreadsheet format.
[12] BVES tracks annual performance from June of the current year, through May of the following year, *i.e.* "2019" = June 2019 – May 2019.
[13] Findings from detailed and patrol Inspections were not differentiated in the BVES's database until 2018.

3	Extent of grid modularization	1. In HFTD	144	144	144	144	144	Number of sectionalizing devices per circuit mile plus number of automated grid control equipment in: 1. HFTD 2. Non-HFTD	Entire BVES service territory is in HTFD 2 or 3.
		2. In Non-HFTD	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]		
4	Data collection and reporting						97.10%	Percent of data requested in SDR and WMP collected in initial submission	

Note: Values for Table 1. "Grid condition findings from inspection" were calculated by dividing the total number of findings of each type by the total number of overhead circuit miles in BVES's service territory, assuming underground circuits are unaffected by wind conditions. Including underground circuit miles in this calculation would deflate the actual assessment of risk posed by wind and other wildfire-risk conditions.
1. No data available at this time.
2. BVES does not have any portions of its service in non-HFTD.

2.3 Recent Performance on Outcome Metrics, Annual and Normalized for Weather, Last 5 Years

A comprehensive table for recent performance on outcome metrics for the last five years is located in the accompanying excel workbook for *Attachment 1* as well as below in Table 2.

Table 2. Recent Performance on Outcome Metrics: 2015 - 2019

Metric type	#	Outcome metric name	Annual performance[14]					Unit(s)	Comments
			2015	2016	2017	2018	2019		
1. Near misses	1.a.	Number of all events (such as unplanned outages, faults, conventional blown fuses, etc.) that could result in ignition, by type according to utility-provided list (total)	33	85	83	31	25	Number per year	
	1.b.	Number of all events (such as unplanned outages, faults, conventional blown fuses, etc.) that could	0.05366	0.02846	0.02506	0.01390	0.01873	Number per RFW circuit mile day per year	

[14] BVES tracks annual performance from June of the current year, through May of the following year

Metric type	#	Outcome metric name	Annual performance[14]					Unit(s)	Comments
			2015	2016	2017	2018	2019		
		result in ignition, by type according to utility-provided list (normalized)							
	1.c.	Number of wires down (total)	7	17	4	3	3	Number of wires down per year	
	1.d.	Number of wires down (normalized)	0.01138	0.00569	0.00121	0.00134	0.00225	Number per RFW circuit mile day per year	
2. Utility inspection findings	2.a.	Number of Level 1 findings that could increase the probability of ignition discovered per circuit mile inspected	N/A – no data available at this time	N/A – no data available at this time	0	4	5	Average number of Level 1 findings that could increase the probability of ignition discovered by all inspections per circuit mile per year	Prior to 2017, inspection and other data which had been being maintained in a database system called Automated Line Patrol System (ALPS) were migrated to a new database system called "Partner." While the old database has been archived and retained, data prior to 2017 is not readily available. During that transition, all level 1, 2 or 3 deficiencies had either been corrected or were entered into the new Partner system for tracking and remediation.
	2.b.	Number of Level 2 findings that could increase the probability of ignition discovered per circuit mile inspected	N/A – no data available at this time	N/A – no data available at this time	0	307	469	Average number of Level 2 findings that could increase the probability of ignition discovered by all inspections per circuit mile per year	
	2.c.	Number of Level 3 findings that could increase the probability of ignition discovered per circuit mile inspected	N/A – no data available at this time	N/A – no data available at this time	668	61	2135	Average number of Level 3 findings that could increase the probability of ignition discovered by all inspections per circuit mile per year	
3. Customer hours of PSPS and other outages	3.a.	Customer hours of planned outages including PSPS (total)	1,467	2,112	88,412	6,725	782	Total customer hours of planned outages per year	
	3.b.	Customer hours of planned outages including PSPS (normalized)	2.38563	0.70717	26.69925	3.01434	0.58574	Total customer hours of planned outages per RFW circuit mile day per year	
	3.c.	Customer hours of unplanned outages, not including PSPS (total)	73,785	129,310	155,513	73,619	121,869	Total customer hours of unplanned outages per year	
	3.d.	Customer hours of unplanned outages, not including PSPS (normalized)	119.98873	43.29752	46.96287	32.99817	91.28356	Total customer hours of unplanned outages per RFW circuit mile day per year	
	3.e.	Increase in System Average Interruption Duration Index (SAIDI)	0	0	0	0	0	Change in minutes compared to the previous year	
	4.a.	Fatalities due to utility-ignited wildfire (total)	0	0	0	0	0	Number of fatalities per year	BVES has not had any utility-ignited wildfires

Metric type	#	Outcome metric name	Annual performance[14]					Unit(s)	Comments
			2015	2016	2017	2018	2019		
4. Utility ignited wildfire fatalities	4.b.	Fatalities due to utility-ignited wildfire (normalized)	0	0	0	0	0	Number of fatalities per RFW circuit mile day per year	BVES has not had any utility-ignited wildfires
5. Accidental deaths resulting from utility wildfire mitigation initiatives	5.a.	Deaths due to utility wildfire mitigation activities (total)	0	0	0	0	0	Number of fatalities per year	
6. OSHA-reportable injuries from utility wildfire mitigation initiatives	6.a.	OSHA-reportable injuries due to utility wildfire mitigation activities (total)	0	0	0	1	0	Number of OSHA-reportable injuries per year	On July 19, 2018, a line worker and the owner of Teele Tree Services made contact with a high voltage power line and sustained non-fatal injuries. The injury did not require reporting under Cal/OSHA guidelines but BVES chose to report the incident.
	6.b.	OSHA-reportable injuries due to utility wildfire mitigation activities (normalized)	0	0	0	4.74361	0	Number of OSHA-reportable injuries per year per 1000-line miles of grid	BVES has only 210.81 miles of OH lines. BVES interpreted this question to mean BVES would have 0.21081 "thousand-line miles of grid."
7. Value of assets destroyed by utility-ignited wildfire, listed by asset type	7.a.	Value of assets destroyed by utility-ignited wildfire (total)	0	0	0	0	0	Dollars of damage or destruction per year	BVES has not had any utility-ignited wildfires
	7.b.	Value of assets destroyed by utility-ignited wildfire (normalized)	0	0	0	0	0	Dollars of damage or destruction per RFW circuit mile day per year	BVES has not had any utility-ignited wildfires
8. Structures damaged or destroyed by utility-ignited wildfire	8.a.	Number of structures destroyed by utility-ignited wildfire (total)	0	0	0	0	0	Number of structures destroyed per year	BVES has not had any utility-ignited wildfires
	8.b.	Number of structures destroyed by utility-ignited wildfire (normalized)	0	0	0	0	0	Number of structures destroyed per RFW circuit mile day per year	BVES has not had any utility-ignited wildfires
9. Acreage burned by	9.a.	Acreage burned by utility-ignited wildfire (total)	0	0	0	0	0	Acres burned per year	BVES has not had any utility-ignited wildfires

Metric type	#	Outcome metric name	Annual performance[14]					Unit(s)	Comments
			2015	2016	2017	2018	2019		
utility-ignited wildfire	9.b.	Acreage burned by utility-ignited wildfire (normalized)	0	0	0	0	0	Acres burned per RFW circuit mile day per year	BVES has not had any utility-ignited wildfires
10. Number of utility wildfire ignitions	10.a.	Number of ignitions (total) according to existing ignition data reporting requirement	0	0	0	0	0	Number per year	BVES had not had any ignitions
	10.b.	Number of ignitions (normalized)	0	0	0	0	0	Number per RFW circuit mile day per year	BVES had not had any ignitions
	10.c.	Number of ignitions in HFTD (subtotal)	0	0	0	0	0	Number in HFTD per year	BVES had not had any ignitions
	10.c.i.	Number of ignitions in HFTD Zone 1	0	0	0	0	0	Number in HFTD Zone 1 per year	BVES had not had any ignitions
	10.c.ii.	Number of ignitions in HFTD Tier 2	0	0	0	0	0	Number in HFTD Tier 2 per year	BVES had not had any ignitions
	10.c.iii.	Number of ignitions in HFTD Tier 3	0	0	0	0	0	Number in HFTD Tier 3 per year	BVES had not had any ignitions
	10.d.	Number of ignitions in HFTD (subtotal, normalized)	0	0	0	0	0	Number in HFTD per RFW circuit mile day per year	BVES had not had any ignitions
	10.d.i.	Number of ignitions in HFTD Zone 1 (normalized)	0	0	0	0	0	Number in HFTD Zone 1 per RFW circuit mile day per year	BVES had not had any ignitions
	10.d.ii.	Number of ignitions in HFTD Tier 2 (normalized)	0	0	0	0	0	Number in HFTD Tier 2 per RFW circuit mile day per year	BVES had not had any ignitions
	10.d.iii.	Number of ignitions in HFTD Tier 3 (normalized)	0	0	0	0	0	Number in HFTD Tier 3 per RFW circuit mile day per year	BVES had not had any ignitions
	10.e.	Number of ignitions in non-HFTD (subtotal)	0	0	0	0	0	Number in non-HFTD per year	BVES had not had any ignitions
	10.f.	Number of ignitions in non-HFTD (normalized)	0	0	0	0	0	Number in non-HFTD per RFW circuit mile day per year	BVES had not had any ignitions
11. Critical infrastructure impacted	11.a.	Critical infrastructure impacted by PSPS	0	0	0	0	0	Number of critical infrastructure (in accordance with D.19-05-042) locations impacted per hour multiplied by hours offline per year	BVES has not needed to initiate any PSPS events
	11.b.	Critical infrastructure impacted by PSPS (normalized)	0	0	0	0	0	Number of critical infrastructure (in accordance with D.19-05-042) locations impacted per hour multiplied by hours offline per RFW circuit mile day per year	BVES has not needed to initiate any PSPS events

Wildfire Safety Division Adopted Standardized Metrics

BVES will begin tracking the WSD's adopted metrics following approval of the WMP 2020 refiling. These metrics are intended to provide consistency across all respondents of the OIR, provide a holistic picture of BVES's contribution to and impact on objectives set by the WSD and CPUC, and inform its decision-making for additional mitigation measures or enhancements. Supporting Table 2-3 presents the identified progress metrics to track implementation starting in late 2020.

Supporting Table 2-3. 2020 WMP Progress Metrics

#	Progress metric name	Unit(s)	Sources	Collection frequency	Example options for audit
1	Grid condition findings from inspection	Number of Level 1, 2, and 3 findings per mile of circuit in High Fire-Threat District (HFTD), and per total miles of circuit for each of the following inspection types: 1. Patrol inspections 2. Detailed inspections 3. Other inspection types	Utility reporting	Monthly	Deep-dive audits of select portions of utility grid
2	Vegetation clearance findings from inspection	Percentage of right-of-way with noncompliant clearance based on applicable rules and regulations at the time of inspection	Utility reporting	Monthly	Deep-dive audits of select portions of right-of-way
3	Extreme weather prediction accuracy	Percentage of total PSPS predictions that are false positives or false negatives 2 days before a potential PSPS event	Utility reporting	Post-event	NWS, UCSD, CAL FIRE Predictive Services
4	Extent of grid modularization	Number of sectionalizing devices per circuit mile and number of automated grid control equipment in: 1. HFTD 2. Non-HFTD	Utility reporting	Quarterly	Deep-dive audits of select portions of utility grid
5	Equipment operating load above nameplate capacity	Number of circuit hours operated above nameplate capacity in HFTD areas Average % above nameplate capacity when equipment operated above nameplate capacity in HFTD areas	Utility reporting	Quarterly	Deep-dive audits of select portions of utility grid, CAISO
6	Risk-spend efficiency of resources deployed towards wildfire mitigation efforts	Dollars per incremental life saved Dollars invested per estimated dollars of rebuilt structures avoided Dollars per customer hour of PSPS avoided	Utility reporting	Quarterly	Calculation inputs and methodology for re-computing by third-party

#	Progress metric name	Unit(s)	Sources	Collection frequency	Example options for audit
7	Extent of hardening across grid	Percent of all grid assets in HFTD areas using proven and demonstrated wildfire-resistant equipment	Utility reporting	Monthly	Deep-dive audits of select portions of utility grid
8	Community engagement activity and effectiveness	Percent of residents made aware of PSPS and emergency response procedures in advance of events, according to post-event surveys Percent of residents agreeing to participate in utility wildfire risk-reduction activities (e.g., allowing access to property for utility hazard tree remediation)	Utility reporting	Quarterly	Resident survey, Fire Safety Councils, audit of wildfire risk reduction activity
9	Emergency planning and preparedness	Number of emergency response deficiencies reported by Cal OES, suppression agencies, and other emergency response personnel when plans tested or activated	Utility reporting	Post-event	CAL FIRE, Cal OES, employee survey, Fire Safety Councils
10	Data collection and reporting	Percent of data requested in SDR and WMP collected in initial submission Number of data elements shared publicly by utilities	Utility reporting	Quarterly	Database access and records, party listserv, and surveys

2.4 Description of Additional Metrics

A comprehensive table that lists and describes additional metrics over the last five years is located in the accompanying Excel workbook for *Attachment 1* as well as below in

Table 3.

BVES notes with respect to BVES-4, 2019 targets for LiDAR inspections were met. The entire circuit was inspected in November with results compiled in February 2020. Table 3 and Table 4 in this Section of the WMP now reflect this. The LiDAR inspection plan aims to cover BVES's entire territory over the course of a year and found 94 trouble spots (Level 1 and 2 discrepancies) during that survey. As reflected in Table 4, BVES does not have a specific target associated with trouble spot findings but anticipates a reduction in findings year over year as system hardening and vegetation management programs and other wildfire risk-mitigation projects are carried out. BVES will consider a specific target to quantifiably measure the ability to achieve performance under LiDAR inspections for the next WMP filing. BVES also views LiDAR as a Quality Control (QC) program and thus the quantity of findings is more reflective of the effectiveness of the tree trimming and not necessarily of the inspection method.

Table 3. List and Description of Additional Metrics: 2015 - 2019

Metric Category	Metric	Performance [15]					Units	Underlying assumptions	Third-party validation
		2015	2016	2017	2018	2019			
Overall Plan	Number of reportable fire incidents (D14-02-015 Appendix C: Fire Incident Data Collection Plan)	0	0	0	0	0	Number of incidents	Assess overall effectiveness of the plan	Prior to 2019, BVES was not required to record this data. 2015-2018 values based on review of utility records.
Infrastructure	Number of bare line contact with vegetation	6	39	17	9	5	Number of contact events	Assess if plan has reduced risk events	Contracted 3rd party analysts or academic researchers could review open as well as closed work orders, BVES GIS databases, staff interviews, as well as spot-checking select items for confirmation of status.
	Number of live wire down events	7	17	4	3	1	Number of events	Assess if plan has reduced risk events	
	Number of conventional blown fuse events	22	18	29	11	4	Number of events	Assess if plan has reduced risk events	
	Number of poles assessed	N/A[1]	N/A[1]	N/A[1]	924	1588	Number of poles	Determine if plan is on schedule	
	Number of poles that failed assessment (wind loading, age, deterioration, unfixable GO-95 violation)	N/A[1]	N/A[1]	N/A[1]	655	393	Number of poles	Determine if plan is on schedule	
	Number of poles replaced as a result of failed assessments	N/A[1]	N/A[1]	N/A[1]	210	305	Number of poles	Determine if plan is on schedule	

[15] BVES tracks annual performance from June of the current year, through May of the following year

Metric Category	Metric	Performance [15]					Units	Underlying assumptions	Third-party validation
		2015	2016	2017	2018	2019			
	Number of poles remediated as a result of failed assessments	N/A[1]	N/A[1]	N/A[1]	40	66	Number poles	Determine if plan is on schedule	
	Number of Tree Attachments Removed	N/A[1]	N/A[1]	N/A[1]	230	199	Number of attachments	Determine if plan is on schedule	
	Length of Covered Bare Wire (Circuit Miles)	N/A[1]	N/A[1]	N/A[1]	N/A[1]	.52	Length of wire (circuit miles)	Determine if plan is on schedule	
	Number of conventional fuses replaced by current limiting fuses	N/A[1]	N/A[1]	N/A[1]	N/A[1]	285	Number of fuses	Determine if plan is on schedule	
	Number of conventional fuses replaced by fused trip savers (vacuum style)	N/A[1]	N/A[1]	N/A[1]	9	8	Number of fuses	Determine if plan is on schedule	
System Hardening	Number of Conventional fuses in system	N/A[1]	N/A[1]	N/A[1]	N/A[1]	1,885	Number of fuses	Assess overall system hardening	Contracted 3rd party analysts or academic researchers could review open as well as closed work orders, BVES GIS databases, staff interviews, as well as spot-checking select items for confirmation of status.
	Percent of 34.5 kV System that is Overhead Bare Wire	N/A[1]	N/A[1]	N/A[1]	97.0%	95.9%	Percent of 34.5 kV circuit miles	Assess overall system hardening	
	Percent of 34.5 kV System that is Underground	N/A[1]	N/A[1]	N/A[1]	3.0%	3.0%	Percent of 34.5 kV circuit miles	Assess overall system hardening	
	Percent of 34.5 kV System that is Covered Wire	N/A[1]	N/A[1]	N/A[1]	0.0%	1.1%	Percent of 34.5 kV circuit miles	Assess overall system hardening	
	Percent of 4 kV System that is Overhead Bare Wire	N/A[1]	N/A[1]	N/A[1]	77.3%	77.2%	Percent of 4 kV circuit miles	Assess overall system hardening	
	Percent of 4 kV System that is Underground	N/A[1]	N/A[1]	N/A[1]	22.7%	22.7%	Percent of 4 kV circuit miles	Assess overall system hardening	
	Percent of 4 kV System that is Covered Wire	N/A[1]	N/A[1]	N/A[1]	0.0%	0.1%	Percent of 4 kV circuit miles	Assess overall system hardening	
	Number of Tree Attachments Remaining in System	N/A[1]	N/A[1]	N/A[1]	977	776	Number of attachments	Assess overall system hardening	
Operations	Number of "Urgent" Vegetation Orders Issued (must be corrected w/30 days)	N/A[1]	N/A[1]	N/A[1]	N/A[1]	37	Number of orders	Assess if vegetation management plan has reduced risk events	Contracted 3rd party analysts or academic researchers could review open as well as closed work orders, BVES GIS databases, staff interviews, as well as spot-checking select items for confirmation of status.
	Number of "Urgent" Vegetation Orders Outstanding	N/A[1]	N/A[1]	N/A[1]	N/A[1]	0	Number of orders	Determine if plan is on schedule	
	Number of Trees Trimmed	N/A[1]	N/A[1]	N/A[1]	5526	6,671	Number of trees	Determine if plan is on schedule	
	Number of Trees Removed	N/A[1]	N/A[1]	N/A[1]	80	123	Number of trees	Determine if plan is on schedule	
	Percent of OH System Cleared by Tree Trimming Crews	N/A[1]	N/A[1]	N/A[1]	29%	48%	Percent of OH system	Determine if plan is on schedule	
	Number of Level 1 GO-95 Potential Non-Compliance (Immediate risk of high potential impact to safety or reliability) Items Identified	N/A[1]	N/A[1]	0	4	5	Number of Items	Determine if plan is on schedule	

Metric Category	Metric	Performance [15]					Units	Underlying assumptions	Third-party validation
		2015	2016	2017	2018	2019			
	Number of Level 1 GO-95 Potential Non-Compliance (Immediate risk of high potential impact to safety or reliability) Items Outstanding	N/A[1]	N/A[1]	0	0	0	Number of Items	Determine if plan is on schedule	
	Number of Level 2 GO-95 Potential Non-Compliance (Any other risk of at least moderate potential impact to safety or reliability) Items Identified	N/A[1]	N/A[1]	0	307	469	Number of Items	Determine if plan is on schedule	
	Number of Level 2 GO-95 Potential Non-Compliance (Any other risk of at least moderate potential impact to safety or reliability) Items Outstanding	N/A[1]	N/A[1]	0	0	0	Number of Items	Determine if plan is on schedule	
	Number of Level 3 GO-95 Potential Non-Compliance (Any risk of low potential impact to safety or reliability) Items Identified	N/A[1]	N/A[1]	668	61	2135	Number Items	Determine if plan is on schedule	
	Number of Level 3 GO-95 Potential Non-Compliance (Any risk of low potential impact to safety or reliability) Items Outstanding	N/A[1]	N/A[1]	0	0	0	Number Items	Determine if plan is on schedule	
	Number of Circuit Miles Patrolled per GO-165	211	211	211	211	422	Number of Circuit Miles	Determine if plan is on schedule	
	Number of Circuit Miles Inspected per GO-165 (detailed inspection)	7.3	1.2	42.6	56.8	28.14	Number of Circuit Miles	Determine if plan is on schedule	
	Number of Poles Intrusively Inspected	994	927	1013	155	48	Number of Poles	Determine if plan is on schedule	
	Number of Poles Failing Intrusive Inspection	8	7	4	4	3	Number of Poles	Determine if plan is on schedule	
	Number of Circuit Miles of LiDAR Survey	N/A[1]	N/A[1]	N/A[1]	N/A[1]	211	Number of Circuit Miles	Determine if plan is on schedule	
	Number of LiDAR trouble spots	N/A[1]	N/A[1]	N/A[1]	N/A[1]	94[2]	Number of spots	Determine if plan is on schedule	
	Number of Circuit Miles of Exacter Survey	N/A[1]	N/A[1]	N/A[1]	N/A[1]	120	Number of Circuit Miles	Assess if communications plan has reduced customer concerns and risk events	
	Number of Exacter trouble spots	N/A[1]	N/A[1]	N/A[1]	N/A[1]	10	Number of trouble spots	Assess outage impact on customers as a result of PSPS	
Customer Service	Number of Customer Service Calls about Tree Trimming	N/A[1]	N/A[1]	N/A[1]	N/A[1]	0	Number of Calls	Monitor changing climatic and weather patterns	Contracted 3rd party analysts or academic researchers could review open as well as closed work orders, BVES GIS databases, staff interviews, as well as
	SAIDI due to PSPS	N/A[1]	N/A[1]	N/A[1]	N/A[1]	0	System Average Interruption Duration Index	Monitor the need for PSPS events over time as an indicator of changing climatic and weather patterns	

Metric Category	Metric	Performance [15]					Units	Underlying assumptions	Third-party validation
		2015	2016	2017	2018	2019			
									spot-checking select items for confirmation of status.
Weather Conditions	Number of NFDRS "Very Dry" and "Dry" Days	N/A[1]	N/A[1]	N/A[1]	N/A[1]	150	Number of Days	Monitor the need for PSPS events over time as an indicator of changing climatic and weather patterns	Contracted 3rd party analysts or academic researchers could review open as well as closed work orders, BVES GIS databases, staff interviews, as well as spot-checking select items for confirmation of status.
PSPS	Number of PSPS Events	N/A[1]	N/A[1]	N/A[1]	N/A[1]	0	Number of Events	Monitor the need for PSPS events over time as an indicator of changing climatic and weather patterns	Contracted 3rd party analysts or academic researchers could review open as well as closed work orders, BVES GIS databases, staff interviews, as well as spot-checking select items for confirmation of status.
	Maximum recorded sustained winds Recorded by NWS	N/A[1]	N/A[1]	N/A[1]	N/A[1]	41	Miles per Hour	Monitor the need for PSPS events over time as an indicator of changing climatic and weather patterns	
	Maximum recorded sustained winds Recorded by BVES Weather Stations	N/A[1]	N/A[1]	N/A[1]	N/A[1]	77.8	Miles per Hour	Monitor the need for PSPS events over time as an indicator of changing climatic and weather patterns	
	Maximum recorded wind gusts Recorded by NWS	N/A[1]	N/A[1]	N/A[1]	N/A[1]	53	Miles per Hour	Monitor the need for PSPS events over time as an indicator of changing climatic and weather patterns	
	Maximum recorded wind gusts Recorded by BVES Weather Stations	N/A[1]	N/A[1]	N/A[1]	N/A[1]	77.8	Miles per Hour	Monitor the need for PSPS events over time as an indicator of changing climatic and weather patterns	
	Frequency of sustained high winds (number of days sustained wind > 50 mph) recorded by NWS	N/A[1]	N/A[1]	N/A[1]	N/A[1]	0	Number of Days	Monitor the need for PSPS events over time as an indicator of changing climatic and weather patterns	
	Frequency of sustained high winds (number of days sustained wind > 50 mph) recorded by BVES weather stations	N/A[1]	N/A[1]	N/A[1]	N/A[1]	5	Number of Days	Monitor the need for PSPS events over time as an indicator of changing climatic and weather patterns	
	Frequency of high wind gusts (number of days wind gusts > 50 mph) recorded by NWS	N/A[1]	N/A[1]	N/A[1]	N/A[1]	1	Number of Days	Monitor the need for PSPS events over time as an indicator of changing climatic and weather patterns	
	Frequency of high wind gusts (number of days wind gusts > 50 mph) recorded by BVES weather stations	N/A[1]	N/A[1]	N/A[1]	N/A[1]	5	Number of Days	Monitor the need for PSPS events over time as an indicator of changing climatic and weather patterns	

Note: Data from 2015-2018 is unavailable for many as these metrics were not recorded prior to implementation of the current (2019) WMP, which took effect June 2019.
1. BVES has not previously recorded this metric prior to the 2019 WMP or respective historical years.
2. Trouble spots defined as level 1 and 2 discrepancies

2.5 Description of Program Targets

A comprehensive table describing the program targets for the WMP is located in the accompanying excel workbook for *Attachment 1* as well as below in Table 4.

Table 4. List and Description of Program Targets: 2015 - 2019

Metric Category	Metric	Program target	2019 performance[16]	Units	Underlying assumptions	Third-party validation
Overall Plan	Number of reportable fire incidents (D14-02-015 Appendix C: Fire Incident Data Collection Plan)	0	0	Number of incidents	Assess overall effectiveness of the plan	Contracted 3rd party analysts or academic researchers could review open as well as closed work orders, BVES GIS databases, staff interviews, as well as spot-checking select items for confirmation of status.
Infrastructure	Number of bare line contact with vegetation	<5	5	Number of contact events	Assess if plan has reduced risk events	Contracted 3rd party analysts or academic researchers could review open as well as closed work orders, BVES GIS databases, staff interviews, as well as spot-checking select items for confirmation of status.
	Number of live-wire down events	<1	1	Number of events	Assess if plan has reduced risk events	
	Number of conventional blown fuse events	<5	4	Number of events	Assess if plan has reduced risk events	
	Number of poles assessed	500	1588	Number of poles	Determine if plan is on schedule	
	Number of poles that failed assessment (wind loading, age, deterioration, unfixable GO-95 violation)	N/A – this program does not have a specific target	393	Number of poles	Determine if plan is on schedule	
	Number of poles replaced as a result of failed assessments	N/A – this program does not have a specific target	305	Number of poles	Determine if plan is on schedule	
	Number of poles remediated as a result of failed assessments	N/A – this program does not have a specific target	66	Number poles	Determine if plan is on schedule	

[16] BVES tracks annual performance from June of the current year, through May of the following year.

Metric Category	Metric	Program target	2019 performance[16]	Units	Underlying assumptions	Third-party validation
	Number of Tree Attachments Removed	75	125	Number of attachments	Determine if plan is on schedule	
	Number of new poles installed as a result of Tree Attachments Removed	N/A – this program does not have a specific target	9	Number of poles	Determine if plan is on schedule	
	Length of Covered Bare Wire (Circuit Miles)	1	.52	Length of wire (circuit miles)	Determine if plan is on schedule	
	Number of conventional fuses replaced by current limiting fuses	1,163	285	Number of fuses	Determine if plan is on schedule	
	Number of conventional fuses replaced by fused trip savers (vacuum style)	230	8	Number of fuses	Determine if plan is on schedule	
System Hardening	Number of Conventional fuses in system	N/A – this program does not have a specific target	2,493	Number of fuses	Assess overall system hardening	Contracted 3rd party analysts or academic researchers could review open as well as closed work orders, BVES GIS databases, staff interviews, as well as spot-checking select items for confirmation of status.
	Percent of 34.5 kV System that is Overhead Bare Wire	N/A – this program does not have a specific target	95.9%	Percent of 34.5 kV circuit miles	Assess overall system hardening	
	Percent of 34.5 kV System that is Underground	N/A – this program does not have a specific target	3.0%	Percent of 34.5 kV circuit miles	Assess overall system hardening	
	Percent of 34.5 kV System that is Covered Wire	N/A – this program does not have a specific target	1.1%	Percent of 34.5 kV circuit miles	Assess overall system hardening	
	Percent of 4 kV System that is Overhead Bare Wire	N/A – this program does not have a specific target	77.2%	Percent of 4 kV circuit miles	Assess overall system hardening	
	Percent of 4 kV System that is Underground	N/A – this program does not have a specific target	2.7%	Percent of 4 kV circuit miles	Assess overall system hardening	
	Percent of 4 kV System that is Covered Wire	N/A – this program does not have a specific target	0.1%	Percent of 4 kV circuit miles	Assess overall system hardening	

Metric Category	Metric	Program target	2019 performance[16]	Units	Underlying assumptions	Third-party validation
	Number of Tree Attachments Remaining in System	N/A – this program does not have a specific target	776	Number of attachments	Assess overall system hardening	
Operations	Number of "Urgent" Vegetation Orders Issued (must be corrected w/30 days)	N/A – this program does not have a specific target	37	Number of orders	Assess if vegetation management plan has reduced risk events	Contracted 3rd party analysts or academic researchers could review open as well as closed work orders, BVES GIS databases, staff interviews, as well as spot-checking select items for confirmation of status.
	Number of "Urgent" Vegetation Orders Outstanding)	0	0	Number of orders	Determine if plan is on schedule	
	Number of Trees Trimmed	N/A – this program does not have a specific target	6,671	Number of trees	Determine if plan is on schedule	
	Number of Trees Removed	N/A – this program does not have a specific target	123	Number of trees	Determine if plan is on schedule	
	Percent of OH System Cleared by Tree Trimming Crews	15%	48%	Percent of OH system	Determine if plan is on schedule	
	Number of Level 1 GO-95 Potential Non-Compliance (Immediate risk of high potential impact to safety or reliability) Items Identified	0	5	Number of Items	Determine if plan is on schedule	
	Number of Level 1 GO-95 Potential Non-Compliance (Immediate risk of high potential impact to safety or reliability) Items Outstanding	0	0	Number of Items	Determine if plan is on schedule	
	Number of Level 2 GO-95 Potential Non-Compliance (Any other risk of at least moderate potential impact to safety or reliability) Items Identified	<50	469	Number of Items	Determine if plan is on schedule	

Metric Category	Metric	Program target	2019 performance[16]	Units	Underlying assumptions	Third-party validation
	Number of Level 2 GO-95 Potential Non-Compliance (Any other risk of at least moderate potential impact to safety or reliability) Items Outstanding	0	0	Number of Items	Determine if plan is on schedule	
	Number of Level 3 GO-95 Potential Non-Compliance (Any risk of low potential impact to safety or reliability) Items Identified	< 1500	2135	Number Items	Determine if plan is on schedule	
	Number of Level 3 GO-95 Potential Non-Compliance (Any risk of low potential impact to safety or reliability) Items Outstanding	0	0	Number Items	Determine if plan is on schedule	
	Number of Circuit Miles Patrolled per GO-165	118	422	Number of Circuit Miles	Determine if plan is on schedule	
	Number of Circuit Miles Inspected per GO-165 (detailed inspection)	12	28.14	Number of Circuit Miles	Determine if plan is on schedule	
	Number of Poles Intrusively Inspected	45	46	Number of Poles	Determine if plan is on schedule	
	Number of Poles Failing Intrusive Inspection	N/A – this program does not have a specific target	9	Number of Poles	Determine if plan is on schedule	
	Number of Circuit Miles of LiDAR Survey	211	211	Number of Circuit Miles	Determine if plan is on schedule	
	Number of LiDAR trouble spots	N/A – this program does not have a specific target	94[1]	Number of spots	Determine if plan is on schedule	
	Number of Circuit Miles of Exacter Survey	<30	120	Number of Circuit Miles	Assess if communications plan has reduced customer concerns and risk events	

Metric Category	Metric	Program target	2019 performance[16]	Units	Underlying assumptions	Third-party validation
	Number of Exacter trouble spots	N/A – this program does not have a specific target	10	Number of trouble spots	Assess outage impact on customers as a result of PSPS	
Customer Service	Number of Customer Service Calls about Tree Trimming	N/A – this program does not have a specific target	0	Number of Calls	Monitor changing climatic and weather patterns	Contracted 3rd party analysts or academic researchers could review open as well as closed work orders, BVES GIS databases, staff interviews, as well as spot-checking select items for confirmation of status.
	SAIDI due to PSPS	N/A – this program does not have a specific target	0	System Average Interruption Duration Index	Monitor the need for PSPS events over time as an indicator of changing climatic and weather patterns	
Weather Conditions	Number of NFDRS "Very Dry" and "Dry" Days	N/A – this program does not have a specific target	150	Number of Days	Monitor the need for PSPS events over time as an indicator of changing climatic and weather patterns	Contracted 3rd party analysts or academic researchers could review open as well as closed work orders, BVES GIS databases, staff interviews, as well as spot-checking select items for confirmation of status.
PSPS	Number of PSPS Events	N/A – this program does not have a specific target	0	Number of Events	Monitor the need for PSPS events over time as an indicator of changing climatic and weather patterns	Contracted 3rd party analysts or academic researchers could review open as well as closed work orders, BVES GIS databases, staff interviews, as well as spot-checking select items for confirmation of status.
	Maximum recorded sustained winds Recorded by NWS	N/A – this program does not have a specific target	41	Miles per Hour	Monitor the need for PSPS events over time as an indicator of changing climatic and weather patterns	
	Maximum recorded sustained winds Recorded by BVES Weather Stations	N/A – this program does not have a specific target	77.8	Miles per Hour	Monitor the need for PSPS events over time as an indicator of changing climatic and weather patterns	
	Maximum recorded wind gusts Recorded by NWS	N/A – this program does not have a specific target	53	Miles per Hour	Monitor the need for PSPS events over time as an indicator of changing climatic and weather patterns	

Metric Category	Metric	Program target	2019 performance[16]	Units	Underlying assumptions	Third-party validation
	Maximum recorded wind gusts Recorded by BVES Weather Stations	N/A – this program does not have a specific target	77.8	Miles per Hour	Monitor the need for PSPS events over time as an indicator of changing climatic and weather patterns	
	Frequency of sustained high winds (number of days sustained wind > 50 mph) recorded by NWS	N/A – this program does not have a specific target	0	Number of Days	Monitor the need for PSPS events over time as an indicator of changing climatic and weather patterns	
	Frequency of sustained high winds (number of days sustained wind > 50 mph) recorded by BVES weather stations	N/A – this program does not have a specific target	5	Number of Days	Monitor the need for PSPS events over time as an indicator of changing climatic and weather patterns	
	Frequency of high wind gusts (number of days wind gusts > 50 mph) recorded by NWS	N/A – this program does not have a specific target	1	Number of Days	Monitor the need for PSPS events over time as an indicator of changing climatic and weather patterns	
	Frequency of high wind gusts (number of days wind gusts > 50 mph) recorded by BVES weather stations	N/A – this program does not have a specific target	5	Number of Days	Monitor the need for PSPS events over time as an indicator of changing climatic and weather patterns	

Note: The "2019 Performance" column only captures data from June 2019 (2019 WMP implementation start) to May 2020. Some "Program Targets" are estimates for current actuals based on June 2019-January 2020 performance.
1. Trouble spots defined as level 1 and 2 discrepancies

2.6 Detailed information supporting outcome metrics

The tables below describe accidental deaths, OSHA-reported injuries, and a description of BVES's methodology for potential impact of ignitions. See Table 5, Table 6, and Table 7. These tables are also presented in the accompanying excel workbook for *Attachment 1*.

Table 5. Accidental Deaths Due to Utility Wildfire Mitigation Initiatives: 2015 - 2019

Activity	Victim															Total
	Full-time employee					Contractor					Member of public					
Year	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	
Inspection	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vegetation management	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Utility fuel management	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grid hardening	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Table 6. OSHA-Reportable Injuries Due to Utility Wildfire Mitigation Initiatives: 2015 - 2019

Activity	Victim															Total
	Full-time employee					Contractor					Member of public					
Year	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	
Inspection	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vegetation management	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Utility fuel management	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grid hardening	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	

Note: On July 19, 2018, a contracted line worker and the owner of Teele Tree Services made contact with a high voltage power line and sustained non-fatal injuries. The injury did not require reporting under Cal/OSHA guidelines but BVES chose to report the incident.

Table 7. Methodology for Potential Impact of Ignitions

List of all data inputs used in impact simulation	Sources of data inputs	Data selection and treatment methodologies	Assumptions, including SME input	Equation(s), functions, or other algorithms used to obtain output	Output type(s), e.g., wind speed model	Comments
N/A - BVES does not have a proprietary model or methodology for evaluating the potential impact of ignitions.	N/A BVES does not have a proprietary model or methodology for evaluating the potential impact of ignitions. BVES	N/A - BVES does not have a proprietary model or methodology for evaluating the potential impact of ignitions. The BVES's Subject	N/A BVES does not have a proprietary model or methodology for evaluating the potential impact of ignitions.	N/A - BVES does not have a proprietary model or methodology for evaluating the potential impact of ignitions. The utility's Subject Matter Expert	N/A - BVES does not have a proprietary model or methodology for evaluating the potential impact of ignitions.	N/A - BVES does not have a proprietary model or methodology for evaluating the potential impact of ignitions. The utility's Subject Matter Expert evaluates the

List of all data inputs used in impact simulation	Sources of data inputs	Data selection and treatment methodologies	Assumptions, including SME input	Equation(s), functions, or other algorithms used to obtain output	Output type(s), e.g., wind speed model	Comments
BVES's Subject Matter Expert evaluates the frequency of potential ignition events versus a set of impact categories (reliability, compliance, quality of service, safety and environmental) to develop total risk impact and scores. BVES will investigate the ability to develop this methodology going forward.	Subject Matter Expert evaluates the frequency of potential ignition events versus a set of impact categories (reliability, compliance, quality of service, safety and environmental) to develop total risk impact and scores. BVES will investigate the ability to develop this methodology going forward.	Matter Expert evaluates the frequency of potential ignition events versus a set of impact categories (reliability, compliance, quality of service, safety and environmental) to develop total risk impact and scores. BVES will investigate the ability to develop this methodology going forward.	BVES's Subject Matter Expert evaluates the frequency of potential ignition events versus a set of impact categories (reliability, compliance, quality of service, safety and environmental) to develop total risk impact and scores. BVES will investigate the ability to develop this methodology going forward.	evaluates the frequency of potential ignition events versus a set of impact categories (reliability, compliance, quality of service, safety and environmental) to develop total risk impact and scores. BVES will investigate the ability to develop this methodology going forward.	BVES's Subject Matter Expert evaluates the frequency of potential ignition events versus a set of impact categories (reliability, compliance, quality of service, safety and environmental) to develop total risk impact and scores. BVES will investigate the ability to develop this methodology going forward.	frequency of potential ignition events versus a set of impact categories (reliability, compliance, quality of service, safety and environmental) to develop total risk impact and scores. BVES will investigate the ability to develop this methodology going forward.

Note: Bear Valley Electric Service does not have a proprietary model or methodology for evaluating the potential impact of ignitions. BVES's Subject Matter Expert evaluates the frequency of potential ignition events versus a set of impact categories (reliability, compliance, quality of service, safety and environmental) to develop total risk impact and scores.

2.7 Mapping Recent, Modeled, and Baseline Conditions

Table 8 below describes the map file requirements for recent and modelled conditions of the service territory over the last five years. This table is also included in the accompanying excel workbook for *Attachment 1*.

Table 8. Map File Requirements for Recent and Modeled Conditions of Utility Service Territory: 2015 - 2019

Layer name	Measurements	2015	2016	2017	2018	2019	Average	Units	Attachment location	Comments
Recent weather patterns	Average annual number of Red Flag Warning days per square mile across service territory	0.0912	0.4427	0.4909	0.3307	0.1979	0.3107	Area, days, square mile resolution	N/A[1]	BVES's service territory is 32 square miles
	Average 95th percentile wind speed and prevailing direction (actual)	N/A[1]	N/A[1]	N/A[1]	N/A[1]	N/A[1]	N/A[1]	Area, miles per hour, at a square mile resolution or better, noting where measurements are actual or interpolated		BVES is unable to provide this data for each year at this time.
	Average 99th percentile wind speed and prevailing	N/A[1]	N/A[1]	N/A[1]	N/A[1]	N/A[1]	N/A[1]			

Layer name	Measurements	2015	2016	2017	2018	2019	Average	Units	Attachment location	Comments
	direction (actual)									
Recent drivers of ignition probability	Date of recent ignitions categorized by ignition probability driver	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]	Point, GPS coordinate, days, square mile resolution	N/A[2]	BVES has not had any recent ignitions
Recent use of PSPS	Duration of PSPS events and area of the grid affected in customer hours per year	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]	Area, customer hours, square mile resolution	N/A[2]	BVES has not had any recent use of PSPS

Note: BVES is unable to provide the above requested data in GIS map file format at this time. BVES has no non-HFTD territory, i.e., the territory is completely within the HFTD and include entirely rural communities respective to the WUI designations.
1. BVES is unable to provide this data at this time. BVES plans to update its GIS database and will provide these files in subsequent filings.
2. Events did not occur within 2015 – 2019; not applicable

The tables below describe the map files for which BVES maintains records. Table 9 and the associated tables are broken out to provide additional detail on the required items and are also included in the accompanying excel workbook for *Attachment 1*.

Table 9. Map File Requirements for Baseline Condition of Utility Service Territory Projected for 2020

Layer Name	Measurements/Variables	Value	Unit(s)	Appendix Location
Current baseline state of service territory and all utility equipment	Non-HFTD vs HFTD (Zone 1, Tier 2, Tier 3) regions of utility service territory	Non-HFTD: NA Zone 1: NA Tier 2: 112.38 Tier 3: 5.48	Area, square mile resolution per type	N/A
	Urban vs. rural vs. highly rural regions of utility service territory	Very Rural: NA Rural: 102.24 Urban: 22.58	Area, square mile resolution per type	
	WUI regions of utility service territory	WUI Flag Based on 2010 Data 0 (Non-WUI): 87.75 1 (Intermix): 15.79 2 (Interface): 21.27	Area, square mile resolution per type	

Note: BVES has submitted this data in its GIS filing. BVES plans to calculate this data in subsequent filings.

Where such data cannot be provided in GIS format at this time, BVES has provided the data it can in the following tables below. Line items in blue text under "Location of Weather Stations" represent planned future additions.

Table 9a. Map File Requirements for Baseline Condition of Utility Service Territory: Critical Facilities

Layer Name	Measurements /Variables	Critical Facility	Address	GPS Coordinate	Unit(s)	Appendix Location
Current baseline state of service territory and utility equipment	Number and location of critical facilities	City of Big Bear Lake (CBBL)	39707 Big Bear Blvd. Big Bear Lake, CA	34.238138, -116.935334	Point, GPS Coordinate	N/A
		Big Bear Fire Department	41090 Big Bear Blvd. Big Bear Lake CA	34.244454, -116.905308		
		Mountaintop Ranger District, U.S. Forest Service	41374 North Shore Drive, Highway 38 Fawnskin, CA 92333	34.263421, -116.900904		
		San Bernardino County Sherriff's Department Big Bear Lake Patrol Station	477 Summit Blvd. Big Bear Lake, CA 92315	34.243900, -116.887824		
		Big Bear Area Regional Wastewater Agency (BBARWA)	121 Palomino Dr, Big Bear City, CA 92314	34.267869, -116.814973		
		Big Bear City Community Services District (CSD)	139 E. Big Bear Blvd. Ca 92314	34.261530, -116.844248		
		Big Bear Lake Water Department (DWP)	41972 Garstin Dr. Big Bear Lake, CA 92315	34.246650, -116.886294		
		Big Bear Municipal Water District (MWD)	40524 Lakeview CT, Big Bear Lake, CA 92315	34.242787, -116.917948		
		Southwest Gas Corporation	140 Business Center Dr. Big Bear Lake, CA 92315	34.249530, -116.888579		
		Bear Valley Community Hospital	41870 Garstin Dr. Big Bear Lake, Ca 92315	34.246529, -116.881211		
		Bear Valley Unified School District	42271 Moonridge Rd. CA 92315	34.242345, -116.881211		
		Big Bear Chamber of Commerce	630 Bartlett Rd. Big Bear Lake, CA 92315	34.241133, -116.912336		
		Big Bear Airport District	501 W. Valley Blvd. Big Bear City, CA 92314	34.261844, -116.853605		
		Big Bear Mountain Resort/ Summit	880 Summit Blvd. Big Bear Lake, Ca 92315	34.236417, -116.889272		

Table 9b. Map File Requirements for Baseline Condition of Utility Service Territory: Customers & OH T&D Lines

Layer Name	Measurements/Variables	Value	Unit(s)	Appendix Location
Current baseline state of service territory and all utility equipment	Number and location of customers	186.81 Customers / Sq. Mi	Area, number of people, square mile resolution	N/A[1]
	Number and Location of customers belonging to access and functional needs populations	N/A[1]	Area, number of people, square mile resolution	
	Overhead transmission lines	N/A[1]	Line, quarter mile resolution	
	Overhead distribution lines	N/A[1]	Line, quarter mile resolution	

1. BVES is working on identifying functional needs populations and will provide this information in subsequent filings. BVES is also in the process of calculating the its overhead transmission and distribution lines and will provide this information in subsequent filings.

Table 9c. Map File Requirements for Baseline Condition of Utility Service Territory: Substation Locations

Layer Name	Measurements / variables	Substation Name	Address	GPS Coordinates	Unit(s)	Appendix Location
Current baseline state of service territory and utility equipment	Location of Substations	Bear City Sub	322 West Meadow Ln. Big Bear city, 92314	34.265381, -116.849596	Point, GPS Coordinate	6.4
		Bear Mountain Sub	Lassen Dr, 1500 Ft W/O Primrose dr. big Bear City, 92314	34.224328, -116.857868		
		Division Sub	150' W/O Division Dr. Big Bear Lake, 92314	34.261855, -116.866588		
		Fawnskin Sub	S/E Corner of Mast Dr. Big Bear Lake, 92314	34.261406, -116.882163		
		Lake Sub	Garstin Dr. N/O Fox Farm Rd, Big Bear Lake, 92315	34.253290, -116.891879		
		Maltby Sub	S/E Corner of Maltby Blvd. & Shore Dr. Big Bear City, 92314	34.266335, -116.830982		
		Maple Sub	N/O Baldwin Ln & 500' W/O Maple Ln. Big Bear City, 92314	34.250630, -116.827014		
		Meadow Sub	N/O 42020 Garstin Dr. Big Bear Lake, 92315	34.247049, -116.885375		
		Moonridge Sub	S/E Corner of Clubview Dr. & Clover Dr. Big Bear Lake, 92315	34.226772, -116.863810		
		Palomino Sub	N/O Shay Rd & E/O Palomino Dr. Big Bear City, 92314	34.268660, -116.814846		
		Pine Knot Sub	S/E Corner of Lahontan Dr. & Georgia St. Big Bear Lake, 92315	34.245323, -116.900342		
		Summit Sub	S/W Corner of Summit Blvd, Snow Summit Parking Lot, Big Bear Lake 92315	34.236216, -116.889647		
		Village Sub	150' W/O Knickerbocker Rd Big Bear Lake, 92315	34.240145, -116.910389		

Table 9d. Map File Requirements for Baseline Condition of Utility Service Territory: Weather Station Locations

Layer Name	Measurements / variables	Weather Station Name	Latitude	Longitude	Pole #	Unit(s)	Appendix Location
Current baseline state of service territory and all utility equipment	Location of Weather Stations	Boulder	34.23859	-116.9376	12524BV	Point, GPS Coordinate	6.4
		Radford	34.20184	-116.9055	12188BV		
		Clubview	34.24027	-116.868	13117BV		
		Garstin	34.24632	-116.8876	13050BV		
		Erwin	34.23296	-116.7921	12671BV		
		Sunrise	34.25446	-116.8239	9784BV		
		North Shore	34.24531	-116.9735	6984BV		
		Lagonita	34.24733	-116.9351	11054BV		
		Goldmine	34.22937	-116.8426	7319BV		
		Baldwin	34.29375	-116.8131	10170BV		
		Pioneer	34.26317	-116.7907	11967BV		
		Paradise	34.26653	-116.8401	11000BV		
		Division	34.26190	-116.8667	13090BV		
		Fawnskin	34.26381	-116.9344	12535BV		
		Big Bear Dam	34.24225	-116.9777	1210284CTC		
		Sugarloaf	34.24304	-116.8374	5026BV		
		Lake Williams	34.23197	-116.7733	9607BV		
		Erwin Lake	34.24291	-116.8007	7025BV		

		2N10	34.2165	-116.9074	4254BV		
		Bertha Peak	34.2830	-116.8994	NA		

Table 9e. Map File Requirements for Baseline Condition of Utility Service Territory: All Utility Assets

Layer Name	Measurement/variables	Value	Unit(s)	Appendix Location
Current baseline state of service territory and utility equipment	All utility assets by asset type, model, age, specifications, and condition	See Section 6[1]	Point, GPS Coordinate	[1]

1. BVES has provided some of this information. See Section 6 and the GIS attachment file for more information.

Table 9f. Map File Requirements for Baseline Condition of Utility Service Territory: Location of Planned Equipment Additions / Removals

Layer Name	Measurement/variables	Value	Unit(s)	Appendix Location
Location of planned utility equipment additions or removal	Non-HFTD vs HFTD (Zone 1, Tier 2, Tier 3) regions of utility service territory	N/A[1]	Line, quarter mile resolution	N/A[1]
	Urban vs. rural vs. highly rural regions of utility service territory	N/A[1]	Line, quarter mile resolution	
	WUI regions of utility service territory	N/A[1]	Line, quarter mile resolution	
	Circuit miles of overhead transmission lines	N/A[1]	Line, quarter mile resolution	
	Circuit miles of overhead distribution lines	N/A[1]	Line, quarter mile resolution	
	Location of substations	N/A[1]	Point, GPS coordinate	

1. BVES does not have this information at this time. BVES plans to submit this data in future filings.

Table 9g. Map File Requirements for Baseline Condition of Utility Service Territory: Planned 2020 WMP Initiative Activity

Layer Name	Measurement/variables	Value	Unit(s)	Appendix Location
Planned 2020 WMP initiative activity per year	Location of 2020 WMP initiative activity for each activity as planned to be completed by the end of each year of the plan term	See Section 6[1]	Line, quarter mile resolution	N/A[1]

1. BVES has provided some of this information. See Section 6 and the GIS attachment file for more information.

3. BASELINE IGNITION PROBABILITY AND WILDFIRE RISK EXPOSURE

BVES operates within a high-risk wildfire environment. All decisions supported by and plans made in this document include risk-based decision-making protocols. This provides an overview of this process as it relates to wildfire mitigation.

3.1 Recent Weather Patterns, Last 5 Years

BVES uses a contracted meteorologist that integrates data from the National Fire Danger Rating System (NFDRS), National Weather Service (NWS), and local real-time data from BVES's distributed weather stations (to account for local micro-climates) to assess relative local fire danger and risk. Reports are issued to BVES weekly, and sometimes more often, up to several times a day, during heightened threat conditions. Operations personnel and leadership receive automated real-time alerts from BVES's weather stations when local winds exceed predetermined thresholds.

Table 10 below presents the recorded weather patterns over the last five years. This information is also included in the accompanying *Attachment 1*.

Table 10. Weather Patterns: 2015 - 2019

Weather measurement	2015	2016	2017	2018	2019	5-year historical average	Unit(s)
Red Flag Warning days	614.93	2,986.55	3,311.40	2,231.00	1,335.06	2,095.79	RFW circuit mile days per year
Days rated at the top 30% of proprietary fire potential index or similar fire risk index measure	107	151	118	129	87	118.40	Circuit mile days where proprietary measure rated above top 30% threshold per year
95th percentile wind conditions	5,691.87	8,221.59	8,643.21	6,956.73	14,967.51	8,896.18	Circuit mile days with wind gusts over 95th percentile historical (meaning the prior 10 years, 2005-2014) conditions per year
99th percentile wind conditions	1,897.29	2,318.91	2,318.91	1,686.48	6,535.11	2,951.34	Circuit mile days with wind gusts over 99th percentile historical (meaning

Weather measurement	2015	2016	2017	2018	2019	5-year historical average	Unit(s)
							the prior 10 years, 2005-2014) conditions per year
Other	N/A - Bear Valley Electric Service cannot provide data on any other weather patterns to the specificity requested at this time	N/A - Bear Valley Electric Service cannot provide data on any other weather patterns to the specificity requested at this time	N/A - Bear Valley Electric Service cannot provide data on any other weather patterns to the specificity requested at this time	N/A - Bear Valley Electric Service cannot provide data on any other weather patterns to the specificity requested at this time	N/A - Bear Valley Electric Service cannot provide data on any other weather patterns to the specificity requested at this time	N/A - Bear Valley Electric Service cannot provide data on any other weather patterns to the specificity requested at this time	N/A - Bear Valley Electric Service cannot provide data on any other weather patterns to the specificity requested at this time

Note: A third-party assessed the NFDRS and estimated fire ratings of Brown ("Very Dry") or more severe as falling within the top 30% of the NFDRS. When calculating circuit-mile days, the contractor multiplied the corresponding metric (RFW days, 95th/99th percentile wind conditions days) by the total number of overhead circuit miles in BVES's service territory, assuming that underground circuit miles are unaffected by wind conditions. Including underground circuit miles in this calculation would deflate the actual assessment of risk posed by wind and other wildfire-risk conditions. When a Red Flag Warning is issued for the San Bernardino Mountains, including Big Bear Valley, which encompasses the entirety of BVES's service territory, the Warning applies to 100 percent of BVES's service territory. BVES will be updating this information, including additional historical data, in the next iteration of its WMP. BVES plans to supplement future WMP submittals with additional weather information from its weather stations as they are added to the databases.

3.2 Recent Drivers of Ignition Probability, Last 5 Years

Table 11 below presents the recent drivers of ignition probability over the last five years. This information is also included in the accompanying *Attachment 1* workbook. BVES has had no ignitions in the past five years.

Table 11. Key Recent Drivers of Ignition Probability: 2015 - 2019

Incident type by ignition probability driver		Near misses tracked (y/n)?	Number of incidents per year						Average percentage probability of ignition per incident						Number of ignitions per year from this driver					
			2015	2016	2017	2018	2019	Average	2015	2016	2017	2018	2019	Average	2015	2016	2017	2018	2019	Average
Contact from object	All types of object contact	Y	6	35	12	8	4	13	0%	0%	0%	0%	0%	0%	0	0	0	0	0	0
	Animal contact	Y	0	0	1	1	1	0.6	0%	0%	0%	0%	0%	0%	0	0	0	0	0	0
	Balloon contact	Y	0	1	0	0	0	0.2	0%	0%	0%	0%	0%	0%	0	0	0	0	0	0
	Veg. contact	Y	6	34	11	7	3	12.2	0%	0%	0%	0%	0%	0%	0	0	0	0	0	0
	Vehicle contact	Y	0	0	0	0	0	0	0%	0%	0%	0%	0%	0%	0	0	0	0	0	0
All types of equipment / facility failure	All types	Y	40	40	42	23	16	32.2	0%	0%	0%	0%	0%	0%	0	0	0	0	0	0
	Capacitor bank failure	Y	0	0	0	0	0	0	0%	0%	0%	0%	0%	0%	0	0	0	0	0	0
	Conductor failure—all	Y	0	3	0	0	3	1.2	0%	0%	0%	0%	0%	0%	0	0	0	0	0	0
	Conductor failure—wire down	Y	0	3	0	0	3	1.2	0%	0%	0%	0%	0%	0%	0	0	0	0	0	0
	Fuse failure—all	Y	18	15	20	12	4	13.8	0%	0%	0%	0%	0%	0%	0	0	0	0	0	0
	Fuse failure—conventional blown fuse	Y	18	15	20	10	4	13.4	0%	0%	0%	0%	0%	0%	0	0	0	0	0	0

Incident type by ignition probability driver		Near misses tracked (y/n)?	Number of incidents per year						Average percentage probability of ignition per incident						Number of ignitions per year from this driver					
			2015	2016	2017	2018	2019	Average	2015	2016	2017	2018	2019	Average	2015	2016	2017	2018	2019	Average
	Lightning arrestor failure	Y	0	0	0	0	0	0	0%	0%	0%	0%	0%	0%	0	0	0	0	0	0
	Switch failure	Y	0	0	0	0	0	0	0%	0%	0%	0%	0%	0%	0	0	0	0	0	0
	Transformer failure	Y	4	4	2	1	2	2.6	0%	0%	0%	0%	0%	0%	0	0	0	0	0	0
Wire-to-wire contact / contamination		Y	0	0	1	1	2	0.8	0%	0%	0%	0%	0%	0%	0	0	0	0	0	0
Other		Y	0	1	0	0	0	0.2	0%	0%	0%	0%	0%	0%	0	0	0	0	0	0

Note: In 2018, an umbrella was caught in one of BVES's overhead distribution lines.

3.3 Recent Use of PSPS, Last 5 years

Table 12 below presents the recent use of PSPS over the last five years. This information is also included in the accompanying *Attachment 1* workbook.

Table 12. Recent Use of PSPS: 2015 - 2019

PSPS characteristic	2015	2016	2017	2018	2019	Unit(s)
Frequency of PSPS events (total)	0	0	0	0	0	Number of instances where utility operating protocol requires de-energization of a circuit or portion thereof to reduce ignition probability, per year
Frequency of PSPS events (normalized)	0	0	0	0	0	Number of instances where utility operating protocol requires de-energization of a circuit or portion thereof in order to reduce ignition probability, per RFW circuit mile day per year
Scope of PSPS events (total)	N/A[1]	N/A[1]	N/A[1]	N/A[1]	N/A[1]	Circuit-events, measured in number of events multiplied by number of circuits de-energized per year
Scope of PSPS events (normalized)	N/A[1]	N/A[1]	N/A[1]	N/A[1]	N/A[1]	Circuit-events, measured in number of events multiplied by number of circuits targeted for de-energization per RFW circuit mile day per year
Duration of PSPS events (total)	N/A[1]	N/A[1]	N/A[1]	N/A[1]	N/A[1]	Customer hours per year
Duration of PSPS events (normalized)	N/A[1]	N/A[1]	N/A[1]	N/A[1]	N/A[1]	Customer hours per RFW circuit mile day per year
Other	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]

Note: 1. BVES did not implement a PSPS event over the 2015-2019 period.
Note: 2. No other relevant PSPS-related data to report.

3.4 Baseline State of Equipment and Wildfire and PSPS Event Risk Reduction Plans

3.4.1 Current Baseline State of Service Territory and Utility Equipment

Table 13 below presents the summary data table for the current service territory baseline for HFTD and non-HFTD in terms of identified characteristics. This information is also included in the accompanying *Attachment 1* workbook. Table 13 is populated as N/A because BVES does not currently track information in the format requested. Supporting Table 3-1 contains service area characteristics aggregated with no alignment to WUI designations as a data collection of details and GIS mapping of “rural” and “urban” regions continue to evolve over the year. Future WMP fillings will include the granularity of area characteristics.

Table 13. Current baseline state of service territory and utility equipment

Land use	Characteristic tracked	In non-HFTD	In HFTD Zone 1	In HFTD Tier 2	In HFTD Tier 3
In urban areas	Circuit miles	N/A	N/A	N/A	N/A
	Circuit miles in WUI	N/A[1]	N/A[1]	N/A[1]	N/A[1]
	Number of critical facilities	N/A	N/A	N/A	N/A
	Number of critical facilities in WUI	N/A[1]	N/A[1]	N/A[1]	N/A[1]
	Number of customers	N/A	N/A	N/A	N/A

Land use	Characteristic tracked	In non-HFTD	In HFTD Zone 1	In HFTD Tier 2	In HFTD Tier 3
	Number of customers in WUI	N/A[1]	N/A[1]	N/A[1]	N/A[1]
	Number of customers belonging to access and functional needs populations	N/A	N/A	N/A	N/A
	Number of customers belonging to access and functional needs populations in WUI	N/A[1]	N/A[1]	N/A[1]	N/A[1]
	Circuit miles of overhead transmission lines	N/A	N/A	N/A	N/A
	Circuit miles of overhead transmission lines in WUI	N/A[1]	N/A[1]	N/A[1]	N/A[1]
	Circuit miles of overhead distribution lines	N/A	N/A	N/A	N/A
	Circuit miles of overhead distribution lines in WUI	N/A[1]	N/A[1]	N/A[1]	N/A[1]
	Number of substations	N/A	N/A	N/A	N/A
	Number of substations in WUI	N/A[1]	N/A[1]	N/A[1]	N/A[1]
In rural areas	Circuit miles	N/A	N/A	N/A	N/A
	Circuit miles in WUI	N/A	N/A	N/A	N/A
	Number of critical facilities	N/A	N/A	N/A	N/A
	Number of critical facilities in WUI	N/A[1]	N/A[1]	N/A[1]	N/A[1]
	Number of customers	N/A	N/A	N/A	N/A
	Number of customers in WUI	N/A[1]	N/A[1]	N/A[1]	N/A[1]
	Number of customers belonging to access and functional needs populations	N/A	N/A	N/A	N/A
	Number of customers belonging to access and functional needs populations in WUI	N/A[1]	N/A[1]	N/A[1]	N/A[1]
	Circuit miles of overhead transmission lines	N/A	N/A	N/A	N/A
	Circuit miles of overhead transmission lines in WUI	N/A[1]	N/A[1]	N/A[1]	N/A[1]
	Circuit miles of overhead distribution lines	N/A	N/A	N/A	N/A
	Circuit miles of overhead distribution lines in WUI	N/A[1]	N/A[1]	N/A[1]	N/A[1]
	Number of substations	N/A	N/A	N/A	N/A
	Number of substations in WUI	N/A[1]	N/A[1]	N/A[1]	N/A[1]
In highly rural areas	Circuit miles	N/A	N/A	N/A	N/A
	Circuit miles in WUI	N/A[1]	N/A[1]	N/A[1]	N/A[1]
	Number of critical facilities	N/A	N/A	N/A	N/A
	Number of critical facilities in WUI	N/A[1]	N/A[1]	N/A[1]	N/A[1]
	Number of customers	N/A	N/A	N/A	N/A
	Number of customers in WUI	N/A[1]	N/A[1]	N/A[1]	N/A[1]
	Number of customers belonging to access and functional needs populations	N/A	N/A	N/A	N/A
	Number of customers belonging to access and functional needs populations in WUI	N/A[1]	N/A[1]	N/A[1]	N/A[1]
	Circuit miles of overhead transmission lines	N/A	N/A	N/A	N/A
	Circuit miles of overhead transmission lines in WUI	N/A[1]	N/A[1]	N/A[1]	N/A[1]
	Circuit miles of overhead distribution lines	N/A	N/A	N/A	N/A
	Circuit miles of overhead distribution lines in WUI	N/A[1]	N/A[1]	N/A[1]	N/A[1]
	Number of substations	N/A	N/A	N/A	N/A
	Number of substations in WUI	N/A[1]	N/A[1]	N/A[1]	N/A[1]

Note: BVES does not own transmission lines and all of its lines are below 65 kV. The utility does not plan to add or remove any overhead distribution lines.

1. BVES has provided GIS data on its WUI, urban, and rural areas in alignment with data from the Spatial Analysis for Conservation and Sustainability (SILVIS) Lab at the University of Wisconsin-Madison and the US Census Bureau, respectively. BVES plans to update its GIS database and will refresh this information in future WMP filings broken out by WUI land use type.

Supporting Table 3-1 has been provided that shows aggregated characteristics of the BVES system. Future filings will provide further granularity as BVES expands its data collection for future plan updates.

Supporting Table 3-1

Land use	Characteristic tracked	In non-HFTD	In HFTD Zone 1	In HFTD Tier 2	In HFTD Tier 3
Service Area (see note above)	Circuit miles	0	0	262.2	2.8
	Number of critical facilities	0	0	14	0
	Number of customers	0	0	24,511	0
	Number of customers belonging to access and functional needs populations	0	0	202	0
	Circuit miles of overhead transmission lines	0	0	0	0
	Circuit miles of overhead distribution lines	0	0	208.1	2.8
	Number of substations	0	0	13	0

Table 14 below summarizes weather stations located across the service territory. This information is also included in the accompanying *Attachment 1* workbook.

Table 14. Summary Data on Weather Station Count

Weather station count type	Current count	Unit(s)
Number of weather stations (total)	18	Total number located in service territory and operated by utility
Number of weather stations (normalized)	0.0853	Total number located in service territory and operated by utility, divided by total number of circuit miles in utility service territory
Number of weather stations in non-HFTD (total)	0	Total number located in non-HFTD service territory and operated by utility
Number of weather stations in non-HFTD (normalized)	0	Total number located in non-HFTD service territory and operated by utility, divided by total number of circuit miles in non-HFTD service territory
Number of weather stations in HFTD Zone 1 (total)	0	Total number located in HFTD Zone 1 service territory and operated by utility
Number of weather stations in HFTD Zone 1 (normalized)	0	Total number located in HFTD Zone 1 service territory and operated by utility, divided by total number of circuit miles in HFTD Zone 1 service territory
Number of weather stations in HFTD Tier 2 (total)	17	Total number located in HFTD Tier 2 service territory and operated by utility
Number of weather stations in HFTD Tier 2 (normalized)	0.08183	Total number located in HFTD Tier 2 service territory and operated by utility, divided by total number of circuit miles in HFTD Tier 2 service territory
Number of weather stations in HFTD Tier 3 (total)	1	Total number located in HFTD Tier 3 service territory and operated by utility
Number of weather stations in HFTD Tier 3 (normalized)	0.354	Total number located in HFTD Tier 3 service territory and operated by utility, divided by total number of circuit miles in HFTD Tier 3 service territory

Note: BVES's service territory is entirely located within Tier 2 or Tier 3 HFTDs. Circuit miles were calculated as the total overhead circuit miles, assuming that underground circuit miles are unaffected by wind conditions. Including underground circuit miles in this calculation would deflate the actual assessment of risk posed by wind and other wildfire-risk conditions.

Table 15 below presents the summary data of fault indicators. This information is also included in the accompanying *Attachment 1* workbook.

Table 15. Summary Data on Fault Indicator Count

Fault indicator count type	Current count	Unit(s)
Number of fault indicators (total)	87	Total number located in service territory and operated by utility
Number of fault indicators (normalized)	0.4127	Total number located in service territory and operated by utility, divided by total number of circuit miles in utility service territory

Fault indicator count type	Current count	Unit(s)
Number of fault indicators in non-HFTD (total)	0	Total number located in non-HFTD service territory and operated by utility
Number of fault indicators in non-HFTD (normalized)	0	Total number located in non-HFTD service territory and operated by utility, divided by total number of circuit miles in non-HFTD service territory
Number of fault indicators in HFTD Zone 1 (total)	0	Total number located in HFTD Zone 1 service territory and operated by utility
Number of fault indicators in HFTD Zone 1 (normalized)	0	Total number located in HFTD Zone 1 service territory and operated by utility, divided by total number of circuit miles in HFTD Zone 1 service territory
Number of fault indicators in HFTD Tier 2 (total)	87	Total number located in HFTD Tier 2 service territory and operated by utility
Number of fault indicators in HFTD Tier 2 (normalized)	0.4152	Total number located in HFTD Tier 2 service territory and operated by utility, divided by total number of circuit miles in HFTD Tier 2 service territory
Number of fault indicators in HFTD Tier 3 (total)	0	Total number located in HFTD Tier 3 service territory and operated by utility
Number of fault indicators in HFTD Tier 3 (normalized)	0	Total number located in HFTD Tier 3 service territory and operated by utility, divided by total number of circuit miles in HFTD Tier 3 service territory

Note: BVES's service territory is entirely located within Tier 2 or Tier 3 HFTD. Circuit miles were calculated as the total overhead circuit miles, assuming that underground circuit miles are unaffected by wind conditions. Including underground circuit miles in this calculation would deflate the actual assessment of risk posed by wind and other wildfire-risk conditions

3.4.2 Planned Additions, Removal, and Upgrade of Utility Equipment by End of 3-Year Plan Term

Table 16 below summarizes information for planned additions or removals planned for completion by 2022. This information is also included in the accompanying *Attachment 1* workbook. BVES does not plan to add or remove any overhead distribution lines during this period.

Table 16. Location of Planned Utility Equipment Additions or Removal by End of 3-Year Plan Term

Land use	Characteristic tracked	Changes by end-2022			
		Non-HFTD Zone	HFTD Zone 1	HFTD Zone 2	HFTD Zone 3
In urban areas	Circuit miles of overhead transmission lines	N/A	N/A	N/A	0
	Circuit miles of overhead distribution lines	N/A	N/A	N/A	N/A
	Circuit miles of overhead transmission lines in WUI	N/A	N/A	N/A	0
	Circuit miles of overhead distribution lines in WUI	N/A	N/A	N/A	N/A
	Number of substations	N/A	N/A	N/A	N/A
	Number of substations in WUI	N/A	N/A	N/A	N/A
	Number of weather stations	N/A	N/A	N/A	N/A
	Number of weather stations in WUI	N/A	N/A	N/A	N/A
In rural areas	Circuit miles of overhead transmission lines	N/A	N/A	N/A	0
	Circuit miles of overhead distribution lines	N/A	N/A	N/A	N/A
	Circuit miles of overhead transmission lines in WUI	N/A	N/A	N/A	0
	Circuit miles of overhead distribution lines in WUI	N/A	N/A	N/A	N/A
	Number of substations	N/A	N/A	N/A	N/A
	Number of substations in WUI	N/A	N/A	N/A	N/A

	Number of weather stations	N/A	N/A	N/A	N/A
	Number of weather stations in WUI	N/A	N/A	N/A	N/A
In highly rural areas	Circuit miles of overhead transmission lines	N/A	N/A	N/A	N/A
	Circuit miles of overhead distribution lines	N/A	N/A	N/A	N/A
	Circuit miles of overhead transmission lines in WUI	N/A	N/A	N/A	N/A
	Circuit miles of overhead distribution lines in WUI	N/A	N/A	N/A	N/A
	Number of substations	N/A	N/A	N/A	N/A
	Number of substations in WUI	N/A	N/A	N/A	N/A
	Number of weather stations	N/A	N/A	N/A	N/A
	Number of weather stations in WUI	N/A	N/A	N/A	N/A

Note: BVES does not own transmission lines and all of its lines are below 65 kV. BVES does not plan to add or remove any overhead distribution lines. BVES has provided GIS data on its WUI, urban, and rural areas in alignment with data from the Spatial Analysis for Conservation and Sustainability (SILVIS) Lab at the University of Wisconsin-Madison and the US Census Bureau, respectively. BVES plans to update its GIS database and will refresh this information in future WMP filings.

Table 17 below refers to the program targets discussed above, presenting a report plan for hardening upgrades in detail. For this iteration of the plan, BVES presents all of its territory categorized as rural, giving way to a comprehensive assessment in the next WMP filing to include distinction of "urban" WUI land use areas. The hardening initiatives included in the calculations below include the 34.5 kV Covered Wire Program, the 4 kV Covered Wire Program, and the Radford Line Replacement Project. This information is also included in the accompanying *Attachment 1* workbook.

Table 17. Location of Planned Utility Infrastructure Upgrades

Land use	Characteristic tracked	In non-HFTD			In HFTD Zone 1			In HFTD Tier 2			In HFTD Tier 3		
		2020	2021	2022	2020	2021	2022	2020	2021	2022	2020	2021	2022
Total circuit miles planned for hardening each year, all types and locations		N/A - Bear Valley Electric Service's entire Service Territory is in HFTD 2 or 3	N/A - Bear Valley Electric Service's entire Service Territory is in HFTD 2 or 3	N/A - Bear Valley Electric Service's entire Service Territory is in HFTD 2 or 3	N/A - Bear Valley Electric Service's entire Service Territory is in HFTD 2 or 3	N/A - Bear Valley Electric Service's entire Service Territory is in HFTD 2 or 3	N/A - Bear Valley Electric Service's entire Service Territory is in HFTD 2 or 3	3.5	12.9	12.9	0	2.8	0
Total number of substations planned for hardening each year, all locations		N/A - Bear Valley Electric Service's entire Service Territory is in HFTD 2 or 3	N/A - Bear Valley Electric Service's entire Service Territory is in HFTD 2 or 3	N/A - Bear Valley Electric Service's entire Service Territory is in HFTD 2 or 3	N/A - Bear Valley Electric Service's entire Service Territory is in HFTD 2 or 3	N/A - Bear Valley Electric Service's entire Service Territory is in HFTD 2 or 3	N/A - Bear Valley Electric Service's entire Service Territory is in HFTD 2 or 3	1	0	0	0	0	0
In urban areas	Circuit miles planned for grid hardening of overhead transmission lines	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Circuit miles of overhead	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Land use	Characteristic tracked	In non-HFTD			In HFTD Zone 1			In HFTD Tier 2			In HFTD Tier 3		
		2020	2021	2022	2020	2021	2022	2020	2021	2022	2020	2021	2022
	transmission lines in WUI to harden												
	Circuit miles of overhead distribution lines to harden	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Circuit miles of overhead distribution lines in WUI to harden	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Circuit miles of overhead transmission lines in WUI to harden	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Number of substations to harden	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Number of substations in WUI to harden	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
In rural areas	Circuit miles of overhead transmission lines to harden	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
In rural areas	Circuit miles of overhead transmission lines in WUI to harden	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
In rural areas	Circuit miles of overhead distribution lines to harden	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Land use	Characteristic tracked	In non-HFTD			In HFTD Zone 1			In HFTD Tier 2			In HFTD Tier 3		
		2020	2021	2022	2020	2021	2022	2020	2021	2022	2020	2021	2022
	Circuit miles of overhead distribution lines in WUI to harden	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Circuit miles of overhead transmission lines in WUI to harden	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Number of substations to harden	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Number of substations in WUI to harden	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
In highly rural areas	Circuit miles of overhead transmission lines to harden	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Circuit miles of overhead transmission lines in WUI to harden	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Circuit miles of overhead distribution lines to harden	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Circuit miles of overhead distribution lines in WUI to harden	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Circuit miles of overhead transmission	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Land use	Characteristic tracked	In non-HFTD			In HFTD Zone 1			In HFTD Tier 2			In HFTD Tier 3		
		2020	2021	2022	2020	2021	2022	2020	2021	2022	2020	2021	2022
	lines in WUI to harden												
	Number of substations to harden	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Number of substations in WUI to harden	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Note: BVES does not own transmission lines and all of its lines are below 65 kV. BVES does not plan to add or remove any overhead distribution lines. BVES has provided GIS data on its WUI, urban, and rural areas in alignment with data from the Spatial Analysis for Conservation and Sustainability (SILVIS) Lab at the University of Wisconsin-Madison and the US Census Bureau, respectively. BVES plans to update its GIS database and will refresh this information into this table in future WMP filings.

3.4.3 Status Quo Ignition Probability Drivers by Service Territory

Table 18 below presents the five-year historical average drivers of ignition probability. This information is also included in the accompanying *Attachment 1* workbook. BVES has had no ignitions in the past five years.

Table 18. Key Drivers of Ignition Probability

Ignition probability drivers		Number of incidents per year (according to 5-year historical average)	Average likelihood of ignition per incident	Ignitions from this driver (according to 5-year historical average)				
				Total	In non-HFTD	In HFTD Zone 1	In HFTD Tier 2	In HFTD Tier 3
Contact from object	All types of object contact	13	0%	0	N/A[1]	N/A[1]	0	0
	Animal contact	0.6	0%	0	N/A[1]	N/A[1]	0	0
	Balloon contact	0.2	0%	0	N/A[1]	N/A[1]	0	0
	Vegetation contact	12.2	0%	0	N/A[1]	N/A[1]	0	0
	Vehicle contact	0	0%	0	N/A[1]	N/A[1]	0	0
All types of equipment / facility failure	All types	32.2	0%	0	N/A[1]	N/A[1]	0	0
	Capacitor bank failure	0	0%	0	N/A[1]	N/A[1]	0	0
	Conductor failure—all	1.2	0%	0	N/A[1]	N/A[1]	0	0
	Conductor failure—wires down	1.2	0%	0	N/A[1]	N/A[1]	0	0
	Fuse failure—all	13.8	0%	0	N/A[1]	N/A[1]	0	0
	Fuse failure—conventional blown fuse	13.4	0%	0	N/A[1]	N/A[1]	0	0
	Lightning arrestor failure	0	0%	0	N/A[1]	N/A[1]	0	0
	Switch failure	0	0%	0	N/A[1]	N/A[1]	0	0
	Transformer failure	2.6	0%	0	N/A[1]	N/A[1]	0	0
Wire-to-wire contact / contamination		0.8	0%	0	N/A[1]	N/A[1]	0	0
Other		0.2	0%	0	N/A[1]	N/A[1]	0	0

Note: 1. BVES's service territory is in either HFTD Tier 2 or Tier 3. None is within the non-HFTD or Zone 1.

4. INPUTS TO THE PLAN AND DIRECTIONAL VISION FOR WILDFIRE RISK EXPOSURE

BVES's long-term vision is to develop an iterative and executable plan to systematically reduce the probability of utility caused ignitions that could lead to destructive wildfires and the need to initiate a PSPS event. This iterative plan will continue to incorporate lessons learned from implementation of prior WMPs, wildfire risk mitigation initiatives and programs, industry research, and BVES pilot programs as well as collaboration with stakeholders and community partners. Additionally, the actions contained within the WMP are expected to improve both the resiliency of the BVES distribution system and protect against other sources of wildfire ignition.

In the short term, BVES will utilize this holistic strategy to improve risk-based evaluations, improve operational practices, enhance existing preventative initiatives and programs, and improve data quality, metrics, emergency planning, and response plans. Due to the nature of the BVES distribution system, many of the near-term mitigations target proactive system hardening efforts. Additional details regarding system hardening initiatives are contained within Section 5 of the WMP.

4.1 Plan Objectives

BVES's WMP aims to prevent the threat of utility-caused wildfires by identifying mitigation measures and, in the event of a wildfire affecting the BVES service area, to provide emergency response and restoration actions regardless of cause. BVES's WMP also seeks to minimize the need to activate PSPS events. Specifically, the WMP aims to fulfill the requirements detailed in PUC Section 8386, as modified by AB 1054 and AB 111. The high-level requirements include an outline of wildfire risks within the BVES service territory; an overview of strategies, protocols, plans, and programs to mitigate wildfires; metrics to monitor the WMP's performance; and protocols for communicating with customers and public safety partners throughout wildfire mitigation and emergency events.

> *Attachment 1* Section 4.1 The Objectives of the Plan
>
> **The objectives of the plan shall, at a minimum, be consistent with the requirements of California Public Utilities Code §8386(a). Describe utility WMP objectives, categorized by each of the following timeframes:**
>
> 1. **Before the upcoming wildfire season, as defined by the California Department of Forestry and Fire Protection (CAL FIRE),**
> 2. **Before the next annual update,**
> 3. **Within the next 3 years, and**
> 4. **Within the next 10 years.**

The WMP will evolve over time as baseline risk assessments are better understood and further guidance is issued by the WSD and is consistent with the requirements mandated in PUC Section 8386(a).[17] The near-term objectives address immediate risk concerns through enhancing operational practices, continuing system hardening efforts, and establishing communication and coordination pathways for communicating and collaborating with customers and public safety partners during emergencies. The long-term objectives target exploratory pilots, assess advanced technologies, and consider mitigation solutions that are under evaluation at the industry level.

[17] ***PUC Section 8386. (a)*** *Each electrical corporation shall construct, maintain, and operate its electrical lines and equipment in a manner that will minimize the risk of catastrophic wildfire posed by those electrical lines and equipment.*

BVES's expected state of wildfire mitigation in its service area in ten years should align to BVES's trajectory of minimal controllable risk threats. External forces beyond the control of BVES may always persist, but the objectives and vision of the WMP are designed to establish quantifiable measurements of baseline risk to better assess the need for mitigations and improve upon that baseline.

BVES provides power to Lake Williams, Erwin Lake, Sugarloaf, Big Bear City, Big Bear Lake, Moonridge, Fawnskin and Boulder Bay. BVES serves approximately 1,500 commercial customers and 23,000 residential customers in a predominantly rural service area. The BVES distribution system is comprised of 13 distribution substations, 3 sub-transmission circuits, 23 distribution circuits, approximately 8,700 poles, 0.9 circuit miles of underground and 28.9 circuit miles of overhead 34.5 kV sub-transmission, 53.2 circuit miles of underground and 182.0 circuit miles of overhead 4 kV distribution. The customer growth of the service area is not expected to change dramatically within the next ten years. The nature of the infrastructure (i.e. substations and distribution lines) should also remain similar but will be significantly upgraded through system hardening and technological advancement to significantly decrease the risk of utility infrastructure caused ignition of wildfires. Additionally, over the next ten years, other initiatives will improve BVES's situational awareness, emergency preparedness and response, and stakeholder and community engagement. Details regarding changes to infrastructure and mitigation capabilities are contained below.

These long-term objectives will apply to the following timeframes: before the upcoming fire season, as defined by the CPUC and CAL FIRE, before the next WMP filing, within the next three years, and within the next ten years.

- Before the upcoming fire season and next annual update:
    - Continue with ongoing initiatives approved in the 2019 WMP
    - Develop new data collection tracking templates that align with programmatic targets and implementation schedules
    - Continue PSPS communication programs and emergency response planning public outreach
    - Coordinate with public safety partners to formalize protocols related to wildfire or PSPS events
- Before the next WMP filing with the WSD:
    - Identify detailed plan to align GIS maps with WSD's GIS standards
    - Monitor implementation of approved near-term mitigation measures
    - Evaluate effectiveness of implemented mitigation measures, using metrics identified in this Plan
    - Revisit technologies and strategies to determine feasibility and efficacy over the longer term
- Within in the next three years:
    - Implement existing and approved measures
    - Fully integrate the installed weather stations into SCADA
- Within the next ten years:
    - Implement and monitor efficacy of approved long-term mitigation measures
    - Evaluate the effectiveness of implemented mitigation measures, adjusting measures and metrics as needed

- Explore new or promising technologies and strategies to be established in the long-term

For longer term objectives, BVES highlights the following initiatives to reduce wildfire risk and minimize the need to initiate a PSPS event. Although a year-by-year timeline is not presented below, Section 5 Supporting Table 5-1 contains details regarding Prevention Strategy Programs Descriptions and Updates. Selected Highlights Include:

a. In the next 3 years:

- Develop an action plan addressing GIS data collection and sharing by 2021
- Replace conventional fuses with current-limiting fuses or electronic programmable (vacuum switch) TripSaver technology over a two-year timeframe
- Remove all tree attachments
- Complete the Pole Loading Assessment and Remediation Program on high risk circuits (estimated by 2022)
- Complete the Radford Line Covered Conductor Replacement Project (Expected Completion Date (ECD) 10/21)
- Complete the Grid Automation Project to install fiber network and automate the grid to improve system responses to prevent wildfires and enhance safety (ECD 12/22)
- Install BVES-specific weather stations in strategic locations to evaluate forecasted weather and monitor potential extreme fire conditions (ECD 12/20)
- Reduce distribution circuits designated as high wildfire threat from 11 to 5, as defined by the Fire Safety Circuit Matrix

b. In the next 10 years:

- 100% completion of Evacuation Route Hardening
- Significant progress replacing bare wire with covered conductor on high and moderate risk circuits – high risk circuits will be completed
- As defined by the Fire Safety Circuit Matrix, all distribution circuits designated as low risk

Many individual activities are required to implement initiatives that lead to a wildfire-hardened distribution grid, improved situational awareness and emergency response, and better operational capabilities. Selected highlights include:

- More advanced risk modeling through quantification of ignition risk drivers and associated probabilities.
- BVES plans to investigate and invest in PSPS resiliency projects in the event of the uncontrollable risk of SCE de-energization. Options may include solar/battery storage hybrids and microgrids.
- Enhanced emergency preparedness and response through employee fire response training and PSPS simulations.

- Improved system reliability, resiliency, and visibility through deployment of SCADA and distribution automation devices.

- Pilot programs will continue to be instituted and evaluated. BVES intends to consider at least one pilot project or program during comprehensive updates.

- Heightened understanding of local weather patterns, drought conditions, and fuels through the use of weather stations, statewide collaboration, and data sharing.

- Expanded employee skills and certifications through training on advanced grid operations, fire and emergency response, and external communications.

The BVES three-year WMP marks a significant step in developing a framework and plan to achieve systemic risk reductions for utility-caused wildfires. In the WMP, BVES outlines improvements in risk assessment, GIS mapping, grid design and system hardening, asset management and inspections, grid operations and system automation, emergency planning, and stakeholder and community engagement. These methodical improvements in both capabilities and competencies provide a foundational roadmap for continuous risk reduction.

BVES recognizes that as a small, jurisdictional utility, it is in the formative stages of developing risk-informed decision-making regarding wildfire mitigation programs and initiatives. BVES implemented its initial approach to evaluating enterprise risk using a risk-based decision-making framework and a Fire Circuit Safety Matrix to prioritize wildfire risk and evaluate wildfire risk mitigation. Additional details regarding both of these assessment tools are detailed in Section 5.4 of this WMP.

In the short term, these tools will be used to prioritize wildfire mitigation initiatives that reduce the overall risk on prioritized circuits, defined as higher fire threat areas (Supporting Table 4-5). In general, the selected initiatives are high priority programs that leverage common industry approaches to improve situational awareness (weather stations, improved forecasting, system automation, and HD cameras) and harden the grid to reduce probability of infrastructure-cased ignition (removal/replacement of tree attachments, expulsion fuses and bare overhead distribution conductors). Given the extreme weather patterns that have led to increasing wildfires in California, it is prudent for BVES to reduce wildfire ignition risk with proven approaches while ignition risk modeling improves.

BVES's current approach to identifying mitigation measures is informed by outage data and inspection results. Improved modeling that quantifies ignition risk drivers and probabilities will improve how the utility prioritizes mitigation measures toward those that have the greatest impact. By targeting initiatives to where they matter most, focused on high-likelihood / high impact measures, BVES can better manage cost impacts that are spread across a limited customer base. Integrating ignition risk modeling data allows BVES to better identify priority programs and evaluate alternatives to determine acceptable levels of residual risk. In the next WMP filing, BVES intends to submit a cost estimate and timeline for establishing improved ignition risk modeling.

The Plan Objectives outlined in Section 4.1 represent near term targets to be implemented in 2020, before the next annual update in February 2021, and aspirational targets for the next 3- and 10-year horizons. These near-term targets and longer-term aspirations are presented using the best available information. As BVES gains experience in deploying initiatives, improves risk modeling, enhances situational awareness, and augments public and stakeholder communications, our programs and targets will be updated. This allows the utility to achieve the greatest wildfire risk reductions, directed at the highest risk elements of the BVES grid, while balancing the practical reality of limited resources as a small utility.

Investigations of alternative measures, scope modifications, or other material changes to WMP elements will be communicated to the WSD in annual updates and quarterly reports between comprehensive

updates. Additionally, some of the projects and programs are part of a multi-year, long-range improvement plan. These are indicated in the WMP to support the overall vision and strategy over the short and long term. Details for specific initiatives are described in Section 5.

4.2 Understanding Major Trends Impacting Ignition Probability and Wildfire Consequences

Attachment 1 Section 4.2 Understanding Major Trends Impacting Ignition Probability and Wildfire Consequence

Describe how the utility assesses wildfire risk in terms of ignition probability and estimated wildfire consequence, including use of Multi-Attribute Risk Score (MARS) and Multi-Attribute Value Function (MAVF) as in the Safety Model and Assessment Proceeding (S-MAP) and Risk Assessment Mitigation Phase (RAMP). Include description of how the utility distinguishes between these risks and the risks to safety and reliability. List and describe each "known local condition" that the utility monitors per GO 95, Rule 31.1, including how the condition is monitored and evaluated. In addition:

A. Describe how the utility monitors and accounts for the contribution of weather to ignition probability and estimated wildfire consequence in its decision-making, including describing any utility-generated Fire Potential Index or other measure (including input variables, equations, the scale or rating system, an explanation of how uncertainties are accounted for, an explanation of how this index is used to inform operational decisions, and an explanation of how trends in index ratings impact medium-term decisions such as maintenance and longer-term decisions such as capital investments, etc.).

B. Describe how the utility monitors and accounts for the contribution of fuel conditions to ignition probability and estimated wildfire consequence in its decision-making, including describing any proprietary fuel condition index (or other measures tracked), the outputs of said index or other measures, and the methodology used for projecting future fuel conditions. Include discussion of measurements and units for live fuel moisture content, dead fuel moisture content, density of each fuel type, and any other variables tracked. Describe the measures and thresholds the utility uses to determine extreme fuel conditions, including what fuel moisture measurements and threshold values the utility considers "extreme" and its strategy for how fuel conditions inform operational decision-making.

BVES was not directed by the CPUC to develop either a MAVF or MARS framework for RAMP filings; however, BVES maintains an assessment toolkit to identify risk drivers and potential consequences of wildfire threat while gauging the success of mitigation initiatives. BVES evaluates enterprise risk using a risk-based decision-making framework and adopted a Fire Circuit Safety Matrix to prioritize wildfire risk and evaluate wildfire risk mitigation. Details of the Wildfire Safety Matrix are described within Section 5.4. BVES also identifies seven sections of "at-risk" areas within its service territory based on the type of distribution facilities (overhead bare conductors, high voltage, etc.), tree and vegetation density, available dry fuel, and other factors that make certain locations more vulnerable to wildfire risk. See Sections 4.2.1 and 5.3.1 for details.

Monitoring Weather and Fuel Conditions and Associated Operational Decision Making

Fuel and weather conditions are major factors when evaluating ignition probability and estimating wildfire impacts. BVES's forecasting framework for fire prevention measures relies on the National Fire Danger Rating System (NFDRS) and contracted meteorologist evaluation of the local forecast and conditions. BVES's entire system is in NFDRS Predictive Service Area SC10 Eastern Mountains. The predictive service provides a wildfire risk forecast based on weather, fuel build up, and fuel dryness among other factors and designates high-risk days as indicated in Supporting Table 4-1 below:

Supporting Table 4-1. Fuel Dryness and High-Risk Days

Fuel Dryness & High Risk Days	Rating	Description
Green	Moist	Little to no risk of fires.
Yellow	Dry	Low risk of large fires in the absence of a "High Risk" event.
Brown	Very Dry	Low/moderate risk of large fires in the absence of a "High Risk" event.
Orange	High-Risk Day	At least a 20% chance of a "Large Fire" due to a combination of either "Dry" or "Very Dry" fuel dryness and a critical burn environment (e.g., Santa Ana winds).
Red	High-Risk Day	At least a 20% chance of a "Large Fire" due to a combination of either "Dry" or "Very Dry" fuel dryness and an ignition trigger (lightning).

An example of the seven-day forecast is provided below in Supporting Table 4-2:

Supporting Table 4-2. Example NFRDS Forecast

SC09-Western Mountains							
SC10-Eastern Mountains							
SC11-Southern Mountains							

The NFDRS is generally updated three to five times per day.[18] The contracted meteorologist integrates the NFDRS with the detailed local forecast specific to BVES's service area and develops a risk rating as indicated below in Supporting Table 4-3.

Supporting Table 4-3. Significant Fire Potential

The Field Operations Supervisor monitors the fire risk designated by the consultant meteorologist, the NFDRS fire danger forecast, and indications from installed weather stations, which are equipped with alarms based on wind speed. This data is then used to direct the proper operational pre-planned

[18] It should be noted that during periods when the NFDRS forecast is not available, the Utility Manager will work with the consultant meteorologist to provide more frequent forecasts and least daily placing more weight on humidity and wind forecasts to determine fire threat.

response. As indicated in Supporting Table 4-4 below, "Brown," "Orange," and "Red" are considered elevated fire threat conditions that require the BVES system to be configured for fire prevention taking precedence over reliability concerns.

Supporting Table 4-4. Pre-Planned Operational Direction Based on Wildfire Risk Forecast

Operations Pre-Planned Action	Green	Yellow	Brown	Orange	Red
Auto-Reclosers and Protective Switches with Reclosing Capability[19]	Automatic[20]	Automatic[20]	Manual (Non-Automatic)		
Patrol following circuit or feeder outage[20]	No[20, 21]	No[20, 21]	Yes		
Fuse TripSavers[2]	Automatic[2]	Automatic	Manual (Non-Automatic)		
Radford Line Use[21]	May be energized	May be energized	De-energize[22]	De-energize	De-energize
Deploy Wildfire Risk Team(s) to "high risk" areas	No	No	Yes, if forecasted sustained wind or 3-second wind gusts expected to exceed 55 mph or actual sustained wind or 3-second wind gusts exceed 45 mph and expected to increase.		
Forward to Field Operations updated list of medical baseline customers and impacts access and functional needs population	No	No	Yes, if forecasted sustained wind or 3-second wind gusts expected to exceed 55 mph or actual sustained wind or 3-second wind gusts exceed 45 mph and expected to increase.		
Activate EOC	No	No	Yes, if forecasted sustained wind or 3-second wind gusts expected to exceed 55 mph or actual sustained wind or 3-second wind gusts exceed 45 mph and expected to increase.		
Prepare Bear Valley Power Plant for sustained operations.	No	No	Yes, if forecasted sustained wind or 3-second wind gusts expected to exceed 55 mph or actual sustained wind or 3-		

[19] During the non-winter months, certain devices identified by the Field Operations Supervisor and approved by the Utility Manager will remain in Manual (Non-Automatic) for the entire period regardless of the wildfire risk.

[20] During the non-winter months, when an Auto-Recloser, Switch, or Fuse TripSaver placed in "Manual" due to the above policy trips open, the affected portions of the de-energized circuit or feeder will be patrolled prior to re-energizing them. If the cause is likely known and the fire risk is "Green" or "Yellow," the Field Operations Supervisor may authorize the Line Crew to test the device once. If the device trips open again, the circuit or feeder must be thoroughly patrolled to determine the fault and ensure there is no risk to causing fire.

[21] Normally only energized during winter period. If the Radford Line must be de-energized during winter period due to high-risk conditions, and load is beyond the capability of the Lucerne supply lines plus the BVPP capacity, then BVES will reduce interruptible customer load as needed.

[22] May be energized if forecasted and actual sustained wind and wind gust conditions are less than 40 mph and the Radford Line is required to meet load demand or the support load due to loss of other power sources or due to planned maintenance when the benefits of the maintenance will reduce the ongoing risk of wildfire. In all of these cases, the Utility Manger will approve energizing the Radford Line and will inform the President.

			second wind gusts exceed 45 mph and expected to increase.
Conduct switching operations to minimize impact of potential PSPS activity	No	No	Yes, if forecasted sustained wind or 3-second wind gusts expected to exceed 55 mph or actual sustained wind or 3-second wind gusts exceed 45 mph and expected to increase.
Activate first responder, local government and agency, customer and community, and stakeholders PSPS communications plan	No	No	Yes, if forecasted sustained wind or 3-second wind gusts expected to exceed 55 mph or actual sustained wind or 3-second wind gusts exceed 45 mph and expected to increase.
Activate Community Resource Centers	No	No	Yes, if forecasted sustained wind or 3-second wind gusts expected to exceed 55 mph or actual sustained wind or 3-second wind gusts exceed 45 mph and expected to increase.
Public Safety Power Shutoff	No	No	Yes, if actual sustained wind or 3-second wind gusts exceed 55 mph.[23]

Significant Fire Potential Risk is one of many factors BVES monitors to determine on-going maintenance and inspection wildfire mitigation initiatives and longer-term decisions regarding capital investments. Evident changes in Fire Potential Risk and other factors are considered for adjustments to wildfire mitigation initiatives and long-term capital investment decisions.

Attachment 1 Subsection 4.2.1 Understanding Major Trends Impacting Ignition Probability and Wildfire Consequence

Discuss fire-threat evaluation of the service territory to determine whether an expanded High Fire Threat District (HFTD) is warranted (i.e., beyond existing Tier 2 and Tier 3 areas). This section shall include a discussion of any fire threat assessment of its service territory performed by the electrical corporation. In the event that the electrical corporation's assessment determines the fire threat rating for any part of its service territory is insufficient (i.e., the actual fire threat is greater than what is indicated in the CPUC Fire Threat Map and High Fire Threat District designations), the corporation shall identify those areas for consideration of HFTD modification, based on the new information or environmental changes. To the extent this identification relies upon a meteorological or climatological study, a thorough explanation and copy of the study shall be included.

4.2.1 Service Territory Fire-Threat Evaluation and Ignition Risk Trends

BVES operates with the inherent risk factors present in the service area's dry, mountainous terrain. BVES took an active role in the CPUC fire threat map creation and approval process. BVES considers the current HFTD designations to be appropriate due to the following factors: 1) the entirety of BVES is located within Tier 2 and Tier 3, 2) the lengths to which BVES is undertaking to prevent wildfire ignition

[23] The Utility Manager may initiate PSPS, if in his or her expert judgement, the actual conditions in the field pose a significant safety risk to the public.

and spread, and 3) there are no significantly different risk factors between the time of creation of the CPUC map and now.

To provide a more granular understanding of the risks facing BVES's territory, BVES is undertaking activity before the next WMP annual filing to identify, quantify, and assess the Wildland Urban Interface (WUI), as the utility did not previously track these zones in wildfire mitigation planning. Specific actions include adding WUI designations to wildfire risk modeling and adding WUI data to the GIS model.

Evaluation of Higher Fire-Threat Areas

As it evaluated fire risks, BVES identified areas of increased concern of fire potential for additional monitoring and assessment. These areas exhibit more fire risk than others in the same HFTD due to increased vegetation or exposed lines, or areas where a wildfire would be particularly destructive such as those with high customer densities. By prioritizing these higher fire-threat areas, BVES can better mitigate wildfires. The table below outlines the parameters of the analysis.

Supporting Table 4-5. Evaluation of Higher Fire-Threat Areas

Circuit	Voltage (kV)	Fire Threat Tier	Wildfire Risk Group[1]	Wildfire Risk Priority Within Group[1]	Wildfire Risk Mitigation Score[1]	Wildfire Risk Mitigation Weight[1]	Customers	# of Poles	Total Circuit Miles	OH Circuit Miles	Percent OH	UG Circuit Miles	Percent UG	Covered Circuit Miles	Percent Covered
Radford	34.5	3	1	1	22.98450707	0.06557634	3,403	89	2.84	2.82	99.30%	0.02	0.70%	0.00	0.00%
Shay	34.5	2	1	2	22.76518179	0.06495059	9,627	610	17.56	17.17	97.78%	0.39	2.22%	0.82	4.67%
Baldwin	34.5	2	1	3	22.24964926	0.063479741	11,305	256	9.44	8.94	94.70%	0.50	5.30%	0.00	3.50%
Boulder	4.16	2	1	5	22.38168253	0.063856441	2,046	917	19.48	17.68	90.76%	1.80	9.24%	0.00	0.00%
North Shore (Fawnskin)	4.16	2	1	7	22.68159915	0.064712123	1,523	745	23.92	15.83	66.18%	8.09	33.82%	0.00	0.00%
Erwin Lake	4.16	2	1	4	23.1218743	0.065968258	2,533	1,042	29.24	21.83	74.66%	7.41	25.34%	0.00	0.00%
Pioneer (Palomino)	4.16	2	3	3	1.425157188	0.004066069	537	599	19.34	16.39	84.75%	2.95	15.25%	0.00	0.00%
Clubview	4.16	2	1	9	21.78583277	0.062156442	1,984	504	10.45	10.18	97.42%	0.27	2.58%	0.00	0.00%
Goldmine	4.16	2	1	8	21.59700851	0.061617713	1,698	550	18.46	13.20	71.51%	5.26	28.49%	0.00	0.00%
Paradise	4.16	2	2	1	12.64300032	0.036071328	1,895	549	11.85	9.85	83.12%	2.00	16.88%	0.00	0.00%
Sunset	4.16	2	1	11	21.27392885	0.060695945	1,918	505	11.17	10.67	95.52%	0.50	4.48%	0.00	0.00%
Sunrise (Maple)	4.16	2	1	10	21.3924117	0.061033985	1,506	347	11.65	7.79	66.87%	3.86	33.13%	0.00	0.00%
Holcomb (Bear City)	4.16	2	1	6	22.59545439	0.064466346	1,587	614	14.10	13.25	93.97%	0.85	6.03%	0.00	0.00%
Georgia	4.16	2	2	5	11.51609399	0.032856188	1,023	345	9.86	5.91	59.94%	3.95	40.06%	0.00	0.00%
Eagle	4.16	2	2	3	12.42182348	0.035440295	959	322	8.91	7.38	82.83%	1.53	17.17%	0.00	0.00%
Harnish (Village)	4.16	2	3	2	1.836373579	0.005239297	254	82	2.55	1.34	52.55%	1.21	47.45%	0.00	0.00%
Garstin	4.16	2	2	8	11.09322448	0.031649713	1,055	276	8.91	5.91	66.33%	3.00	33.67%	0.82	9.20%
Lagonita	4.16	2	2	6	11.77614854	0.033598141	1,103	451	8.89	7.46	83.91%	1.43	16.09%	0.00	0.00%
Interlaken	4.16	2	2	4	12.19301304	0.034787484	880	280	10.00	6.45	64.50%	3.55	35.50%	0.00	0.00%
Castle Glen (Division)	4.16	2	2	2	12.70205001	0.0362398	1,188	343	10.61	6.93	65.32%	3.68	34.68%	0.19	1.79%
Country Club	4.16	2	2	7	11.33770399	0.03234723	605	177	4.12	3.18	77.18%	0.94	22.82%	0.00	0.00%
Fox Farm	4.16	2	3	1	1.857558226	0.005299738	35	4	0.84	0.00	0.00%	0.84	100%	0.00	0.00%
Pump House (Lake)	4.16	2	3	4	1.439568499	0.004107185	4	22	0.66	0.64	96.97%	0.02	3.03%	0.00	0.00%
Lift (Summit TOU)	4.16	2	3	5	1.286297193	0.003669892	1	1	0.10	0.10	100.00%	0.00	0.00%	0.00	0.00%
Skyline (Summit Res)	4.16	2	3	7	1	0.002853067	0	0	0.00	0.00	NA	0.00	NA	0.00	NA
Geronimo (Bear Mtn.)	4.16	2	3	6	1.142857143	0.003260648	1	0	0.03	0.00	0.00%	0.03	100%	0.00	0.00%

[1]As mitigations are implemented and at least annually, Wildfire Risk Group, Priority and Mitigation Weight should be re-evaluated.
Source: *BVES*

According to the analysis, BVES identified the higher fire-threat areas outlined above, and prioritized for this current WMP cycle, to include the following circuits: (1) Radford, (2) Boulder, (3) Northshore, (4) Moonridge (Goldmine and Clubview), and (5) Erwin. BVES has paid special attention to and in many cases prioritized mitigation strategies in these areas.

Supporting Table 4-6. Prioritization of Higher Fire-Threat Areas

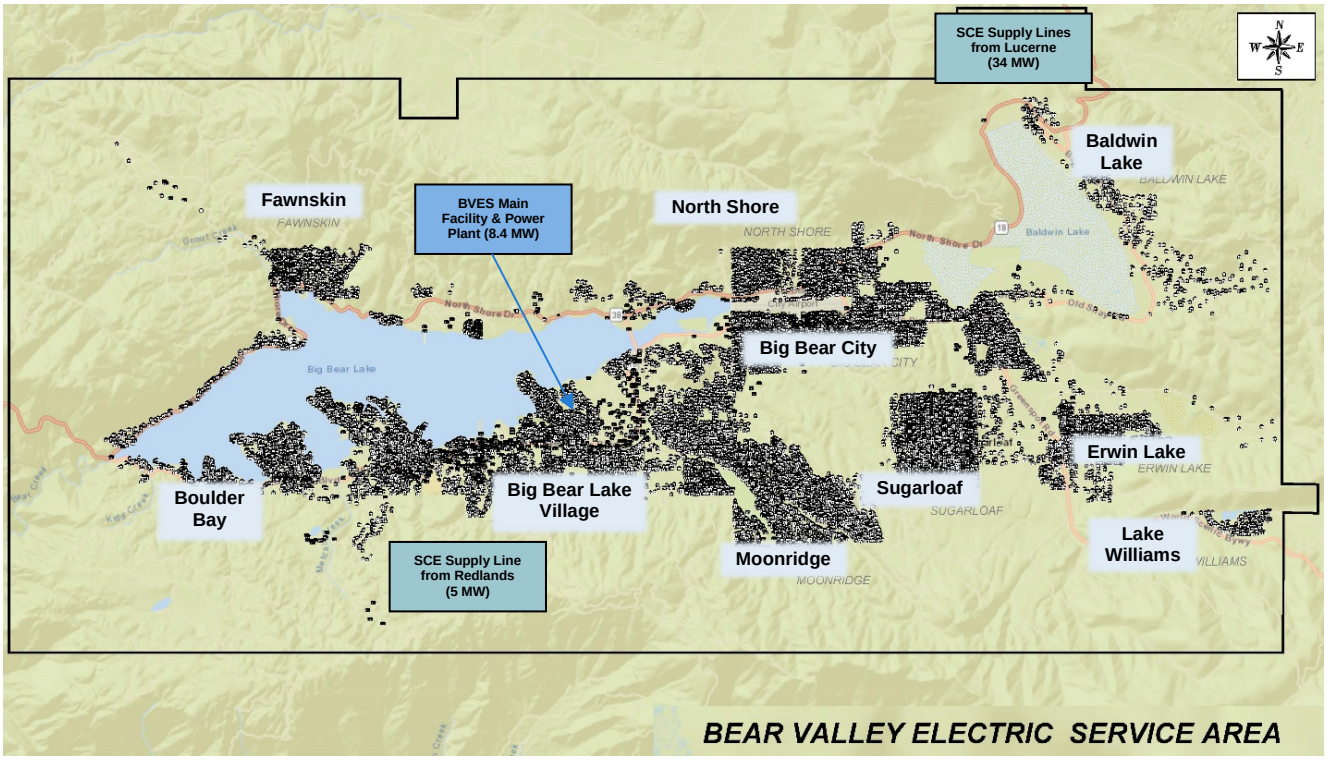
Wildfire Risk Groups
High
Moderate
Low

At this time, BVES believes that the Tier 2 and Tier 3 HFTD ratings used by the CPUC adequately account for these higher fire-threat areas. Section 4.3, below, elaborates the method for identifying these higher fire-threat areas. Additionally, Section 5.4 includes an overview of the Fire Safety Circuit Matrix which identifies the five circuits listed within a "High" wildfire risk circuit group.

Service Territory Description & Risks

As part of its risk understanding, BVES examined its service territory to identify risks unique to its geography. This section provides an overview of the service territory and details the risks BVES factored into its mitigation strategy. BVES's service territory is in the mountain resort community of Big Bear Lake, California, with approximately 24,400 customers in a 31 square-mile service area. Located in the San Bernardino Mountains of Southern California, 80 miles east of Los Angeles. The region is rural and mountainous. Figure 4-2 below shows the service territory and key customer and system areas.

Figure 4-2. Map of BVES Service Territory and Key Areas



Source: BVES

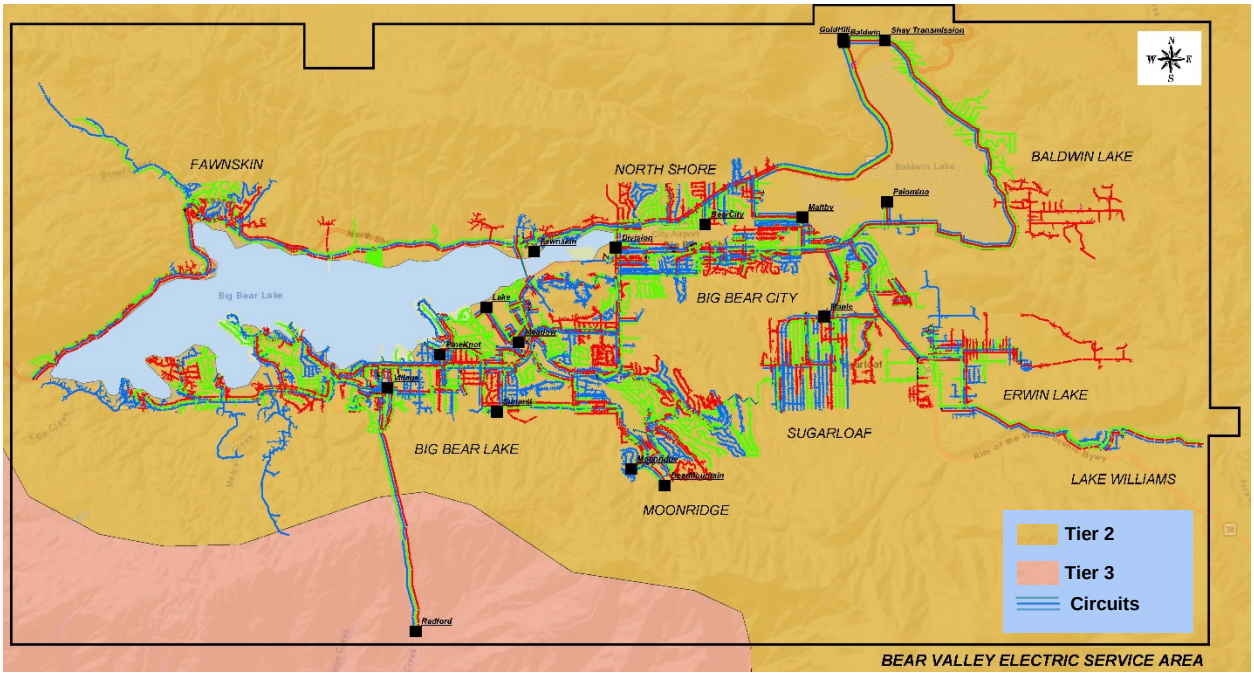
Given its unique service territory, BVES must consider the following when making decisions and implementing plans related to wildfire mitigation: (1) electrical system design and assets, (2) complex jurisdictional structure, (3) local load profile, and (4) geographic location.

- **Electrical System Design & Assets:** BVES owns and operates 87.8 miles of overhead (OH) 34.5 kV sub-transmission lines, 2.7 miles of 34.5 kV underground (U/G) sub-transmission lines, 488.6 miles of overhead distribution circuit lines, 89.1 miles of underground distribution circuit lines, 13 substations, and a natural gas-fueled 8.4 megawatt (MW) peaking generation facility. These assets will need to be considered when creating and implementing the WMP.
- **Jurisdictional Structure:** BVES's entire service area is under the jurisdictional responsibility of the City of Big Bear Lake, with some areas (unincorporated) under the responsibility of the County of San Bernardino. The San Bernardino Mountains and forests are managed by the USFS, California Environmental Protection Agency, and the California Department of Fish and Wildlife. This complex jurisdictional structure is a key consideration when developing or implementing any strategic plan, including one related to wildfires.
- **Local Load Profile:** Big Bear Lake mainly serves as a vacation destination during the winter months. This results in a winter peaking profile that occurs due to increased load from population influx and local snow-making activity in the late evening hours. Throughout the rest of the year, system load returns to normal. Understanding this local load profile is a key element of implementing a successful WMP.
- **Geographic Location:** BVES's service area is entirely above the 3,000-foot elevation threshold (which requires heavy loading construction standards) and has a high density of trees in a mostly dry environment.

Identified Wildfire Risk Areas

There are several wildfire risk assessment designations from various organizations, including the CPUC, CAL FIRE, and the US Department of Agriculture (USDA). Each designation provides a different perspective of potential fire danger. For example, the USDA's National Fire Danger Rating System (NFDRS) assesses fire-threats at the county-level based on weather, while CAL FIRE includes four fire-hazard severity zones based on various factors. Figure 4-3 shows the CPUC designated fire hazard zone tiers within BVES's service territory.

Figure 4-3. BVES CPUC Designated Tier 2 and Tier 3 Fire Hazard Zones



Source: CPUC, Fire-Threat Map; BVES

BVES monitors these risk assessments regularly and has created procedures and protocols accordingly. Supporting Table 4-7 below outlines the various rating systems and BVES's rating in that system.

Supporting Table 4-7. Wildfire Risk Assessments in BVES Service Territory

Agency and Rating Name	Scope of Rating	BVES Rating
CPUC, Fire-Threat Map Adopted January 19, 2018[24]	Areas or zones where enhanced fire safety regulations in Decision 17-12-024 will apply[25]	High Fire-Threat District; Mostly Tier 2 (elevated risk) with some Tier 3 (extreme risk) areas.
USDA Forest Service, NFDRS[26]	County-level assessment of fire danger for that day or the next day based on fuels, weather, topography, and risks	76.11% of the time "Very Dry" or "Dry"
CAL FIRE, California Fire Hazard Severity Zone Map Update Project[27]	City and County-level assessments of fire "hazard" zones	Very High Fire Hazard Severity Zone

Source: BVES

[24] CPUC, CPUC Fire Safety Rulemaking Background, 2018, http://www.cpuc.ca.gov/firethreatmaps/.

[25] CPUC, CPUC Adopts New Fire-Safety Regulations, December 14, 2017, http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M201/K352/201352402.PDF.

[26] USDA Forest Service, National Fire Danger Rating System, https://www.fs.usda.gov/detail/inyo/home/?cid=stelprdb5173311.; BVES Analysis

[27] CAL FIRE, Wildland Hazard & Building Codes Cities for which CAL FIRE has made recommendations on Very High Fire Hazard Severity Zones (VHFHSZ), http://www.fire.ca.gov/fire_prevention/fire_prevention_wildland_zones_maps_citylist.

In addition to gaining a deeper understanding of its wildfire risks, BVES analyzed its reliability data to prioritize its risks. Table 11[28] provides the analysis focused on recent incident data (2015-2019) and examined three types of events: (1) bare line contacts from objects, (2) all types of equipment and/or facility failures, and (3) wire-to-wire contact, since these events may result in wildfires. Vegetation and bare line contact events pose the most frequent risk for wildfires in BVES's system. These events are mainly caused by weather and third parties. This is understandable due to the dense tree coverage of the mountainous terrain and the susceptibility to heavy winter snowstorms. The risk of fire during these storms is diminished due to the moisture level in surrounding vegetation and on the ground is typically high, reducing the risk of wildfire. The second most frequent cause of these events is proximity to vegetation due to the tree density. Legacy tree attachments also increase this risk factor of vegetation contact if structurally instable trees falling or leaning cause electrical equipment to fail and potentially spark. BVES's system currently has approximately 777 tree attachments in compliance with previous system design standards and vegetation management protocols.[29] In addition, the mountainous terrain and dry California climate may be contributing factors to these types of events.

Wire down events also pose a risk to the system, however these events occur less frequently. Notably, the total number of such events accounts for less than 15 percent of the risk events studied.[30] Of these events, weather was the greatest contributor to wire down events. It should be noted that wire down events, among other hazards, have the potential to trigger an underbrush fire, which may lead to a larger wildfire. Another risk event that BVES considered is a "blown conventional fuse."

Attachment 1 Subsection 4.2.1 Table 19 Macro Trends Impacting Ignition Probability and/or Wildfire Consequence

List and describe any additional macro trends impacting ignition probability and estimated wildfire consequence within utility service territory, including trends within the control of the utility, trends within the utility's ability to influence, and externalities (i.e., trends beyond the utility's control, such as population changes within the utility's territory).

List and describe all relevant drivers of ignition probability and estimated wildfire consequences and the mitigations that are identified in the Risk Assessment Mitigation Phase (RAMP) and not included in the above, including how these are expected to evolve. Rank these drivers from highest to lowest risk and describe how they are expected to evolve.

BVES does not have any additional macro trends to report related to ignition probability at this time. Future WMP filings may include the evolving risk reduction methodology as the WSD continues to develop and issue its data schema for comprehensive risk analysis. As mentioned above, BVES is not currently required to have alignment with the MAVF or MARS framework. Externalities beyond the utility's control are not anticipated to impact ignition probability over time. BVES serves a mountainous resort community with a part-time and permanent resident mix with minimal population changes forecasted over the planning horizon. Controllable strategies (e.g., system hardening, enhanced inspection measures, and proactive vegetation management) have been mapped to the circuits directly impacted as demonstrated in the Fire Circuit Safety Matrix. Additionally, BVES is not required to file with a comprehensive RAMP framework.

Table 19 below ranks the trends anticipated to exhibit the greatest change related to wildfire ignition probability and estimated wildfire consequences. This information is also included in the accompanying *Attachment 1* workbook.

[28] *See* Section 3 of this WMP.

[29] 14 CA ADC § 1257(a)(C).

[30] Percentage related to 2019 WMP outage study from 2009 – 2015 recorded outage incidents.

Table 19: Macro Trends Impacting Ignition Probability and/or Wildfire Consequence

Rank	Macro trends impacting utility ignited ignition probability and estimated wildfire consequence by year 10	Comments
1	Change in ignition probability and estimated wildfire consequence due to climate change	The utility expects climate change to produce significant increase in ignition probability over the 10-year period. Based on 2017 Climate Change and Health Profile Report San Bernardino County (UC Davis), California Fourth Climate Assessment.
3	Change in ignition probability and estimated wildfire consequence due to relevant invasive species, such as bark beetles	The Big Bear Lake region has previously been affected by bark beetles, notably in the Summer of 2018 as a result of the then-ongoing drought in California. While the utility has not experienced any ignition events, increased dead tree density is likely as climate change creates more favorable summer conditions for bark beetle populations.
2	Change in ignition probability and estimated wildfire consequence due to other drivers of change in fuel density and moisture	The utility's service territory is in a heavily forested mountain environment. Any increase in fuel density and dryness creates a disproportionate increase in ignition probability and estimated wildfire consequences.
5	Population changes (including Access and Functional Needs population) that could be impacted by utility ignition	The utility's service territory is entirely in a mountain resort region. BVES does not expect significant population changes within its service territory and does not foresee measurable changes impacting ignition probability and wildfire consequences as a result.
6	Population changes in HFTD that could be impacted by utility ignition	The utility's service territory is entirely in a mountain resort region. BVES does not expect significant population changes within its service territory and does not foresee measurable changes impacting ignition probability and wildfire consequences as a result.
4	Population changes in WUI that could be impacted by utility ignition	The utility's service territory is entirely in a mountain resort region. BVES does not expect significant population changes within its service territory and does not foresee measurable changes impacting ignition probability and wildfire consequences as a result.
7	Utility infrastructure location in HFTD vs non-HFTD	The utility's service territory is entirely in HFTD 2 or HFTD 3. As a result, BVES does not foresee any differentiated impacts in ignition probability and wildfire consequences due to the location of utility infrastructure in HFTD vs non-HFTD
8	Utility infrastructure location in urban vs rural vs highly rural areas	The utility's service territory is primarily rural with no highly rural areas and limited urban areas. As a result, BVES does not foresee any differentiated impacts in ignition probability and/or wildfire consequences due to the location of utility infrastructure in urban vs rural vs highly rural areas

BVES has not historically had reportable or non-reportable utility-involved ignitions or catastrophic wildfires. BVES does not have any macro trends identified for impacting ignition probability and plans to enhance current capabilities for measuring fire potential as the risk spend efficiency methodology is further improved. BVES also does not face significant population fluctuations. Future WMPs will consider developed macro trends as they materialize and are understood over time.

4.3 Change in Ignition Probability Drivers

Attachment 1 Section 4.3 Change in Ignition Probability Drivers

Based on the implementation of the above wildfire mitigation initiatives, explain how the utility sees its ignition probability drivers evolving over the 3-year term of the WMP. Focus on ignition probability and estimated wildfire consequence reduction by ignition probability driver, detailed risk driver, and include a description of how the utility expects to see incidents evolve over the same period, both in total number (of occurrence of a given incident type, whether resulting in a near miss or in an ignition) and in likelihood of causing an ignition by type. Outline methodology for determining ignition probability from events, including data used to determine likelihood of ignition probability, such as past ignition events, number of near misses, and description of events (including vegetation and equipment condition).

Based on the implementation of its wildfire mitigation initiatives, BVES believes its ignition probability drivers will decline over the three-year term of the WMP. BVES focused much of its efforts on reducing ignition sources and opportunities such as reducing the amount of bare wire present in its service territory. BVES is also implementing measures to reduce the wildfire consequence by increasing situational awareness through the use of cameras, hardening overhead facilities along evacuation routes, and increasing coordination with public safety agencies. As initiatives are executed, the WMP evolves, and baseline achievements are established in effort to reduce wildfire and PSPS risk, BVES anticipates a parallel decline in incidents and findings with potential to spark or ignite a fire. The prioritization of efforts mapped to circuits based on related system hardening efforts are depicted in the table below.

Supporting Table 4-8. Projected Risk Outlook

		Current Circuit Status				3-Year Projected Outlook				10-Year Projected Outlook			
Circuit	HFTD Tier	Wildfire Risk Group[1]	Wildfire Risk Priority within Group[1]	Wildfire Risk Mitigation Score[1]	Wildfire Risk Mitigation Weight[1]	Wildfire Risk Group[1]	Wildfire Risk Priority within Group[1]	Wildfire Risk Mitigation Score[1]	Wildfire Risk Mitigation Weight[1]	Wildfire Risk Group[1]	Wildfire Risk Priority within Group[1]	Wildfire Risk Mitigation Score[1]	Wildfire Risk Mitigation Weight[1]
Radford	3	1	1	22.985	6.56%	3	1	2.709	1.11%	3	1	2.894	7.33%
Shay	2	1	2	22.765	6.50%	2	1	12.820	5.25%	3	2	2.833	7.17%
Baldwin	2	1	3	22.250	6.35%	1	1	22.475	9.21%	3	3	2.680	6.79%
Boulder	2	1	5	22.382	6.39%	2	2	12.650	5.18%	3	5	2.583	6.54%
North Shore (Fawnskin)	2	1	7	22.682	6.47%	2	3	12.349	5.06%	3	6	2.448	6.20%
Erwin Lake	2	1	4	23.122	6.60%	3	2	2.574	1.05%	3	4	2.772	7.02%
Pioneer (Palomino)	2	3	3	1.425	0.41%	3	6	1.355	0.56%	3	19	0.978	2.48%
Clubview	2	1	9	21.786	6.22%	1	3	21.299	8.73%	3	9	2.068	5.24%
Goldmine	2	1	8	21.597	6.16%	3	3	2.198	0.90%	3	10	1.968	4.98%
Paradise	2	2	1	12.643	3.61%	2	4	12.022	4.92%	3	15	1.400	3.54%
Sunset	2	1	11	21.274	6.07%	1	4	20.713	8.49%	3	7	2.320	5.87%

		Current Circuit Status				3-Year Projected Outlook				10-Year Projected Outlook			
Circuit	**HFTD Tier**	**Wildfire Risk Group[1]**	**Wildfire Risk Priority within Group[1]**	**Wildfire Risk Mitigation Score[1]**	**Wildfire Risk Mitigation Weight[1]**	**Wildfire Risk Group[1]**	**Wildfire Risk Priority within Group[1]**	**Wildfire Risk Mitigation Score[1]**	**Wildfire Risk Mitigation Weight[1]**	**Wildfire Risk Group[1]**	**Wildfire Risk Priority within Group[1]**	**Wildfire Risk Mitigation Score[1]**	**Wildfire Risk Mitigation Weight[1]**
Sunrise (Maple)	2	1	10	21.392	6.10%	1	5	20.080	8.23%	3	8	2.156	5.46%
Holcomb (Bear City)	2	1	6	22.595	6.45%	1	6	19.539	8.00%	3	18	1.095	2.77%
Georgia	2	2	5	11.516	3.29%	2	8	10.887	4.46%	3	12	1.673	4.23%
Eagle	2	2	3	12.422	3.54%	2	7	11.166	4.57%	3	11	1.807	4.58%
Harnish (Village)	2	3	2	1.836	0.52%	3	5	1.516	0.62%	3	21	0.600	1.52%
Garstin	2	2	8	11.093	3.16%	2	11	10.057	4.12%	3	16	1.204	3.05%
Lagonita	2	2	6	11.776	3.36%	2	6	11.453	4.69%	3	13	1.568	3.97%
Interlaken	2	2	4	12.193	3.48%	2	9	10.611	4.35%	3	20	0.754	1.91%
Castle Glen (Division)	2	2	2	12.702	3.62%	2	5	11.710	4.80%	3	14	1.463	3.70%
Country Club	2	2	7	11.338	3.23%	2	10	10.309	4.22%	3	17	1.070	2.71%
Fox Farm	2	3	1	1.858	0.53%	3	4	1.800	0.74%	3	23	0.347	0.88%
Pump House (Lake)	2	3	4	1.440	0.41%	3	7	0.906	0.37%	3	22	0.471	1.19%
Lift (Summit TOU)	2	3	5	1.286	0.37%	3	8	0.601	0.25%	3	24	0.232	0.59%
Skyline (Summit Res)	2	3	7	1.000	0.29%	3	9	0.300	0.12%	3	25	0.115	0.29%
Geronimo (Bear Mtn.)	2	3	6	1.143	0.33%	3	10	0.000	0.00%	3	26	0.000	0.00%

[1]As mitigations are implemented and at least annually, Wildfire Risk Group, Priority and Mitigation Weight should be re-evaluated.

BVES is acting on these initiatives through identifying applicable risks from its risk-based decision-making framework filing and adding to the list, based on gaps identified through its WMP development. The risks identified are then scored according to frequency (ignition potential) and impact (wildfire consequence). The latter includes the effect of events on reliability, compliance, quality of service, safety, and environmental quality. All other risks, identified outside of the formal filing, have not been formally scored. However, BVES qualitatively evaluated costs, technological effectiveness, and implementation feasibility when determining which mitigation measures should be implemented as part of its WMP. Further description of the enterprise-wide risk framework is found in Section 5.

The list below organizes all the strategies included in the WMP shown in Supporting Table 4-9.

Supporting Table 4-9. List of Wildfire Risks and Risk Score (Priority)

Risk Event	Total Risk Score
Design & Construction	
Line Attached to Fallen Tree (includes Tree Attachments)	88,191
Sparking Caused by Equipment/Infrastructure Settings	N/A
Inspection & Maintenance	
Pole Failures	49,702
Downed Wire	114,944
Aging Infrastructure	4,966
Vegetation in Proximity to Infrastructure	NA
Quickly Changing Conditions	N/A
Operational Practices	
Violations of Safe Work Practice	35,053
Situational & Conditional Awareness	
Inability to Visualize Equipment in Hard-to-Patrol Areas	3,641
Imprecise Weather Forecasting	N/A
Response & Recovery	
Fatality caused by wildfire / emergency	1,275,706
Sustained outages affecting health	124,339

Source: BVES
Note: Risks with "N/A" represent risks identified after BVES's formal risk-based decision-making process. Although these risks have not been formally scored, BVES has used qualitative information and evaluated cost-effectiveness and implementation-feasibility to prioritize these measures.

In addition to assessing its territory at a high level, BVES conducted a detailed analysis based on the NFDRS evaluation. This analysis used available weather data to determine the percentage of days for each rating. BVES found that on average its service area was "Very Dry" or "Dry" approximately 76.11 percent of the time over the 2015-2019 period, which significantly contributes to the high fire risk. Supporting Table 4-10 below shows the full analysis.

Supporting Table 4-10. BVES NFDRS Rating Analysis (% Days per Rating)

NFDRS Rating	Dryness	Fire Risk	2015	2016	2017	2018	2019	Avg
Green	Moist	Little or No	7.12%	19.40%	29.86%	8.02%	55.26%	23.89%
Yellow	Dry	Low	63.56%	39.34%	37.81%	52.16%	19.30%	42.51%
Brown	Very Dry	Moderate	28.77%	37.70%	28.22%	37.65%	22.81%	30.99%
Orange (Wind)	Very Dry	High	0.00%	2.46%	4.11%	2.16%	2.63%	2.27%
Red (Lightning)	Very Dry	High	0.55%	1.09%	0.00%	0.00%	0.00%	0.34%

Source: BVES NFDRS Analysis

Note: Data begins 1/15/2015, ends 12/31/2019; 41 and 23 erroneous or missing days were not included from 2018 and 2019, respectively

There are also specific areas that are considered high-risk and would be more adversely affected in a wildfire or emergency. These areas consist of dense vegetation coverage, populations, and/or critical infrastructure. The areas identified and their risks are listed below. This section details the wildfire prevention activities for these locations.

- **Radford Area**: The area is remote, mountainous, heavily forested and primarily accessible only by foot. Additionally, BVES has critical infrastructure running through this area, creating challenges in upgrading the infrastructure and maintaining visibility on the lines. Specifically, infrastructure changes require the use of helicopters and specially trained linemen to work in the challenging environment. Currently, BVES de-energizes the infrastructure in this area in the summer due to the high fire risk.
- **Boulder Area:** BVES has identified this area as high-risk due to the number of customers in the area (~1,000), the dense tree coverage, adverse terrain, abundant available fuel, and high number of tree attachments. This area includes the Boulder and Lagonita distribution circuits.
- **North Shore Area:** Like the Boulder Area, this area is susceptible to fires due to tree density, available fuel, high number of tree attachments, and difficult terrain, which make operations and maintenance and access to facilities difficult. Additionally, certain areas have a high density of customers.
- **Moonridge Area:** Like the Boulder Area, this area is identified as high-risk due to the number of customers in the area (~1,000), dense tree coverage, adverse terrain, and abundant available fuel. This area includes the Goldmine and Club View distribution circuits.
- **Erwin Lake Area:** Like the Boulder Area, this area is identified as high-risk due to the number of customers in the area (~1,000), dense tree coverage, adverse terrain, and abundant available fuel.

As described above, the service territory's high elevation means the area consists of a heavily forested, steep, mountainous environment, which is vulnerable to wildfires. BVES understands this risk and prepared its fire mitigation plans accordingly. Furthermore, it complies with all fire-safety regulations adopted to date, including those set out in GO 95, 165, and 166.

4.4 Directional Vision for Necessity of PSPS

Attachment 1 Section 4.4 Directional Vision for Necessity of PSPS

Describe any lessons learned from PSPS since the utility's last WMP submission and expectations for how the utility's PSPS program will evolve over the coming 1, 3, and 10 years. Be specific by including a description of the utility's protocols and thresholds for PSPS implementation. Include a quantitative description of how the circuits and numbers of customers that the utility expects will be impacted by any necessary PSPS events is expected to evolve over time. The description of protocols must be sufficiently detailed and clear to enable a skilled operator to follow the same protocols. When calculating anticipated PSPS, consider recent weather extremes, including peak weather conditions over the past 10 years as well as recent weather years and how the utility's current PSPS protocols would be applied to those years.

BVES considers PSPS as a measure of last resort, driven by a combination of extreme fire threat weather, fuel moisture, wind, and situational awareness information. BVES is committed to reducing the scope, frequency, and duration of PSPS events and will only implement PSPS when the risk of imminent fire danger is greater than the impact of de-energization. In addition to its own plan for proactive de-energization, BVES is also impacted by PSPS events triggered by SCE. BVES has conducted public outreach and published its vision for necessity of PSPS on its website.[31] Covering bare wires, the pole loading program, the tree attachment program, and replacing conventional fuses are at the core of high-impact initiatives to mitigate against proactive de-energization and are the only initiatives that affect threshold values of initiating PSPS events. As BVES describes in Supporting Table 4-8, the projected risk outlook relative to system hardening efforts carried out on prioritized circuits indicates a low risk forecast as these initiatives are executed over ten years. This reduces the likelihood and need to initiate PSPS events.

BVES is developing mitigation measures, including operating the BVPP in combination with customer load management when the import lines are out of service. BVES has sufficient local generation to supply critical services and infrastructure, which only effectuate rolling blackouts in a worst-case scenario. Because BVES has not had to initiate PSPS events, it is not possible to address how to reduce the frequency, scope, and duration of something that has not occurred. Through several WMP hardening projects, BVES intends to take measures to harden its system. Completing the programs to eliminate bare wire, in combination with the pole loading program, tree attachment program and the elimination of conventional fuses, BVES significantly improves its ability to maintain zero PSPS events.

BVES has not initiated any PSPS events over the past year and does not forecast an imminent need to de-energize in the future based on a three-year forecast. Because BVES has not had to initiative PSPS events, it is not quantifiable to reduce the frequency, scope, or duration through initiative expectation. BVES does not view lack of PSPS events as a case for complacency. BVES will continue its de-energization mitigation programs and projects, including operating the Bear Valley Power Plant, deploying the community load management plan or, in a worst-case scenario, rolling blackouts when the SCE import lines are out of service (planned and unplanned). BVES's service territory has sufficient local generation to supply critical services and infrastructure. Future plans include installing an 8 MW / 32 MWh storage project. Load is further balanced and met by a planned utility-owned 7.9 MW solar facility directly supplying the distribution system. In combination with alerting interruptible customers to curtail loads, BVES does not anticipate significant impact related to SCE's decision to de-energize the main supply source feeding BVES's service area.

BVES's 10-year vision is to eliminate the need for PSPS events altogether, which should be achievable when no bare wires remain on high risk circuits, the pole loading and tree attachment programs are complete, and conventional fuses have been eliminated.

The utility has identified seven sections of "at-risk" areas based on type of distribution facilities (overhead bare conductions, high voltage, etc.), tree and vegetation density, available dry fuel, and other factors that make certain locations vulnerable to wildfire risk. These line sections may be de-energized by "opening" the Auto-Reclosers (AR); each circuit affects a varying number of customers, as outlined in Supporting Table 4-10 below.

[31] BVES, "2020 PSPS Plan" https://www.bvesinc.com/media/managed/ /BVES_PSPS_PPT_2020_Final.pdf.

Supporting Table 4-10: Circuits Identified for De-Energization & Customers Affected

Circuit (AR To Be Opened)	Number of Customers
Radford 34.5 kV	0[32]
North Shore 4 kV (Open AR)	1021
Erwin 4 kV (Open AR 1128)	197
Boulder 4 kV (Open AR 105)	1063
Lagonita 4 kV (Open AR 145)	946
Club View 4 kV (Open AR 424)	740
Goldmine 4 kV (Open AR 405)	950

Source: BVES

Execution: BVES's procedures include two aspects: (1) field operations and (2) communications. The first includes the planned actions of service crews and BVES staff and the second involves notifications to stakeholders. The following Supporting Table 4-12 outlines BVES's phases, timeframes, and internal and external actions related to a PSPS.

[32] When this line is de-energized, the load is shifted to the Shay 34.5 kV line.

Supporting Table 4-11: PSPS Phases for PSPS Procedures

Phase	Timeframe	Internal Staff Actions	External Communications and Notifications
Preparatory	**Pre-fire season.** • Conducted annually well before extreme fire threat conditions are expected; or • When lessons learned or other conditions warrant updating plans, training, and/or outreach. • Coordinate with the CPUC, CalFire, Cal OES, communications providers, representatives of people/communities with access and functional needs, and other public safety partners to plan de-energization simulation exercises throughout the utility service territories in the areas with the highest historical and forecasted risk for de-energization in advance of fire season.	**Planning and Training** • Managers review and update plans and procedures. • Managers ensure staff are trained on PSPS procedures as applicable. • Reach out to media and Community-based organizations to ensure consistent awareness of and availability to third parties of all messaging and map data, including application programming interfaces, that is used for de-energizations events.	**Local Government, Agencies, and Partner Organizations:** • Provide copy of plan and solicit comments. • Incorporate comments as deemed appropriate. • Conduct meetings to discuss procedures. • Update primary and secondary contacts for PSPS communications. • Advisory Board: May consist of public safety partners, communications and water service providers, local and tribal government officials, business groups, non-profits, representatives of people/communities with access and functional needs and vulnerable communities, and academic organizations. **Customer Outreach and Education:** • Post PSPS information on BVES Website and social media. • Include PSPS information in periodic customer newsletter. • Conduct public workshops.

Phase	Timeframe	Internal Staff Actions	External Communications and Notifications
Warning	**4-7 Days Ahead** (Forecasts indicate extreme fire threat weather and conditions may occur.)	**Operations & Planning:** • Evaluate possible impacted area(s) and ensure resources ready to support PSPS. • Contact SCE Staff and maintain status of SCE supply lines. • Review operational and maintenance status sub-transmission system. • Review operational and maintenance status of Bear Valley Power Plant (BVPP). • Review operational and maintenance status of Radford Line. • Consider conducting patrol of Radford Line. • Review National Weather Service (NWS) forecasts, National Fire Danger Rating System (NFDRS) 7-day forecast, and weather and threat assessments from contracted meteorology consultant. • Consider having meteorology consultant provide more frequent forecasts. • Alert customer service to possibility of PSPS. **Customer Service:** • Review and edit as applicable templates for PSPS events and the anticipated impacts on BVES Customers. • Staff draft notices to Public Affairs consultant for review significant changes to templates are made.	**None**

Phase	Timeframe	Internal Staff Actions	External Communications and Notifications
Warning	**4 Days Ahead** (Continuing and consistent forecasts of extreme fire threat weather and conditions.)	**Operations & Planning:** • Closely monitor fire weather alerts from various sources with the goal of refining the forecast (NWS, NFDRS, and meteorology consultant weather and threat assessments). • Contact SCE Staff and maintain status of SCE supply lines. If any SCE lines are under "PSPS Consideration," take actions per Table 4-2, BVES Action for SCE Lines Under PSPS Consideration. • Ensure sub-transmission system in most reliable condition. Defer and/or secure from planned maintenance. • Ensure BVPP ready to operate. Defer and/or secure from planned maintenance. • Alert Energy Resource Department of possible extended BVPP operations. • Consider energizing Radford Line, if deemed necessary for reliability. • Closely coordinate with SCE Staff regarding the PSPS status of SCE supply lines (Doble, Cushenberry, and Bear Valley). • Ensure BVES installed weather stations fully operational. • Ensure circuit load monitoring equipment fully operational. • Place BVES staff incident responders on alert. **Customer Service:** • Finalize **"4 Day Alert"** email regarding continuing and consistent forecasted extreme fire threat weather and conditions, which may lead to possible BVES directed PSPS and/or SCE directed PSPS. Also, provides anticipated impacts on BVES Customers and direction of event. Obtain President's approval to release.	**Local Government, Agencies, and Partner Organizations:** • Email **"4 Day Alert"** to local government, agencies, and partner organizations primary and secondary points of contact. • Alert the emergency management community, first responders and local government first.

Phase	Timeframe	Internal Staff Actions	External Communications and Notifications
Warning	**2-3 Days Ahead** (Extreme fire threat weather and conditions forecasted with increasing confidence.)	**Operations & Planning:** • Continue to closely monitor fire weather alerts from various sources with the goal of refining the forecast (NWS, NFDRS, and meteorology consultant weather and threat assessments). • Prepare staff rotation plans to support continuous field crew operations, BVPP operations, dispatch, and customer service. • Evaluate need for additional resources from mutual aid agreements (CUEA and MMAA) and contracted services. Alert additional resources points of contact. • Set up processes to frequently monitor BVES installed weather stations. • Review pre-approved field Switching Orders against current system line-up and make changes as applicable with Field Operations Supervisor's approval. • Keep Customer Service informed of latest forecast to ensure accurate communications with stakeholders. • Closely coordinate with SCE Staff regarding SCE supply lines to the BVES service area and take actions per Table 4-2, BVES Action for SCE Lines Under PSPS Watch, as applicable. **Customer Service:** • Finalize **"2-3-Day Notice"** regarding forecasted extreme fire threat weather and conditions, which may lead to possible BVES directed PSPS and/or SCE directed PSPS. Also, provides anticipated impacts on BVES Customers and direction of event. Obtain President's approval to release.	**Local Government, Agencies, and Partner Organizations:** • Email **"2-3 Day Notice"** to local government, agencies, and partner organizations primary and secondary points of contact. • Coordinate with the emergency management community, first responders and local government first. • Encourage widest dissemination of this information. **Customer Outreach:** • Post **"2-3 Day Notice"** on BVES website and social media. • Issue **"2-3 Day Notice"** press release for local media. • Send out **"2-3 Day Notice"** via IVR.

Phase	Timeframe	Internal Staff Actions	External Communications and Notifications
Warning	**1-2 Days Ahead** (Extreme fire threat weather and conditions forecasted with high degree of confidence.)	**Operations & Planning:** • Continue to closely monitor fire weather alerts from various sources with the goal of refining the forecast (NWS, NFDRS, and meteorology consultant weather and threat assessments). • If needed, request additional resources from mutual aid agreements (CUEA and MMAA) and contracted services). • Monitor BVES installed weather stations on a frequent basis. • Keep Customer Service informed of latest forecast to ensure accurate communications with stakeholders. • Continue to closely coordinate with SCE Staff regarding SCE supply lines to the BVES service area and take actions per Table 4-2, BVES Action for SCE Lines Under PSPS Watch, as applicable. • When directed by Operations & Planning Manager: o Staff incident responders called in. o Incident dispatch established. o Field Crews dispatched to monitor various actual field conditions for extreme fire weather and other dangerous conditions throughout the service area and "at risk" areas. o Implement BVES ERP including staffing the EOC as applicable. **Customer Service:** • Finalize **"1-2 Day Notice"** regarding imminent extreme fire threat weather and conditions, which may result in BVES directed PSPS and/or SCE directed PSPS. Also, provides anticipated impacts on BVES Customers and duration of event. Obtain President's approval to release. • Update list of medical baseline customers that may lose power as result of PSPS.	**Local Government, Agencies, and Partner Organizations:** • Email **"1-2 Day Notice"** to local government, agencies, and partner organizations primary and secondary points of contact. • Coordinate with the emergency management community, first responders and local government first. • Encourage widest dissemination of this information. **Customer Outreach:** • Post **"1-2 Day Notice"** on BVES website and social media. • Issue **"1-2 Day Notice"** press release for local media. • Send out **"1-2 Day Notice"** via IVR.

Phase	Timeframe	Internal Staff Actions	External Communications and Notifications
Warning	**1-4 Hours Ahead** **When De-Energization Imminent.** (Extreme fire threat weather and conditions validated by field resources.)	**Operations & Planning:** • Closely coordinate with SCE regarding SCE directed PSPS that affect SCE lines into BVES service area and take applicable actions per Table 4-3, BVES Action for SCE Lines De-energized Due to PSPS. • Field Operations staff frequently monitor BVES installed weather stations. • Field Crews patrol throughout service area and the "at risk" areas to monitor various actual field conditions for extreme fire weather and other dangerous conditions. • Field Crews monitor local wind gusts in "at-risk" areas. **Customer Service:** • Finalize "**De-energization Imminent Notice"** regarding extreme fire threat weather and conditions validated by field resources and actual PSPS de-energization(s) directed by BVES and/or SCE and includes areas de-energized, number of customers without power, and best estimated time to restore (ETR). Obtain President's approval to release. • Refine lists of medical baseline customers without power.	**Local Government, Agencies, and Partner Organizations:** • Email **"De-energization Imminent Notice"** to local government, agencies, and partner organizations. • Coordinate with the emergency management community, first responders, and local government in managing outages due to PSPS. • Provide list of customers that may be without power and listed as medical baseline customers to Sheriff Department and Fire Department. • Encourage widest dissemination of this information. **Customer Outreach:** • Post "**De-energization Imminent Notice"** on BVES website and social media. • Issue "**De-energization Imminent Notice"** press releases for local media. • Send out "**De-energization Imminent Notice"** via IVR.

Phase	Timeframe	Internal Staff Actions	External Communications and Notifications
Implementation	**During de-energization event.** (Extreme fire threat weather and conditions validated by field resources.)	**Operations & Planning:** • Closely coordinate with SCE regarding SCE directed PSPS that affect SCE lines into BVES service area and take applicable actions per Table 4-3, BVES Action for SCE Lines De-energized Due to PSPS. • Field Operations staff frequently monitor BVES installed weather stations. • Field Crews patrol throughout service area and the "at risk" areas to monitor various actual field conditions for extreme fire weather and other dangerous conditions. • Field Crews monitor local wind gusts in "at-risk" areas. • Field Crews de-energize circuits in "at risk" areas as wind gusts reach threshold for de-energization as designated by Field Operations Supervisor. • Field Crews may de-energize additional power lines they evaluate as posing a public safety hazard and/or as directed by Field Operations Supervisor. • Prepare GO-166 major outage and ESRB-8 notifications as applicable. **Customer Service:** • Finalize "**De-energization Notice"** regarding extreme fire threat weather and conditions validated by field resources and actual PSPS de-energization(s) directed by BVES and/or SCE and includes areas de-energized, number of customers without power, and best estimated time to restore (ETR). Obtain President's approval to release. • Finalize **"De-energization Updates"** providing status changes such as when the number of customers without power and/or ETR(s) change significantly. Obtain President's approval to release. • Refine lists of medical baseline customers without power.	**Local Government, Agencies, and Partner Organizations:** • Email **"De-energization Notice"** to local government, agencies, and partner organizations. • Coordinate with the emergency management community, first responders, and local government in managing outages due to PSPS. • Send **"De-energization Updates"** on the PSPS. • Provide list of customers without power and listed as medical baseline customers to Sheriff Department and Fire Department. • Encourage widest dissemination of this information. • Notify California Public Utilities Commission (CPUC) and Warning Center at the Office of Emergency Services San Bernardino within one hour of shutting off the power if the outage meets the major outage criteria of GO-166. • Notify President Safety Enforcement Division (SED), CPUC within twelve hours of the power being Shutoff per ESRB-8. **Customer Outreach:** • Post "**De-energization Notice"** and "**De-energization Updates"** (when warranted) on BVES website and social media. • Issue "**De-energization Notice"** and "**De-energization Updates"** (when warranted) press releases for local media. • Send out "**De-energization Notice"** and "**De-energization Updates"** (when warranted) via IVR.

Phase	Timeframe	Internal Staff Actions	External Communications and Notifications
Restoration	**Re-energization** (Extreme fire conditions subside to safe levels as validated by field conditions.)	**Operations & Planning:** • Field Crews validate that the extreme fire weather conditions have subsided to safe levels as designated by the Field Operations Supervisor and report these conditions to Dispatch. • Field Crews conduct field inspections and patrols of facilities that were de-energized. • When field inspections and patrols are completed satisfactorily, power is restored to the affected circuits. • As SCE restores supply lines, Field Crews conduct switching operations as directed by Field Operations Supervisor to restore systems normal. **Customer Service:** • Finalize **"Intent to Restore"** notice to include ETR(s) and obtain President's approval to release. • Finalize **"Restoration Complete"** notice to be issued when power is fully restored and obtain President's approval to release.	**Local Government, Agencies, and Partner Organizations:** • Send **"Intent to Restore"** notice to local government, agencies, and partner organizations. Encourage widest dissemination of this information. • Coordinate with the emergency management community, first responders, and local government in managing restorations. • Send **"Restoration Complete"** notice to local government, agencies, and partner organizations once power is fully restored or an update if restoration is delayed. **Customer Outreach:** • Post **"Intent to Restore"** notice on BVES website and social media. • Issue **"Intent to Restore"** press release for local media. • Send out **"Intent to Restore"** notice via IVR. • Post **"Restoration Complete"** notice on BVES website and social media once power is fully restored or an update if restoration is delayed. • Issue **"Restoration Complete"** press release for local media once power is fully restored or an update if restoration is delayed. • Send out **"Restoration Complete"** notice via IVR once power is fully restored or an update if restoration is delayed.
Reporting and Lessons Learned	**Post Event**	**Operations & Planning:** • Operations & Planning Manager conduct lessons learned with applicable staff. Include Customer Service and solicit input from Local Government, Agencies, and Partner Organizations. • If applicable, update plan and procedures per the lessons learned. • Prepare PSPS Post Event Report required by ESRB-8 and forward to President and Manager Regulatory Affairs for approval.	**CPUC Safety Enforcement Division:** • File a report (written) to President of SED no later than 10 business days after the Shutoff event ends per ESRB-8.

For the purpose of the procedure discussed in the table above, the Utility Manager will be in charge of the execution. The Field Operations Supervisor will direct field activities and operations. The Service Crew (or Dutyman outside normal working hours) will provide the initial field response. Additional linemen will be activated as needed. Customer Service staff or additional staff may also be called out to assist with notification procedures or at the direction of the Utility Manager, as needed. For example, Engineering staff may be called out to assist linemen in monitoring local wind speeds. Collectively, the staff described above are referred to as the Emergency Response Team (ERT).

When de-energization is deemed necessary, BVES crews will manually shut off at-risk circuits, lines, and other infrastructure. In the future, as it implements SCADA and other technologies, BVES will consider remote shut off implementation. BVES has worked closely and will continue to work closely with local stakeholders that own or operate critical facilities, including hospitals and police and fire departments, to ensure their facilities remain operational or they have back-up plans in PSPS situations. Additionally, BVES will update these plans in accordance with changes to the CPUC proceeding 18-12-005, Order Instituting Rulemaking to Examine Electric Utility De-Energization of Power Lines in Dangerous Conditions.

Table 20 below ranks the characteristic of PSPS events. This information is also included in the accompanying *Attachment 1* workbook.

Table 20: Anticipated Characteristics of PSPS Use Over Next 10 Years

Rank order 1-9	PSPS characteristic	Significantly increase; increase; no change; decrease; significantly decrease	Comments
N/A[1]	Number of customers affected by PSPS events (total)	No change	BVES has not implemented any PSPS and does not anticipate the need for PSPS over the next 10 years
N/A[1]	Number of customers affected by PSPS events (normalized by fire weather, e.g., Red Flag Warning line mile days)	No change	BVES has not implemented any PSPS and does not anticipate the need for PSPS over the next 10 years
N/A[1]	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)	No change	BVES has not implemented any PSPS and does not anticipate the need for PSPS over the next 10 years
N/A[1]	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)	No change	BVES has not implemented any PSPS and does not anticipate the need for PSPS over the next 10 years
N/A[1]	Scope of PSPS events in circuit-events, measured in number of events multiplied by number of circuits targeted for de-energization (total)	No change	BVES has not implemented any PSPS and does not anticipate the need for PSPS over the next 10 years
N/A[1]	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)	No change	BVES has not implemented any PSPS and does not anticipate the need for PSPS over the next 10 years
N/A[1]	Duration of PSPS events in customer hours (total)	No change	BVES has not implemented any PSPS and does not anticipate the need for PSPS over the next 10 years
N/A[1]	Duration of PSPS events in customer hours (normalized by fire weather, e.g., Red Flag Warning line mile days)	No change	BVES has not implemented any PSPS and does not anticipate the need for PSPS over the next 10 years
N/A[1]	Other	No change	BVES has not implemented any PSPS and does not anticipate the need for PSPS over the next 10 years

1. BVES does not anticipate future PSPS events to occur and has not initiated proactive de-energization within 2015 - 2019.

5. WILDFIRE MITIGATION STRATEGY AND PROGRAMS FOR 2019 AND EACH YEAR OF THE 3-YEAR WMP TERM

5.1 Wildfire Mitigation Strategy

Attachment 1 Section 5.1 Wildfire Mitigation Strategy

Describe organization-wide wildfire mitigation strategy and goals for each of the following time periods:

1. **Before the upcoming wildfire season, as defined by the California Department of Forestry and Fire Protection (CAL FIRE),**
2. **Before the next annual update,**
3. **Within the next 3 years, and**
4. **Within the next 10 years.**

The description of utility wildfire mitigation strategy shall:

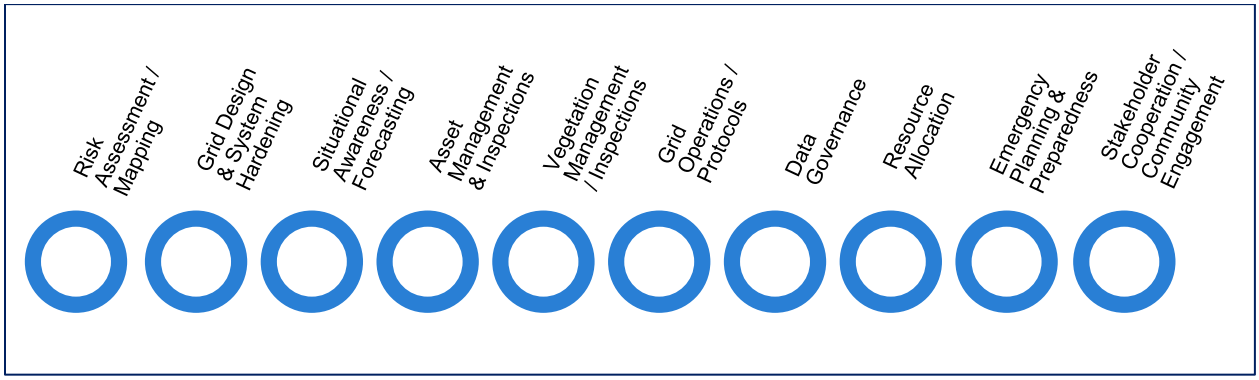
- **A. Discuss the utility's approach to determining how to manage wildfire risk (in terms of ignition probability and estimated wildfire consequence) as distinct from managing risks to safety and/or reliability. Describe how this determination is made both for (1) the types of activities needed and (2) the extent of those activities needed to mitigate these two different groups of risks. Describe to what degree the activities needed to manage wildfire risk may be incremental to those needed to address safety and/or reliability risks.**
- **B. Include a summary of what major investments and implementation of wildfire mitigation initiatives achieved over the past year, any lessons learned, any changed circumstances for the 2020 WMP term (i.e., 2020-2022), and any corresponding adjustment in priorities for the upcoming plan term. Organize summaries of initiatives by the wildfire mitigation categories listed in Section 5.3.**
- **C. List and describe all challenges associated with limited resources and how these challenges are expected to evolve over the next 3 years.**
- **D. Outline how the utility expects new technologies and innovations to impact the utility's strategy and implementation approach over the next 3 years, including the utility's program for integrating new technologies into the utility's grid.**

This section provides an overview of the preventative strategies and programs established in the WMP. The information provided includes the overarching strategy, projects implemented or proposed, and the timing of proposed implementations. BVES did not split its preventative strategies into transmission and distribution categories, since BVES does not own and operate any transmission infrastructure. Although it has sub-transmission lines (34.5 kV), it considers the lines distribution assets, given the voltage.[33]

BVES's wildfire preventative strategy and programs encompass ten main components and align with best practices. Together, the planning components create a comprehensive wildfire preparedness and response plan with an overarching focus on robust construction standards, focus on fire prevention system design, proactive operations and adherence to maintenance programs, and well-socialized operating procedures and staff training. Figure 5-1 outlines the ten main components.

[33] Distribution lines are defined as all lines below 65 kV per Attachment 1 to R.18-10-007 filed 12/16/19 at 11:53 AM

Figure 5-1. Preventative Strategy & Program Overview



The organizational goals related to execution and tracking of BVES's wildfire mitigation may evolve as strategies are implemented and initiative efficiency measurements are recorded and evaluated. BVES made significant progress ahead of the 2020 wildfire season and leveraged implementation and pilot takeaways to drive this 2020 WMP Final Action Statement filing. The objective for this 2020 Final Action Statement filing is to resubmit the 2020 WMP and address the Class A and B level deficiencies and provide updated data and details of prioritized WMP initiatives. BVES has also identified where program acceleration is viable through personnel additions, supplemental training, and leveraging contractor resources. Additionally, BVES is in the process of enhancing data management and GIS capabilities to bolster data governance initiatives.

In Section 4, BVES describes the objectives and highlighted projects over the following time periods. The following describes the organization-wide wildfire mitigation strategy statements over the same periods:

1. Before the 2020 wildfire season: Continued development, implementation and monitoring of programs and initiatives which both prepared BVES for the 2020 wildfire season and continues to execute long-term plans to systematically reduce wildfire ignition risk through:
    - System hardening and automation initiatives
    - Improved preventive maintenance practices
    - Enhanced situational awareness
    - Continued coordination with public safety partners for development of protocols, emergency response planning and public communications for wildfires and PSPS events
2. Before the next annual update: Continue to refine and enhance the BVES WMP plan and associated actions and initiatives in preparation for the next annual update through:
    - Development of a plan to improve GIS data governance and align GIS maps with WSD standards
    - Using established metrics, monitor the effectiveness WMP initiatives and associated wildfire risk reduction
    - Gather internal and external (from other CA utilities) lessons learned from wildfire risk modeling, program implementation and effectiveness, pilot projects and new technology

3. Within the next three years: Reduce the number of high-risk circuits from 11 to 5 by completion of wildfire risk reduction initiatives and improvements to wildfire risk modeling, situational awareness, internal capabilities and external stakeholder communications and outreach through:

    - Completion of the removal of all tree attachments, replacement of conventional fuses, completion of Radford Line Covered Conductor Project, completion of Grid Automation Project, completion of additional BVES weather stations deployment and substantial completion of the pole loading and assessment remediation program

    - Develop action plans for resolving GIS data collection

4. In the next ten years: Reduce the number of high-risk circuits from 11 to 0 by completion of wildfire risk reduction initiatives and improvements to wildfire risk modeling, situational awareness, internal capabilities, and external stakeholder communications and outreach through:

    - 100% completion of the pole loading and assessment remediation program, 100% completion of the route hardening program, significant progress on bare wire replacements on high and moderate risk circuits

    - Implementation of GIS improvements, ignition risk modeling, and other wildfire risk reduction technologies, plans, and initiatives gathered through internal and external lessons learned

A. Wildfire Risk Management Compared to Safety/Reliability

The proposed initiatives in this WMP include several assessed risk drivers that quantifiably produce weighted measurements for scoring. Public safety impact mitigation is a principal and core consideration within operating practices and is emphasized under the prioritization of project and program execution schedules within the WMP.

Leveraging the risk-based decision-making framework, current programmatic targets, and applied lessons learned, BVES has enhanced its existing wildfire mitigation practices for the 2020 Final Action Statement filing and included updated progress status. Each subsection under section 5.3 further details the planning, execution, and cost components in addition to alternative assessments, where applicable, and how proposed practices will mitigate wildfire ignition and consequences. Additional information includes the financial impact of each practice, the time required to establish each practice, and applicable regulatory requirements. Mitigation practices in this section will be reviewed annually to evaluate progress and determine if modification to the WMP is appropriate. Each of the components outlined above have several sub-practices, many of which have already been implemented. Furthermore, the sub-practices align with the objectives outlined above. Supporting Table 5-1 below outlines the response to prompt 5.1B as well as sub-practices and their implementation status as recent as August 2020.

Supporting Table 5-1. Prevention Strategy Program Descriptions & Updates

Mitigation Measure	Description	Status	Lessons Learned	Objective Period	Standard or Augmented Wildfire Operations
Risk Assessment and Mapping					
BVES does not have unique or specialized initiatives under this category for this filing.					

Mitigation Measure	Description	Status	Lessons Learned	Objective Period	Standard or Augmented Wildfire Operations
Grid Design and System Hardening					
Pineknot Substation Upgrades	Technical and safety upgrades to prevent equipment exposure to the vegetation and human contact	Completed	Underground vaults for pad mounted equipment design for cold temperatures required more time than expected.	Completed before the 2020 wildfire season	Standard Operations
Palomino Substation Upgrade	Safety and technical upgrades to Palomino Substation. Converts substation from overhead-type to pad-mounted design with dead front SCADA enabled equipment.	Design completed. Equipment on order. Construction bids being evaluated. On track to complete by end of 2020.		Complete before the 2021 wildfire season	Standard Operations
Energy Storage Project	Construct an energy storage facility within BVES's Service Territory.	Project in concept development stage.		Ongoing over the next three-year planning period.	Standard Operations
Ute Undergrounding	*Transfer SCE Ute Line assets to BVES and undergrounding to mitigate proximity to forested areas.*	*Due to several factors, BVES is no longer proposing the acquisition and subsequent undergrounding of the Ute Line.*	*BVES is no longer considering this initiative*	*N/A*	*Augmented Wildfire Operations*
Fuse Upgrades	Two-year project to replace conventional fuses with current-limiting fuses or electronic programmable (vacuum switch) TripSaver technology.	In progress. 50% complete.	Electronic Fuse TripSavers are long lead items in high demand. It is more efficient to send a TripSaver programming technician out in field with the Line Crew performing the installation work.	Ongoing over the next WMP planning cycle.	Augmented Wildfire Operations
Tree Attachment Removal Project	Five-year project for removal of tree attachments to avoid proximity to fuel and ignition sources.	In progress. 35.5% complete.	Coordination with "Lease Cabin" residents in US Forestry areas can be challenging. BVES will work to account for these anticipated delays for part-time residents in future ongoing efforts.	Ongoing over the next three-year planning period.	Standard Operations
Pole Loading Assessment & Remediation Program	Five-year program to perform an engineering assessment of pole strength to identify pole issues which can result in wildfires.	In progress. 28.9% complete.	A large number of poles failed due to communications lines that were added to the poles, could not be in compliance with minimum distance from power lines and minimum distance off the ground. These lines	Ongoing over the next three-year planning period.	Standard Operations

Mitigation Measure	Description	Status	Lessons Learned	Objective Period	Standard or Augmented Wildfire Operations
			were largely installed over 20 years ago.		
Covered Conductor Replacement Pilot Program	Pilot program to determine the effectiveness of using covered tree wire (molded) conductor to mitigate ignition and to develop work methods for a larger initiative rollout	100% Complete.	The covered conductor proved to be very effective and reasonable to install. Performing the pilot program allowed utility staff to gain invaluable experience in working with the product on a small scale before moving to larger installation projects.	Completed before the 2020 wildfire season.	Augmented Wildfire Operations
Covered Conductor Wrap Pilot Program	*Pilot program using wire wrap for high-risk wires to test feasibility for a larger initiative rollout.*	*The pilot project indicated that the wire wrap product does not meet BVES's specifications, primarily due to ampacity limitations on existing wire and information not being readily available for research and testing. Because of these issues, it was determined that the product was not ready to be deployed in the field.*	*Comprehensive pilot programs provide valuable information related to engineering properties and installation and, as in this case, Protected the utility from investing in a product that turned out to not be effective.*	*No longer applicable.*	*Augmented Wildfire Operations*
Covered Wire Program (34.5 kV sub-transmission)	Covered Wire Program (34.5 kV sub-transmission): All bare wire in Tier 3 to be covered by end of calendar year 2021 and all bare wire in Tier 2 to be covered by end of 2025	Six-year program to replace bare overhead wire with covered wire starting 2020.		Ongoing over the next ten-year planning period.	Augmented Wildfire Operations
Covered Wire Program (4 kV distribution)	Covered Wire Program (4 kV distribution): All bare wire in Tier 2 dense vegetation areas to be covered by end of calendar year 2030. This is approximately 47.5% of current bare 4 kV wire (86 circuit miles).	Ten-year program to replace bare overhead wire with covered wire starting 2021.		Ongoing over the next ten-year planning period.	Augmented Wildfire Operations

Mitigation Measure	Description	Status	Lessons Learned	Objective Period	Standard or Augmented Wildfire Operations
Radford Line Covered Conductor Replacement Project	Radford Line replacement with a covered conductor to mitigate bare wire contact with fuel sources in HFTD Tier 3 area.	Design complete. Construction expected completion date (ECD) October 2021.	US Forest Service permitting process has proven to be longer and more cumbersome than in previous projects.	Ongoing over the next WMP planning cycle.	Augmented Wildfire Operations
Evacuation Route Hardening (Pilot Project)	Hardening of overhead facilities along evacuation routes to prevent facilities from falling into evacuation routes during a wildfire.	Pilot program installed two different technologies to date. Utility staff also conducting product reviews on technologies used by other utilities.	Working with local stakeholders is essential to get acceptance for the change in appearance of hardened overhead facilities.	Ongoing over the next WMP planning cycle.	Augmented Wildfire Operations
Situational Awareness & Forecasting					
GIS-Based Applications (e.g. Outage Management	Implementation of GIS-based systems, outage management systems, and interactive voice response systems, which allow BVES to locate outages and respond to customers more promptly in the case of a wildfire or related emergency.	Completed.		Implemented. Ongoing program	Standard Operations
SCADA Installations	Included in the four-year Grid Automation project.	In progress. ECD December 2022.		Ongoing over the next three-year planning period.	Standard Operations
Web-Based Weather Resources	Monitoring of publicly available weather resources to evaluate forecasted weather and monitor for potential extreme fire conditions to prepare the system during high-risk events.	Completed.		Implemented. Ongoing program	Standard Operations
Situational Awareness Enhancement	BVES plans to install a complete distribution management control center with equipment and applications that provide full information capabilities available to distribution decision makers.	The conceptual planning will start in 2021. A detailed design plan will be developed in 2022 with the actual facility being constructed in 2023.		Ongoing over the next ten-year planning period	Augmented Wildfire Operations
BVES-Owned Weather Stations	Monitoring of BVES-specific weather stations in strategic locations to evaluate forecasted weather and monitor potential extreme fire conditions	90% complete. ECD December 2020.	Permitting and access conditions can lengthen the installation process.	Do not expect to install any further weather station over next three years.	Augmented Wildfire Operations

Mitigation Measure	Description	Status	Lessons Learned	Objective Period	Standard or Augmented Wildfire Operations
iRestore App Implementation	Implementing the iRestore App provides first responders and internal damage assessment teams with tools to quickly document and report facility and equipment problems to Dispatch.	Completed.	Training outside organizations is challenging.	Implemented. Ongoing program	Augmented Wildfire Operations
Weather Forecasting	Analysis of weather feeds to predict, prepare for, and respond to extreme weather events, which may result in wildfires. BVES currently analyzes this in-house but proposes to contract out the services on a weekly basis for additional analysis.	Completed.		Implemented. Ongoing program	Augmented Wildfire Operations
Remote Monitoring	Monitoring of system and assets in remote areas using HD cameras to improve situational awareness and maintenance of key assets.	In progress. ECD April, 2020	Gaining access to certain areas to install cameras requires significant coordination.	Ongoing over the next WMP planning cycle	Augmented Wildfire Operations
Grid Automation	Four-year project to install fiber network and automate the grid to improve system responses to prevent wildfires and enhance safety.	In progress. 25% complete.		Ongoing over the next three-year planning period.	Standard Operations
Asset Management and Inspections					
First Annual On-Ground Inspection (GO 165)	One annual system patrol to inspect the condition of assets to avoid faults, which can result in wildfires.	Completed.		Implemented. Ongoing program	Standard Operations
Second Annual On-Ground Inspection	One additional system patrol by an independent 3rd party in addition to the annual GO 165 patrol to ensure all assets are in good condition to avoid faults, which can result in wildfires.	Completed.	3rd party's first patrol took longer than planned due to ramp up in learning service area and its features.	Implemented. Ongoing program	Augmented Wildfire Operations
Electrical Preventative Maintenance Program	System examination using additional diagnostics on assets to further inspect asset conditions.	Completed.		Implemented. Ongoing program	Standard Operations
LIDAR Inspection	Light Detection and Ranging (LIDAR) inspections of overhead facilities in difficult-to-patrol areas to visualize vegetation growth proximity to the system for targeted maintenance.	Completed.	Initial LiDAR survey results required significant effort by Contractors interpreting the results. Follow-on survey results are ready much sooner due to system model being in place.	Implemented. Ongoing program	Augmented Wildfire Operations
Vegetation Management and Inspections					

Mitigation Measure	Description	Status	Lessons Learned	Objective Period	Standard or Augmented Wildfire Operations
Vegetation Management Plan	Vegetation maintenance program to avoid system encroachment and blow-ins, which may cause wildfires. Vegetation inspections are performed during first and second annual patrols and are included under vegetation management procedures, but not captured separately as a unique initiative.	Completed.		Implemented. Ongoing program	Standard Operations
Forester Consulting Service	Engage full-time utility forester services for the service area	In contracting process. Expect to implement by October 2020.		Ongoing over the next three-year planning period	Augmented Wildfire Operations
Grid Operations and Protocols					
Operational Considerations / Special Work Procedures	Protocols and procedures for staff during high-risk fire conditions.	Completed.		Implemented. Ongoing program	Augmented Wildfire Operations
Automatic Recloser Upgrades	Recloser replacement to reduce electrical sparking, while also helping mitigate power outages and equipment damage.	Completed.	Important to ensure vendor communications equipment compatible with Company network.	Implemented. Ongoing program	Augmented Wildfire Operations
PSPS Protocols	Protocols and procedures to respond to and recover from de-energization events to proactively prevent wildfires.	Completed.		Implemented. Ongoing program	Augmented Wildfire Operations
Wildfire Infrastructure Protection Teams	Roles and responsibilities for staff to respond to protect system infrastructure in case of emergencies.	Completed.		Implemented. Ongoing program	Augmented Wildfire Operations
Data Governance					
GIS Data Collection & Sharing	Geographic Information System (GIS) database on system infrastructure for asset management and planning with key stakeholders. Performing gap analysis to proposed Implement WSD GIS Standards and plan to resolve any gaps by 2021.	In progress.	Having a dedicated GIS Specialist and access to temporary GIS data entry is key to keeping the GIS up to date and useful. BVES is hiring for a new role dedicated to collecting and organizing related information and is investing in GIS training and capability enhancements over the next year.	Ongoing over the next WMP planning cycle.	Augmented Wildfire Operations
Resource Allocation Methodology					
BVES does not have unique or specialized initiatives under this category for this filing.					

Mitigation Measure	Description	Status	Lessons Learned	Objective Period	Standard or Augmented Wildfire Operations
Emergency Planning & Preparedness					
Post Incident Recovery, Restoration & Remediation	Protocols and procedures to respond to and recover from any wildfire or related emergency events.	Completed.		Implemented. Ongoing program	Augmented Wildfire Operations
Emergency Reporting	Protocols and procedures for staff when third parties (e.g. customers) report potential fires, including "arcing, sparks, smoldering, smoke, or fire."	Completed.		Implemented. Ongoing program	Standard Operations
Stakeholder Cooperation and Community Engagement					
Community Engagement	Program to gain input from and inform and educate community on WMP and PSPS Policy through community briefs, advertising, website and social media, newsletters, and other media venues. Engagement includes languages as indicated in D.20-03-004.	Completed.	Significant advertising necessary to encourage attendance at community briefs. Use of Zoom meetings effective during COVID-19 restrictions.	Implemented. Ongoing program	Augmented Wildfire Operations
Local Government, and Agency Briefs	Program to gain input from, and to inform and educate, first responders, local government. and agencies and other stakeholder organizations on WMP and PSPS Policy through community briefs, advertising, website and social media, newsletters, and other media venues. Engagement includes languages as indicated in D.20-03-004.	Completed.	Use of Zoom meetings effective during COVID-19 restrictions.	Implemented. Ongoing program	Augmented Wildfire Operations

Completed or Implemented as Ongoing Program | On Track | Not Started | Reconsidered / Delayed

Source: BVES, 2020

As outlined in the BVES June 5, 2020 "Request for Initial Safety Certification under Public Utilities Code Section 8389", BVES manages a corporate safety program. Included in the program is a dedicated Safety Committee of its Board of Directors composed of members with relevant safety experience. In addition to wildfire responsibilities, the Committee oversees BVES safety events related to the operation and maintenance of its electric utility system. Requirements are outlined in BVES's Safety & Health Policy and BVES's Hazard Inspection Program and the performance of these programs are reviewed annually.[34]

34 https://www.cpuc.ca.gov/uploadedFiles/CPUCWebsite/Content/News_Room/NewsUpdates/2020/BVES%20Inc.%20Safety%20Certification%20Request.pdf

B. Limited Resources

Several vacancies for new and revised staff roles and responsibilities to implement WMP initiatives have occurred. BVES relies on contractors for certain functions, including vegetation management and quality assurance verifications for work performed by BVES personnel. To better align enterprise-wide accountability and responsibility in managing, executing, and tracking WMP activities, new positions have been created and current job descriptions revised to account for these specialized responsibility areas. Additional outsourced support includes contracting with a meteorologist to assist in weather condition monitoring and supporting the aggregation of weather station data along with publicly available resources. Additionally, BVES is seeking to hire an analyst to assist in WMP initiative-specific data collection and management for future WMP filings. BVES has experienced challenges in filling several vacancies. To that situation, the utility expanded its reach to qualified candidates and enhanced its lineman apprenticeship program. BVES had preferred hiring candidates with prior utility experience but will now provide education and training to enhance opportunities for new hires and fill existing and future vacancies.

C. Emerging Innovations and Technologies

BVES will consider the feasibility of implementing alternative technologies, such as wire-break sensing technology, as they become available and cost-effective. BVES is following closely the pilot programs and research and development efforts of other utilities in this area and as the technologies mature, become reliable, and ready for commercial deployment, BVES will pursue them. BVES is currently closely following these technologies:

- **Down Wire Detection Relay Installment Program:** Install fast acting smart switches and detection relays to detect and de-energize down wires.
- **Rapid Earth Fault Current Limiter (REFCL) (or similar technology) Insertion:** Rapid Earth Fault Current Limiter (REFCL) technology that rapidly reduces the power in powerlines when it detects phase-to-earth faults on the electricity network. This technology “works like a large safety switch and reduces the likelihood of a fire starting if a powerline comes in contact with the ground or a tree limb."[35]
- **Install On-line Diagnostic Technology Insertion:** Installs technology that monitors for power line faults and vegetation contact.

BVES’s Grid Automation project, approved in BVES’s General Rate Case Commission Decision 19-08-027 of August 15, 2019, includes the installation of a service area network and communication links over the next two years, which will enhance the capability to support deployment of the above technologies as they become ready for field installation.

[35] Powercor. “Rapid Earth Fault Current Limiter,” https://www.powercor.com.au/safety/bushfire-mitigation-program/rapid-earth-fault-current-limiter/.

5.2 Wildfire Mitigation Plan implementation

Attachment 1 Section 5.2 Wildfire mitigation Plan Implementation

Describe the processes and procedures the electrical corporation will use to do all the following:

- **A. Monitor and audit the implementation of the plan. Include what is being audited, who conducts the audits, what type of data is being collected, and how the data undergoes quality assurance and quality control.**
- **B. Identify any deficiencies in the plan or the plan's implementation and correct those deficiencies.**
- **C. Monitor and audit the effectiveness of inspections, including inspections performed by contractors, carried out under the plan and other applicable statutes and commission rules.**
- **D. For all data that is used to drive wildfire-related decisions, including grid operations, capital allocation, community engagement, and other areas, provide a thorough description of the utility's data architecture and flows. List and describe 1) all dashboards and reports directly or indirectly related to ignition probability and estimated wildfire consequences and reduction, and 2) all available GIS data and products. For each, include metadata and a data dictionary that defines all information about the data. For each, also describe how the utility collects data, including a list of all wildfire-related data elements, where it is stored, how it is accessed, and by whom. Explain processes for QA/QC, cleaning and analyzing, normalizing, and utilizing data to drive internal decisions. Include list of internal data standards and cross-reference for they datasets or map products to which the standards apply.**

A. Monitoring and Auditing the Plan

To monitor the implementation of the WMP, the Utility Manager and Energy Resource Manager provide status updates of all WMP initiatives, including identification of any deficiencies, to the President & Treasurer, during regularly scheduled monthly management meetings. Additionally, the WMP and its program targets are included as a discussion item on the agenda at regularly scheduled Manager and Supervisor Meetings.

In order to audit the implementation of the WMP, the Utility Manager collects and submits a report of the WMP metrics each quarter to the President & Treasurer as well as BVES Managers and Supervisors for quality assurance and control. Based on the results, the Utility Manager makes recommendations to the President & Treasurer on actions to be implemented. Additionally, work orders, contracts, purchase orders, and other expense mechanisms will be subject to BVES internal and external audit procedures.

As an additional review, BVES shall engage one of the CPUC-approved independent evaluators to review and assess BVES's compliance with its WMP upon the list issuing, expected on or around March 2021. This will provide an additional layer of quality assurance and control. Phase 2 of the OIR opened discussion into the structure, focus, and priorities that evaluators will apply to their audits. The process for

procuring an independent evaluator has been described in the WSD Strategic Roadmap but has not yet been formalized at the time of this filing.[36] It is expected that the evaluator will:

- Consult with, and operate under direction of, the WSD and Safety and Enforcement Division (SED).
- Issue a report of each comprehensive review to the Commission/WSD based upon future decisions in R.18-10-007.
- Determine whether the utility submitted a comprehensive WMP with justified mitigation strategies poised to effectively reduce wildfire risk.
- Incorporate review of the supplemental and underlying data responses that will be filed in parallel with the 2020 WMP and presumably future iterations.

B. Identifying and Correcting Deficiencies in the Plan

BVES staff and qualified external stakeholders are encouraged to offer comments or identify potential deficiencies to the Utility Manager as soon as possible when observed. The Utility Manager shall evaluate each reported deficiency and, if the deficiency is determined to be a valid plan deficiency, he shall enter the deficiency into a log with the following information:

- Date the deficiency was discovered
- Description of the deficiency
- Source identifying the deficiency (e.g., Internal Audit)
- Priority based on deficiency severity
- Assign a corrective action including the date of planned completion
- Assign staff responsible for completing the corrective action
- Date corrective action completed

The Utility Manager will review the deficiency log at regularly scheduled Manager and Supervisor Meetings. It should also be noted that the log is not a substitute for tracking specific program deficiencies (e.g., vegetation management discrepancies are tracked via the vegetation management quality control program not in the WMP deficiency log).

C. Monitoring and Auditing the Effectiveness of Equipment and Line Inspections

The Utility Manager will assign qualified internal staff members (e.g., line crew or field supervisors) or engage a third party to review and audit the equipment and line inspections, including inspections performed by contractors, as defined in the WMP after the completion of the first six months of the plan. Ideally, the audit will be conducted between the 6-month and 8-month point of each plan period. The assigned auditor will:

- Review records for the inspection programs,
- Interview staff performing inspections to assess their knowledge of the inspection programs,
- Monitor staff performing inspection activities,
- Ensure compliance with all applicable regulatory requirements (e.g. G.O. 165)
- Review deficiencies noted in the programs,
- Identify systemic issues or problems,
- Note the timeliness of corrective actions,

[36] WSD. " DRAFT Reducing Utility-Related Wildfire Risk: Utility Wildfire Mitigation strategy and Roadmap for the Wildfire Safety Division," https://www.cpuc.ca.gov/uploadedFiles/CPUCWebsite/Content/About_Us/Organization/Divisions/WSD/Report_WildfireMitigationStrategy_WSD_DRAFT_vF.pdf. May 2020.

- Pick a random sample of some completed corrective actions and verify the effectiveness of the corrective actions, and
- Issue a written findings report.

The Utility Manager will review the audit findings and assign corrective action as applicable. A copy of the audit report will be provided to the President & Treasurer.

D. Utility Data Architecture and Flow

The following information refers to and describes BVES's Data Collection for WMP report, filed with the Commission in July 2019. The data architecture and products are discussed in the following tables. BVES does not have its initiatives broken out by cost allocation for associated data resources at this time. Future filings will include this update.

While BVES has sufficient supporting data sources to evaluate their WMP, BVES plans to continue to improve data collection, analysis, and reporting practices surrounding the evaluation of its WMP. Future plans include incorporating a data collection and tracking spreadsheet Data Product Catalog (Catalog) within its collection of data sources to aggregate the elements of various mitigation strategy results. This Catalog will allow for better, more transparent data collection and tracking both internally and externally. Finally, BVES will continue to identify new metrics and data sources to help assess the effectiveness of its implementation of the WMP.

Supporting Table 5-2: Data Product Catalogue for Wildfire Mitigation

Data / Map Products	Software / File Type	Description	Assessment Value	Data Owner	QC / QA Responsible
Fault / Outage Tracking					
Outage Log	Excel Workbook	Collection of incidents detailing the duration, weather conditions, cause, and impacted facilities associated with each outage event.	Fire Incident Data collection is annually updated and provided to the CPUC Safety Enforcement Division (SED) and is an approved reporting method. This supports the underlying data.	Substation Technician	Field Operations Supervisor
Vegetation Management					
Proposed WMP Call Tracker[37]	*Excel Workbook*	*Number of vegetation-related line contacts with vegetation, as reported by customer service calls and verified by roll-out crew.*	*This will aid in determining links to customer-reported vegetation-related service calls and track if mitigation activities are required as a result.*	*Customer Service Specialist*	*Customer Service Supervisor*
Vegetation Inspection Report	Software Database	Captures and records results of the inspection practices and findings for vegetation management.	Inspections of vegetation will help prevent overgrowth or impact from subject trees and can lead to prevention and remediation activities, thus reducing risk. Addressing Priority 1 and 2 remediations and corrective efforts are swift through this collection process.	Wildfire Mitigation & Reliability Engineer	Utility Engineer & Wildfire Mitigation Supervisor
Vegetation Management Report	Software Database	Captures and records results of the activities (trimming, removal) for vegetation management.	Reducing the amount of fuel surrounding the electrical equipment will greatly reduce the likelihood of ignition by tracking growth cycles and subject tree species. Frequency of vegetation mitigation activities would provide a valuable assessment.	Wildfire Mitigation & Reliability Engineer	Utility Engineer & Wildfire Mitigation Supervisor

[37] BVES plans to implement this data collection activity to help support the WMP strategies. The data product will not be present in the Data Dictionary as it is in preliminary stages of refinement.

Data / Map Products	Software / File Type	Description	Assessment Value	Data Owner	QC / QA Responsible
Right of Way (ROW) Map for Vegetation Management	Geographic Information System (GIS) Map Package	Presents, through mapping, results and characteristics of the vegetation surrounding circuits and electrical equipment.	These maps serve to verify data through visualizations to present whether a utility is effectively inspecting vegetation and taking appropriate action to mitigate fire ignition and spread risks.	GIS Specialist	Wildfire Mitigation & Reliability Engineer
Tree-Trimming QC Log	Software Database	Number of successful trimming services and inspections for at-risk vegetation as reported by tree trimming crews by identified circuits.	Tracking of these reports supports the successful implementation of the WMP's elements through quality checks and monthly reports as well as indicate reduced vegetation risk for wildfire initiation.	Field Inspector	Field Operations Supervisor
Infrastructure / Operations					
Expulsion Limiting Fuse Locations	GIS Data Base, Excel Workbook	Tracks and accounts for the replacement of conventional fuses with current-limiting or electronic fuses	The planned fuses are designed to eliminate the release of hot gas and debris and can be measured against current conditions of wildfire risk as each fuse location is completed.	Regulatory Compliance Project Engineer	Utility Engineer & Wildfire Mitigation Supervisor
Substation Inspection Report	Document Records Kept	Provides results of substation inspections.	Frequent inspections or an increase from the baseline of substation inspections illustrates WMP effectiveness by reducing the risks substations pose outside their perimeters.	Substation Technician	Regulatory Compliance Project Engineer
Circuit Map Product	GIS Map	Details the circuits presented in the territory field view.	Verification of infrastructure and related circuits that are within fire threat areas.	GIS Specialist	Wildfire Mitigation & Reliability Engineer
Detailed Circuit Map Product	GIS Data Base	Illustrates the locations of distribution circuits and related electrical equipment within the service territory in detail.	Supporting data to ensure mitigation strategies are addressing the correct circuit or related infrastructure.	GIS Specialist	Wildfire Mitigation & Reliability Engineer

Data / Map Products	Software / File Type	Description	Assessment Value	Data Owner	QC / QA Responsible
Distribution Circuit Map by Substation	GIS Data Base	Illustrates the locations of distribution circuits and related electrical equipment within the service territory.	Supporting data to ensure mitigation strategies are addressing the correct circuit or related infrastructure.	GIS Specialist	Wildfire Mitigation & Reliability Engineer
Pole Replacement Work Order	GIS Data Base, WO Tracking Excel Workbook	Number of poles replaced annually for any reason.	The remediation and removal of aged or damaged poles will ensure structural integrity and reduction of ignition or fire risk.	Regulatory Compliance Project Engineer	Utility Engineer & Wildfire Mitigation Supervisor
Covered Wire Program	GIS Map	Illustrates the phases of the covered conductor project.	Helps align the WMP's progress with the performed activities and overall helps reduce contact and spark risk.	Regulatory Compliance Project Engineer	Utility Engineer & Wildfire Mitigation Supervisor
Covered Wire Pilot Program	GIS Map	Percentage of bare wire replaced and planned represented as a map product.	Allows metric tracking progress of covered conductor project and reduces the risk potential for contacts from objects causing arcs and potential ignitions.	Regulatory Compliance Project Engineer	Utility Engineer & Wildfire Mitigation Supervisor
Field Activity	Document Records Kept	Provides results and conditions of reported or routine roll-out/field activities.	Fire and outage related reports are useful for metric verifications of incident reduction.	Customer Service Specialist	Customer Service Supervisor
Wildfire Ignitions					
Fire Incident Data Report	Excel Workbook	Number of utility-caused wildfires reported to the CPUC SED.	The format is useful for determining unique aspects of wildfire events for targeted mitigation efforts.	Wildfire Mitigation & Reliability Engineer	Utility Engineer & Wildfire Mitigation Supervisor

Data / Map Products	Software / File Type	Description	Assessment Value	Data Owner	QC / QA Responsible
Fire Safety Circuit Matrix	Outage log, Excel Workbook	Number of potential ignition events, as determined by presence of specific criteria.	This matrix demonstrates the fire potential through the collated data attributes from various data product sources. This provides a comprehensive determination of risk drivers for the listed items.	Wildfire Mitigation & Reliability Engineer	Utility Engineer & Wildfire Mitigation Supervisor
Situational Awareness / Weather Conditions					
NFDRS Fire Conditions	Comma-Separated Value (CSV) dataset file	Number of elevated fire risk days and dry days as determined by National Fire Danger Rating System (NFDRS) through an associated scale.	This resource provides meteorological data that signals to utilities when and how to prepare for fire weather conditions. The utilization of this information corresponding with reported activities to prevent/mitigate wildfire threat could be valuable to assess.	Meteorologist Consultant	Wildfire Mitigation & Reliability Engineer
BVES Weather Station Database	Database Software, GIS and .CSV	Live map that presents the server data from BVES's weather stations on a weather system vendor platform.	The information available from the server reads allow a more comprehensive evaluation of the fire risk potential at a given time.	Senior Technical Operations Support Specialist	Wildfire Mitigation & Reliability Engineer
BVES Weather Station Locations Map	GIS Map	Map representing the locations of BVES's weather stations.	These locations provide detailed understanding of unique weather conditions within those microclimates.	GIS Specialist	Wildfire Mitigation & Reliability Engineer
De-Energization					
ESRB-8	Report Filing	Required incident report to the SED addressing utility de-energization events to prevent or minimize wildfire risk as a method of last resort.	Useful to track the cause and procedural follow-through of practices related to de-energization events and customer notification and communication.	Utility Manager	Regulatory Affairs Manager

The details provided in the Data Dictionary capture the descriptions of the corresponding data product to which BVES has access and regularly tracked in addition to established metrics. Evaluation of BVES's metrics and WMP effectiveness is not contingent on the level of granular detail described below. BVES

understands the importance of delivering concise, meaningful data resources to facilitate a thorough review of the WMP and metrics and identifies, consistent with guidelines from the WSD, and provide valuable measurements for determining the success of WMP efforts. The table below describes the related data products used to facilitate the successful execution of this WMP.

Supporting Table 5-3: Data Dictionary

Data Product	Field ID / Metadata	Description
BVES Weather Station Database	Metadata	Server queries include recorded data points for meteorological conditions at each weather station. These include temperature, wind chill, heat index, dew point, density altitude, humidity, wind speeds (over various intervals), wind direction, wind gust (over various intervals), barometer pressure, vapor pressure, dry air pressure, saturated vapor pressure, rain, hail
	Measurements	Averages, rolling averages, peak measurements, rates, time of events, and forecasts of related data collection attributes
Circuit Map Product	Metadata	The base layer includes the service territory area layered with circuit lines and load center shapefiles
Covered Wire Pilot Program	Task #	Header depicts milestones within the pilot program
	Steps	Subset list that itemizes the necessary activities in achieving goals of associated task
	Metrics/Comments	Presents the milestones or goals to be completed, with any additional comments
	Evaluation	Determination if the activity passes internal quality check
Covered Wire Program Phase 1 & Phase 2 Map	Metadata	The map layers include the base layer for service territory, the circuit identified for the phases, and distinct polygons that outline each segment related to its specific phase
	Measurements	The outlined phase segments identified for replacement with covered wire are displayed with the circuit mile length associated with the phase activities
Detailed Circuit Map Product	Metadata	The base layers include distribution with attributes that include electrical equipment locations, meters, and other related data points.
Distribution Circuit Map by Substation	Metadata	Map includes base layer of selected substation service territory by streets/roads and feeders, and lines (overhead and underground and single or three phase). Additional data points reflect vaults, transformers, capacitors, PM-XFR, reclosers, fuses, pedestal, and whether a switch is opened or closed.
ESRB-8 De-Energization Incident Report	Date IOU Contacted Local Community Representatives	The date in which the local communities' representatives were contacted by the utility
	Local Communities Affected by De-Energization Event	List of communities impacted by the de-energization events
	Affected Area	Zone 1, Tier 2, or Tier 3 per General Order (GO) 95, Rule 21.2-D
	Customer Notification	Identification of event and explanation describing the conditions upon which the utility was not able to provide notice at least two hours in advance of de-energization

	Number and Nature of Complaints	Summary of the number of complaints resulting from the de-energization event as well as claims that are filed against the utility
	Restoration Steps	Detailed description of the steps taken to restore power
	Community Assistance Location	Identification of the address of each location during a de-energization event
	Location Description	Description of the building or structure
	Assistance Services	Description of the available services at each location
	Operational Hours	The days and hours that the community assistance location was open and operational
Expulsion Limiting Fuse Locations	Pole #	The associated pole identified in the fuse location
	Location	The address or description of fuse location
	# of Transformers	The number of identified transformers
	Transformer Voltage	The associated voltage of the transformer
	Transformer Brand	Manufacturer of the transformer
	Transformer Serial #	Serial number of the transformer
	Transformer Sizes (kVA)	The determined kVA size rating of the transformer
	Elf Fuse Size	The size of the fuse
Field Activity	Premise	Location of field activity
	Existing Conditions	Current status of the reported incident or necessary activity
	Actions Taken	Description of the actions taken by a field crew
Fire Incident Data Template	Utility Name	Name of reporting utility
	Fire Start Date	The date recorded of the fire incident
	Time	The time associated with the fire incident
	Latitude / Longitude	The exact location of the fire ignition
	Material at Origin	Determination of vegetation is present at the location
	Land Use at Origin	Description of urban or rural interface at the origin of the fire incident
	Fire Size	The size, in acres, of the recorded fire incident at the time of extinguish
	Suppressed by	The determination of how the fire was suppressed
	Suppressing Agency	The agency or involved parties that suppressed the fire
	Facility Identification	Facilities recorded directly at the source
	Other Companies	List of affected companies' equipment involved or as part of the fire incident

	Voltage (Volts)	Voltage of the affected electrical equipment
	Equipment Involved with Ignition	The utility's equipment involved with the ignition
	Type	The determination of the equipment type
	Outage "Was There an Outage"	Indication of a resulting outage from the fire ignition
	Date	Date of the outage
	Time	Time of the outage
	Field Observations "Suspected Initiating Event"	Determination of the cause of ignition
	Equipment / Facility Failure	Determination of any electrical equipment that failed
	Contact from Object	Determination of third-party contact with the equipment if the cause of the incident
	Facility Contacted	The determination of the facility impacted if part of the cause of the ignition
	Contributing Factor	Determination of any contributing factors to the ignition cause
	Notes	Additional comments regarding the incident
Fire Safety Circuit Matrix	Circuit	List of circuits located in High Fire-Threat Districts, which determines the scope of data collection and presentation within the matrix
	Voltage	Kilovolt (kV) listing for each identified circuit
	Fire Threat Tier	Acknowledgment of the fire threat Zone/Tier in which the circuit resides
	# of Poles	The number of poles within the identified circuit segments
	# of Tree Attachments	The number of tree attachments cataloged with the identified circuit segments
	UG Circuit Miles	The length of undergrounded circuit miles respective to the listed circuit
	UG Circuit Miles	The length of undergrounded circuit miles respective to the listed circuit
	Substation	Associated substation, if any, by circuit
	De-Energize in Unfavorable Condition	This column provides the allowance of which lines are permitted to be de-energized if fire potential threat exists
	Exacter Survey	Determined if exacter survey process has started, is in progress, or is completed, by circuit
	Pole Loading	Based on parameters of pole loading, GO 95, and age of the pole (70yrs.$^{+}$), this column tracks the status of pole loading, intrusive testing, or pole replacement needs by circuit
	Tree Attachment Removal Program	Determines the status of tree attachment removal activities by circuit
	Tree Wire	The status of investigation determining the need for tree wire by circuit
	Covered Wire	The status, by circuit, of covered conductor implementation and evaluation
	Replace Expulsion Fuses	The status of evaluation of where fuse replacements from convention to current-limiting fuses are warranted, by circuit

	IntelliRupters Pulsing Auto Reclosers	The status of determining whether fault interrupters are warranted on the identified circuit
	System Instrumentation	The status, by circuit, of investigations of where further instrumentation is warranted
	Switch Automation Opportunities	The status, by circuit, of evaluated opportunities for switch automation that enhance fire safety
	Branch Line Fusing Options	The status of investigation, by circuit, of additional related fusing opportunities that enhance fire safety
	Evaluate Protective Settings	The status of evaluation, by circuit, for protective setting determinations for breakers, switches, reclosers, fuse trip savers, fuses, and other trip devices
	Consider Partial Undergrounding	The status of investigation, by circuit, of additional related fusing options
NFDRS Fire Conditions / Threat Days	GACC	The region (state) in which the data is being populated
	PSA	The region within the state for which the dryness level forecast is being made
	Published Timestamp (UTC)	The date and time that the data is posted
	Forecast Date	The date forecasted for Dryness levels
	Dryness	The level indicated with the associated forecast of dryness from 1 - 5
	Trigger	Determines if a response is required as a result of the Dryness rank
	Risk	The highest risk level out of the various daily forecasts from 1 - 5, shown as the day's risk projection
	Dryness / Risk Key	Little or no risk/Green = 1, Low Risk-Dry/Yellow = 2, Moderate Risk-Very Dry/Brown = 3, High Risk-Windy & Dry/Orange = 4, High Risk-Lightning/Red = 5
	Days of Risk	Days of risk based upon the level are captured monthly for BVES service territory

Outage Log	Type	Determination of "Planned" versus "Unplanned" outages that take place within the annual dataset
	Outage Date	Date of outage incident recorded
	Circuit	Name of circuit impacted
	Substation	Name of substation associated with circuit and location
	Location	Address of the fault / trip (general outage) event
	Regional Area	Associated geographic region
	Number of Customers Out	Count of customers impacted by the outage event
	Outage Duration	Represented in minutes and Customer Minutes as an account of aggregated outage time the customers experience in total
	Event SAIDI	System Average Interruption Duration Index rating
	Cause/Comments	Determined cause of outage from supporting ListSets sheet descriptions in line with patrol / inspection results
	Blown Fuse Type	Reports applicable blown fuses and their types
	Work Order	Identification of required mitigations in the form of a work order as a result of the outage event
	GO 166 Report	Indication of whether a GO 166 report was made as a result of the outage
	Cause Category	Indication of the standalone cause of the outage event as stated in the field report
	NFDRS Rating	Color representation from NFDRS of fire weather conditions recorded at the time of the outage
	2019 ResultsToDate	Collated measurements of reliability ratings based on outage report base data
Right of Way Map for Vegetation Management Map Package	Metadata	Data points represent activities related to vegetation management and inspection based upon the parameters of the ROW in view
Substation Inspection Report	Appearance	Description of surroundings
	Metering	Description of the conditions of the equipment
	Transformers / Voltage Regulators / Recloser & Auto Switches	Parameters specific to determine operational status
	Other	Additional items for inspection
	Date	Date of the performed inspection

Tree Trimming QC Module	Record Number	ID of the Tree Trimming request
	Address	Location of the tree to be trimmed. Usually includes the pole number nearest to the tree
	Infract or Type	The type of job to be performed, depends on the type of tree and the rating of the conductors
	Complete	Flag to identify if the job is complete.
	Comments	Additional comments regarding the job
	Time Frame	General time frame by when the job should be complete
	Date Complete	Date When the job is complete
	Due Date (If urgent)	Date by which the job needs to be completed. Only provided if the job is urgent.
	Completed by	Name of the person who completed the job
	Reason	Description of the completed job
Vegetation Management Report	Corrective / Preventative	Each form must indicate whether the vegetation management work was corrective or preventative
	Due At:	Data by which the vegetation management work is to be performed
	Crew Size:	Number of personnel to engage in the work
	Scheduled Work:	Date and time of the scheduled work
	Pole Number:	Location marker by the adjacent pole number
	Line Number:	The associated line nearby the work performed
	Underground Device #:	If applicable, the underground device related to the vegetation management activity
	Photo Before:	Photo of the vegetation prior to corrective/preventative action
	Photo After:	Photo of the vegetation after the corrective/preventative action
	Comments:	Additional comments related to the scope of work
Vegetation Inspection Report	Tree Species:	Toggle options that list the classification of tree based upon the service territory ecology
	Density of Vegetation:	The level of vegetation density determined from the inspection
	Height of Vegetation:	Measurement of the identified vegetation species
	Type of Permission:	Determination of permission of utility to remedy vegetation concerns
	Proof of Permission:	Supporting documents demonstrating permissions
	Trim Info	Check boxes for information related to the status of the tree and nearby lines
	Amount Trimmed (FTS):	The reported amount of vegetation trimmed
	Width:	Diameter of vegetation
	Work Info:	Check boxes for work completion items
	Date of Visit	Recorded time and date of inspection
	Priority:	Determination of the rank of priority

	Suggested Return Date:	Date determined for return routine inspection or as part of a corrective action, depending on the priority level
	Permits	Check boxes for permits in hand related to selected agencies and jurisdictions
	Inaccessible / Special Equipment Needed	Yes / No with additional comments
	Comments:	Additional comments on the scope of work
Weather Stations Map	Metadata	The map base layer includes the terrain of the service territory with layers added that include the latitude/longitude markers for each weather station

5.3 Detailed Wildfire Mitigation Programs

The following section describes initiatives, proposed and existing, aligned to the following categories:

1. Risk assessment and mapping;
2. Situational awareness and forecasting;
3. Grid design and system hardening;
4. Asset management and inspections;
5. Vegetation management and inspections;
6. Grid operations and protocols;
7. Data governance;
8. Resource allocation methodology;
9. Emergency planning and preparedness;
10. Stakeholder cooperation and community engagement; and
11. Definitions of initiative activities by category.

5.3.1 Risk Assessment and Mapping

Table 21 below presents program details related to risk assessment and mapping activities. This information is also included in the accompanying *Attachment 1* workbook.

Table 21. Risk Assessment & Mapping

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
1. A summarized risk map showing the overall ignition probability	2019 plan	Bear Valley Electric Service has implemented the CPUC Fire-Threat Map adopted in D17-12-024 December 14, 2017 throughout its service territory. This map shows the CPUC-designated fire hazard zones within BVES's service territory, which quantify specific geography that could be subject to elevated fire risk under historically viable fire weather conditions. The utility has also identified "at-risk" areas within its service territory based on the type of distribution facilities (overhead bare conductors, high voltage, etc.), tree and vegetation density, available dry fuel, and other factors that make certain locations more vulnerable to wildfire risk. The "at-risk" line sections are shown and further outlined in BVES's WMP submission. BVES's wildfire mapping efforts are foundational to determining and executing														
	2019 actual															
	2020															
	2021															

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
and estimated wildfire consequence along electric lines and equipment	2022 2020-2022 plan total	priorities among the BVES risk mitigation efforts, as well as its day-to-day operations. BVES employs the risk designations to inform inspection, vegetation management, correction timeframes, and prioritized hardening efforts. Wildfire risk mapping is foundational to prioritizing efforts for a variety of activities undertaken throughout the business. Bear Valley Electric Service does not have a summarized risk map showing the overall ignition probability and estimated wildfire consequence along electric lines and equipment. Within the next 3 years, BVES will endeavor to develop a summarized risk map showing the overall ignition probability and estimated wildfire consequence along electric lines and equipment There are no specifically designated expenses, risk reductions, or any of the other column headings above associated with this initiative. Within the next 3 years, BVES will develop a cost estimate to develop the risk map and present the estimated costs as part of its WMP filing.														
2. Climate-driven risk map and modelling based on various relevant weather scenarios	2019 plan 2019 actual 2020 2021 2022 2020-2022 plan total	Bear Valley Electric Service has implemented the CPUC Fire-Threat Map adopted in D17-12-024 December 14, 2017 throughout its service territory. This map shows the CPUC-designated fire hazard zone tiers within BVES's service territory, which quantify specific geography that could be subject to elevated fire risk under historically viable fire weather conditions. The utility has also identified seven sections of "at-risk" areas within its service territory based on the type of distribution facilities (overhead bare conductors, high voltage, etc.), tree and vegetation density, available dry fuel, and other factors that make certain locations more vulnerable to wildfire risk. The “at-risk” line sections are shown and further detailed in BVES’s WMP submission. BVES’s wildfire mapping efforts are foundational to determining and executing on priorities among BVES’s risk mitigation efforts as well as its day-to-day operations. BVES employs tiered risk designations to inform inspection, vegetation management, correction timeframes, and prioritized hardening efforts. Wildfire risk mapping is foundational to prioritizing efforts for a variety of activities undertaken throughout the business. Bear Valley Electric Service does not have a climate-driven risk map and modelling based on various relevant weather scenarios. Within the next 3 years, BVES will endeavor to develop a climate-driven risk map and modelling based on various relevant weather scenarios. There are no specifically designated expenses, risk reductions, or any of the other column headings above associated with this initiative. Within the next 3 years, BVES will develop a cost estimate to develop the model and present the estimated costs as part of its WMP filing.														
3. Ignition probability mapping showing the probability of ignition along the electric lines and equipment	2019 plan 2019 actual 2020 2021 2022 2020-2022 plan total	Bear Valley Electric Service has implemented the CPUC Fire-Threat Map adopted in D17-12-024 December 14, 2017 throughout its service territory. This map shows the CPUC-designated fire hazard zones within BVES's service territory, which quantify specific geography that could be subject to elevated fire risk under historically viable fire weather conditions. The utility has also identified seven sections of "at-risk" areas within its service territory based on the type of distribution facilities (overhead bare conductors, high voltage, etc.), tree and vegetation density, available dry fuel, and other factors that make certain locations more vulnerable to wildfire risk. The “at-risk” line sections are shown and further outlined in BVES’s WMP submission. BVES's wildfire mapping efforts are foundational to determining and executing on priorities among BVES’s risk mitigation efforts as well as its day-to-day operations. BVES employs risk designations to inform inspection, vegetation management, correction timeframes, and prioritized hardening efforts. Wildfire risk mapping is foundational to prioritizing efforts for a variety of activities undertaken throughout the business. Bear Valley Electric Service does not have an ignition probability mapping showing the probability of ignition along the electric lines and equipment. Within the next 3 years, BVES will endeavor to														

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
		develop an ignition probability mapping showing the probability of ignition along the electric lines and equipment. There are no specifically designated expenses, risk reductions, or any of the other column headings above associated with this initiative. Within the next 3 years, BVES will develop a cost estimate to develop the model and present the estimated costs as part of the 2021 WMP filing.														
4. Initiative mapping and estimation of wildfire and PSPS risk-reduction impact	2019 plan 2019 actual 2020 2021 2022 2020-2022 plan total	Bear Valley Electric Service has implemented the CPUC Fire-Threat Map adopted in D17-12-024 December 14, 2017 throughout its service territory. This map shows the CPUC-designated fire hazard zones within BVES's service territory, which quantify specific geography that could be subject to elevated fire risk under historically viable fire weather conditions. The utility has also identified seven sections of "at-risk" areas within its service territory based on the type of distribution facilities (overhead bare conductors, high voltage, etc.), tree and vegetation density, available dry fuel, and other factors that make certain locations more vulnerable to wildfire risk. The “at-risk” line sections are shown and further outlined in BVES’s WMP submission. BVES's wildfire mapping efforts are foundational to determining and executing on priorities among BVES’s risk mitigation efforts as well as its day-to-day operations. BVES employs risk designations to inform inspection, vegetation management, correction timeframes, and prioritized hardening efforts. Wildfire risk mapping is foundational to prioritizing efforts for a variety of activities undertaken throughout the business. Bear Valley Electric Service does not have an initiative mapping and estimation of wildfire and PSPS risk-reduction impact. Within the next 3 years, BVES will endeavor to develop an Initiative “mapping and estimation of wildfire and PSPS risk-reduction impact.” There are no specifically designated expenses, risk reductions, or any of the other column headings above associated with this initiative. Within the next 3 years, BVES will develop a cost estimate to develop the model and present the estimated costs as part of its WMP filing.														
5. Match drop simulations showing the potential wildfire consequence of ignitions that occur along the electric lines and equipment	2019 plan 2019 actual 2020 2021 2022 2020-2022 plan total	Bear Valley Electric Service does not, at this time, have a specific wildfire mitigation risk assessment and mapping initiative focused on conducting match drop simulations showing the potential wildfire consequence of ignitions that occur along BVES’s electric lines and equipment. BVES’s subject matter expert evaluates the frequency of potential ignition events versus a set of impact categories (reliability, compliance, quality of service, safety and environmental) to develop total risk impact and scores. There are no specifically designated expenses, risk reductions, or any of the other column headings above associated with this initiative. Within the next 3 years, BVES will develop a cost estimate to develop the model and present the estimated costs as part of its WMP filing.														
6. Weather-driven risk map and modelling based on various relevant	2019 plan 2019 actual 2020 2021	Bear Valley Electric Service has implemented the CPUC Fire-Threat Map adopted in D17-12-024 December 14, 2017 throughout its service territory. This map shows the CPUC-designated fire hazard zones tiers within BVES's service territory, which quantify specific geography that could be subject to elevated fire risk under historically viable fire weather conditions. The utility has also identified seven sections of "at-risk" areas within its service territory based on the type of distribution facilities (overhead bare conductors, high voltage, etc.), tree and vegetation density, available dry fuel, and other factors that make certain locations more vulnerable to wildfire risk. The “at-risk” line sections are shown and further outlined in BVES’s WMP submission. BVES's wildfire mapping efforts are foundational to														

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
weather scenarios	2022	determining and executing on priorities among BVES's risk mitigation efforts as well as its day-to-day operations. BVES employs risk designations to inform inspection, vegetation management, correction timeframes, and prioritized hardening efforts. Wildfire risk mapping is foundational to prioritizing efforts for a variety of activities undertaken throughout the business. Bear Valley Electric Service does not have a weather driven risk map and model based on various relevant weather scenarios. BVES subject matter expert evaluates the frequency of potential ignition events versus a set of impact categories (reliability, compliance, quality of service, safety and environmental) to develop total risk impact and scores. Within the next 3 years, BVES will endeavor to develop a weather-driven risk map and modelling based on various relevant weather scenarios. There are no specifically designated expenses, risk reductions, or any of the other column headings above associated with this initiative. Within the next 3 years, BVES will develop a cost estimate to develop the model and present the estimated costs as part of its WMP filing.														
	2020-2022 plan total															
7. Other / not listed	2019 plan	Bear Valley Electric Services does not have any risk assessment and mapping initiatives other than those provided above at this time. Within the next 3 years, BVES will develop a cost estimate to develop the model and present the estimated costs as part of its WMP filing.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															

5.3.2 Situational Awareness and Forecasting

Plan: The overall goal of situational awareness is to facilitate collaborative planning, assist in achieving shared situational awareness, and improve decision-making, particularly for wildfire mitigation. As discussed earlier, BVES is a small electric utility with a lean, dedicated staff. BVES staff is optimized to work during normal working hours, with adequate resources dedicated to afterhours. BVES outlined several critical operations, listed below.

- **Information Requirements & Methods**: Critical information to BVES's wildfire mitigation decision making include weather conditions (forecasted and actual), system line-up, and available resources. This information is best gathered from devices and sensors in the field and on equipment. Additionally, online feeds and websites, such as the NFDRS rating system information and weather feeds, provide highly useful information resources to BVES's situational awareness enhancements.

- **Roles & Responsibilities**: Key Field Operations staff must have real time access to situational awareness information. These staff include the Utility Manager, Field Operations Supervisor, Utility Engineer and Wildfire Mitigation Supervisor, and Service Crew/Dutyman. Additionally, the Customer Service Supervisor must be included to ensure customers and key stakeholders are informed as applicable.

- **Methods of Sharing Information**: The information is optimally shared through network-connected devices such as operations displays at BVES, desktop computers, laptops, and mobile devices out in the field. Access to situational awareness products on mobile devices is particularly critical to achieving 24/7 situational awareness.

- **Implementation of Technologies to Communicate and Manage Information**: Technologies that will aid in communicating situational awareness information include supervisory control and data acquisition (SCADA) (including incorporation of weather station data into SCADA), internet, intranet, social media, and other networked solutions.

To further enhance its situational monitoring, BVES outlined a number of resources that contribute to its information base and facilitate sharing. These resources include web-based weather resources, BVES-owned weather stations, weather forecasting, distribution system SCADA, and GIS-based applications, such as its Outage Management System (OMS). BVES also implemented remote monitoring via cameras.

- **SCADA:** BVES has a very basic SCADA system with few controls for the distribution system and very limited monitoring capability. Through its Grid Automation Project, BVES intends to establish a service area network, build out its SCADA software and historian capabilities, connect substations and field switches, and install circuit metering and monitoring devices such as weather stations.

- **GIS Based Applications:** BVES implemented an ESRI-based GIS system and runs several applications to improve situational awareness. Recently, BVES installed an OMS and an Interactive Voice Response (IVR) system. BVES intends to continue to build upon this capability by implementing mobile workforce and dispatching applications.

- **Web-Based Weather Resources**: BVES monitors several web-based weather resources to evaluate forecasted weather and monitor for potential extreme fire conditions. The weather resources monitored by BVES are products produced by the National Weather Service, local weather forecasts from local media, and the NFDRS 7-day significant fire potential product. The NFDRS is monitored at least daily by Field Operations. The utility also monitors the likelihood of dry lightning occurrence as it is the type most likely to cause wildfires. This section details how BVES monitors conditions and how it will enhance this monitoring.

Currently, BVES monitors weather conditions using local weather services and 18 BVES-installed weather stations. It also conducts regular patrols of its system to monitor conditions in real-time. More specific information about actions taken during certain conditions are expressed in this WMP.

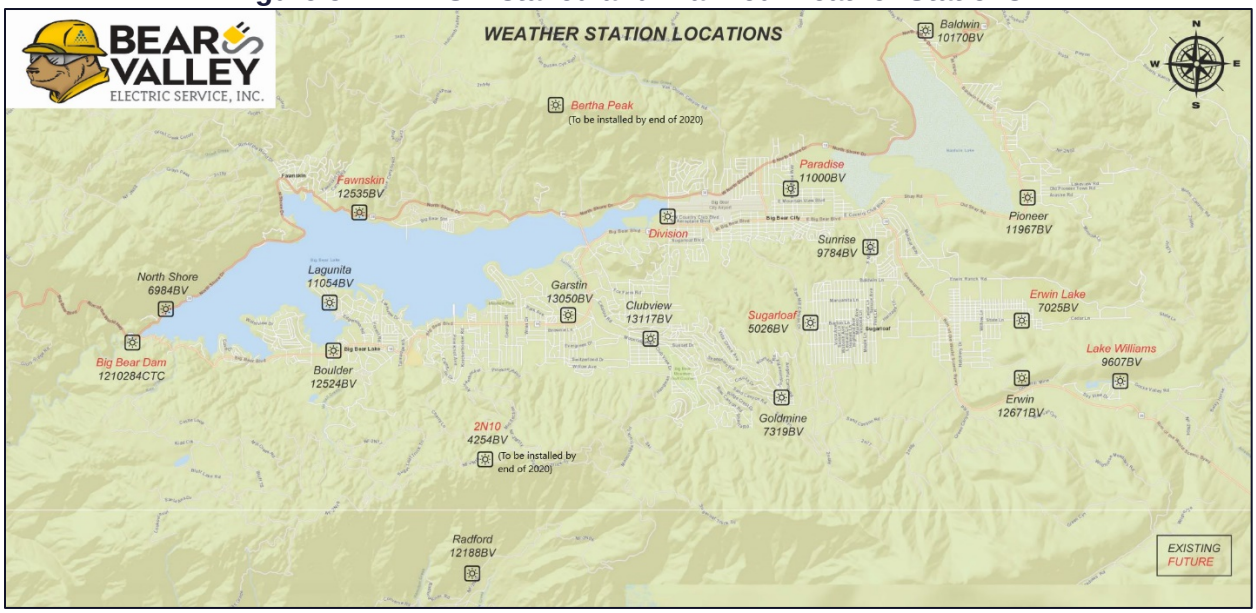
BVES-Owned Weather Stations: Because weather stations are identified as wildfire risk-mitigation strategies, BVES installed 18 Orion Weather Stations and plans on installing an additional 2 stations by the end of 2020 to further enhance actual weather monitoring at its facilities. These stations include temperature sensors, relative humidity sensors, digital barometers, ultrasonic wind direction and speed sensors, and impact rain sensors. These sensors communicate with the BVES system over wireless cellular communications to help BVES obtain service territory-specific data and information at one-minute interval recordings. In addition to adding 2 weather stations to the system, BVES intends to integrate the output of these weather stations to SCADA to concentrate critical information in one primary display and

to provide alarm and notification capability. BVES assesses that the 20 weather stations will provide sufficient coverage of its service area. The table below provides a comparison of weather station density.

Supporting Table 5-4. BVES Weather Station Count Compared to IOUs

	Weather Stations	Service Area (square miles)	Weather Station per Square Mile
BVES	18	32	0.563
SCE	480	50000	0.010
SDG&E	191	4100	0.047
PG&E	600	70000	0.009

Figure 5-2. BVES Installed and Planned Weather Stations



- **Weather Forecasting**: BVES does not have a dedicated meteorologist on staff. However, BVES contracted with a dedicated meteorolgist to provide at least weekly focused weather forecasts tailored to BVES's 32 square mile service area with an evaluation of fire threat. The meteorolgist is able to obtain analysis of weather data during, before, and after certain extreme weather events. During elevated fire threat and storm conditions, the meteorolgist provides forecasts at least daily. During a PSPS event, which BVES has not yet expereinced, BVES's contracted meteorolgist would provide near continuous forecasting. BVES also relies on its Field Operations staff to interpret web-based weather feeds along with the raw data from its weather stations. This arrangement has proven to be very effective and has become an essential part of BVES's operational planning routine.
- **Remote Monitoring (via Camera):** In partnership with UCSD, CAL FIRE, and Big Bear Fire Department, BVES is installing an ALERT Wildfire HD Camera System to monitor the service area and surrounding areas for fire and immediately alert fire fighting assets. HD camera locations were selected at a joint meeting with UCSD, CAL FIRE, Big Bear Fire Department and

BVES. Cameras are currently installed at the top of Bear Mountain, Snow Summit, and "Deadman's Ridge" (Lake Williams). BVES is coordinating the installation of cameras at the other two locations (Bertha Peak and KBHR antenna).

- Because the BVES service territory is very small, roughly 32 square miles, situational awareness over a broader view shed for oncoming threats into our service territory is necessary as can be seen through the www.alertwildfire.org displays. BVES was collaborative and purposeful in locating its cameras, which are sufficient and ideally situated to surveille a broader distance to identify oncoming threats from surrounding forest area. During high threat conditions, BVES deploys personnel to supplement camera information with observations by qualified personnel.
- **Grid Automation:** Over the next three years, BVES plans to continue to implement grid automation into its system to include installing a fiber optic network throughout the service area, implementing highly capable SCADA software, automating substations and key field switches, and instrumenting the system for critical elements of information. Grid automation will enhance operational efficiency, safety, and wildfire prevention tactics by allowing remote monitoring and real-time fault detection.
- **Situation Awareness Enhancement:** BVES plans to install a complete Distribution Management Control Center with the following equipment and applications that provide full information capabilities available to distribution decision makers relevant to the following functional areas: (1) Energy Resources (2) T&D Assets (3) SCADA, Outage Management System, GIS & Other Applications (4) Weather Information (5) HD Cameras (6) Media Access (Internet, BVES Website & Social Media, Local Radio, TV, etc.); (7) Communications Equipment; and (8) Dispatch Services. The conceptual planning for such a facility will start in 2021. A detailed design plan will be developed in 2022 with the facility anticipated to be constructed in 2023 to coincide with the SCADA and Grid Automation efforts being completed as the Distribution Management Control Center facility comes online.
- **Implement iRestore APP:** BVES implemented the iRestore APP, which provides First Responders (Big Bear Fire Department and San Bernardino Sheriff's Department – Big Bear Lake Detachment) and BVES's internal Damage Assessment Teams a tool to quickly document and report problems along its distribution system and facilities to Dispatch.

Execution: BVES has already established some of these techniques, including implementing web-based weather monitoring and BVES-owned weather stations. It currently monitors these systems on both a weekly and daily basis to determine how best to optimize its systems. Execution of weather forecasting, remote monitoring, and grid automation are longer duration plans that began in 2019 and will continue through 2022. Future iterations of the WMP will also include BVES's method of determining spend and deployment across projects, a description of how BVES will conduct audits and other quality control, and how BVES plans to demonstrate effectiveness of projects over time.

Expenses: BVES has already implemented several of these situational awareness techniques, so certain costs have already been approved through previous rate cases. Other projects, such as Grid Automation are covered as part of BVES's normal operations and such costs are recovered through the GRC.

BVES installed ten weather stations in 2018 using ongoing capital funds and were not installed as part of the 2019 WMP. The 2019 WMP proposed to install ten more weather stations for a total incremental cost estimate of $122,000. To date, eight have been installed and two more will be installed by the end of 2020. The total expended to date is $103,136, which includes the procurement of 10 weather stations, connectivity equipment, structural support for all 10 installations and the labor to install the eight weather stations in 2020. BVES plans to install two more weather stations in 2020 and does not plan to install any additional weather stations at this time in the 2021 WMP.

Additionally, the utility expensed $67,860 for iRestore from ongoing capital improvement projects included in its most recent GRC. The utility also estimates the HD Cameras total incremental expense of $500,000 (capital) over the project's 2-year execution period, or $250,000 per year. The HD Camera costs are not currently included in BVES's General Rate Case Commission Decision 19-08-027 of August 15, 2019 and therefore are incremental. BVES intends to book incremental costs related to initiatives approved in this WMP in BVES's existing Wildfire Mitigation Plan Implementation Memorandum Account.

Internal Review and Quality Check: As stated, BVES appreciates the collaboration involved in selecting coverage and number of deployments relative to cameras and weather stations. BVES currently circulates publicly available weather and meteorological conditions and data, which is deemed highly reliable in nature and maintains access to utility-owned cameras and weather stations for granular-level condition assessment. With the direct collection and aggregation of available BVES-owned assets and dedicated meteorologist, BVES intends to ensure up-to-date information is relayed to crews and contractors prior to and during field work. With multiple resources from which this data is gathered, BVES compares current conditions prior to issuing department reports or fire weather condition forecasts.

Risk Reduction Efficiency: Projects presented under situational awareness and forecasting are paramount in having the ability to monitor BVES's 32-square mile service area. The NFDRS provides useful information for fuel, moisture, and related fire weather conditions. However, the reports are presented at the county level. With San Bernardino County existing as the largest in the state, and continental U.S., actionable data is not always readily apparent from the reports because BVES cannot always equate lowland conditions to the mountainous terrain with unique microclimates.[38] Grid automation will enable better information delivery for faster dissemination when fire weather conditions are captured from deployed assets and will allow for rapid fault detection and reduce need for manual operations. This results in a higher risk spend efficiency in accounting for the full life of the cameras and weather stations and added value over time as data governance and architecture practices expand over the WMP planning period. The iRestore Responder Application will provide emergency and remedial response needs at the ground-level allowing public safety partners, utility personnel, and contractors to coordinate and execute emergent corrections and quickly identify at-risk events to bolster near miss tracking in the future.

Alternative Approaches: BVES could continue to utilize public resources for detailed condition monitoring as an alternative approach to these improvements, though granular detail may not be available in all cases and fluctuations of weather conditions may change rapidly impacting working conditions or potential emergency events. This has been an accepted and appropriate approach for BVES ahead of these integrations described above. However, in order to move toward collaboration and community efforts to share situational awareness information, BVES must modernize its system capabilities to better contribute to and maintain detailed awareness of its service territory at all times.

[38] San Bernardino County includes an area of 20,105 square miles and is the largest county in the contiguous U.S. by square mile coverage.

Table 22 below presents program details related situational awareness and forecasting activities. This information is also included in the accompanying *Attachment 1* workbook.

Table 22. Situational Awareness and Forecasting

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
1. Advanced weather monitoring and weather stations	2019 plan	$ 122,000	$ 122,000	$ -	N/A - this is a System Wide Initiative	N/A - this is a System Wide Initiative	Dry conditions, high wind speeds, weather that could increase ignition risk (e.g. lightning)	1,024,621.77	8.40	Wildfire-Significant Loss of Property	Existing	GRC	WMP Implementation Memorandum Account and GRC	In compliance	GO95	Installs additional 10 weather stations throughout the BVES service area bringing the total to 20 weather stations. Allows BVES to prepare response ahead of time and take precautionary and/or advanced action. Also, allows BVES to validate actual conditions in the field such as before and after PSPS events.[4]
	2019 actual	$ 103,136	$ 103,136	$ -												
	2020	$ -	$ -	$ -												
	2021	$ -	$ -	$ -												
	2022	$ -	$ -	$ -												
	2020-2022 plan total	$ -	$ -	$ -												

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
2. Continuous monitoring sensors	2019 plan	$ -	$ -	$ -	N/A - this is a System Wide Initiative	N/A - this is a System Wide Initiative	Contact from object, all types of equipment /facility failure, wire-to-wire contact/ contamination	994,607	3.98	Wildfire-Significant Loss of Property	New	N/A - this is a new initiative	WMP Memorandum Account	Exceeding compliance	GO95	Installs ALERT Wildfire HD Cameras throughout the service area allowing rapid detection and direction of first responders to any fires.[6]
	2019 actual	$ -	$ -													
	2020	$ 250,000	$ 250,000	$ -												
	2021	$ 250,000	$ 250,000	$ -												
	2022	$ -	$ -	$ -												
	2020-2022 plan total	$ 500,000	$ 500,000	$ -												
3. Fault indicators for detecting faults on electric lines and equipment	BVES is monitoring Down wire Detection Technology and once the technology is ready for field use, BVES will develop a Down Wire Detection Installment Program in future WMPs.															

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
4. Forecast of a fire risk index, fire potential index, or similar	2019 plan	Bear Valley Electric Service has not established a plan to develop a forecast of a fire risk index, fire potential index, or similar beyond that which it has communicated in its 2019 and 2020 WMPs at this time. BVES Subject Matter Expert evaluates the frequency of potential ignition events versus a set of impact categories (reliability, compliance, quality of service, safety and environmental) to develop total risk impact and scores. In addition, no specific incremental spend has been identified for this initiative. BVES does not have a proprietary model or methodology for evaluating the potential impact of ignitions.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															
5. Personnel monitoring areas of electric lines and equipment in elevated fire risk conditions	2019 plan	BVES does not have a specific wildfire mitigation situational awareness and forecasting initiative focused on personnel monitoring areas of electric lines and equipment in elevated fire risk conditions. The initiatives BVES has for situational awareness and forecasting initiatives are described in Table 22 as well as the asset management and inspection initiatives described in Table 24. During high fire threat weather that could lead to PSPS events, BVES deploys crews to monitor conditions in the field, in the high threat areas.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
6. Weather forecasting and estimating impacts on electric lines and equipment	2019 plan	$ 45,000		$ 45,000	N/A - this is a System Wide Initiative	N/A - this is a System Wide Initiative	Contact from object, all types of equipment/facility failure, wire-to-wire contact/contamination	1,022,629	14.52	Contact from object, all types of equipment/facility failure, wire-to-wire contact/contamination	New	N/A - this is a new initiative	WMP Memorandum Account	Exceeding compliance	ESRB-8	Weather Consulting Services. Provides BVES staff service area specific forecasts to better understand fire threat weather as well as storm conditions that may affect service. Allows BVES to prepare response ahead of time and take precautionary and/or avoidance action. Est. $45,000 O&M annually.[5]
	2019 actual	$ 19,000	$ -	$ 19,000												
	2020	$ 45,000	$ -	$ 45,000												
	2021	$ 45,000	$ -	$ 45,000												
	2022	$ 45,000	$ -	$ 45,000												
	2020-2022 plan total	$ 135,000	$ -	$ 135,000												
7. Other / not listed	2019 plan	$ -	$ -	$ -	N/A - this is a System Wide Initiative	N/A - this is a System Wide Initiative	Dry conditions, high wind speeds, inclement weather that could increase ignition risk (e.g. lightning)	1,143,068	3.34	Wildfire-Significant Loss of Property.	New	N/A - this is a new initiative	WMP Memorandum Account	Exceeding compliance	ESRB-8	Project. Installs complete Distribution Management Control Center with the following equipment and applications that provide full information capabilities available to Distribution decision makers relevant to the following functional

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
	2019 actual	$ -	$ -	$ -												areas: (1) Energy Resources (2) T&D Assets (3) SCADA, Outage Management System & GIS Other Applications (4) Weather Information (5) HD Cameras (6) Media access (Internet, BVES Website & Social Media, Local Radio, TV, etc. (7) Communications Equipment and (8) Dispatch services.[8] Project construction to start in 2023.
	2020	$ -	$ -	$ -												
	2021	$ -	$ -	$ -												
	2022	$ -	$ -	$ -												
	2020-2022 plan total	$ -	$ -	$ -												
8. Other / not listed	2019 plan	$ -	$ -	$ -	N/A - this is a System Wide Initiative	N/A - this is a System Wide Initiative	Contact from object, all types of equipment/facility failure, wire-to-wire contact/contamination	148,459	3.2	Wildfire-Significant Loss of Property. Loss of Energy Supplies.	Existing	D 19-08-027	GRC	Exceeding compliance	ESRB-8	GIS-based applications (e.g. Outage Management System). Implementation of GIS-based systems, such as outage management systems and interactive voice response systems, which allow BVES to locate outages and respond to customers more promptly in the
	2019 actual	$ -	$ -	$ -												
	2020	$54,800	$ -	$54,800												
	2021	$55,896	$ -	$55,896												

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
	2022	$57,014	$ -	$57,014												case of a wildfire or related emergency[2]
	2020-2022 plan total	$167,710	$ -	$167,710												
9. Other/ not listed	2019 plan	$ 70,000	$ 70,000	$ -	N/A - this is a System Wide Initiative	N/A - this is a System Wide Initiative	Contact from Object. All types of equipment/facility failure, wire-wire contact/contamination	148,458.96	2.19	Wildfire-Significant Loss of Property	New	N/A - this is a new initiative	GRC	Exceeding compliance	ESRB-8	Implement iRestore app that Provides First Responders and internal Damage Assessment Teams tool to quickly document and report equipment and facility problems to Dispatch.[9]
	2019 actual	$67,860	$67,860	$ -												
	2020	$ -	$ -	$ -												
	2021	$ -	$ -	$ -												
	2022	$ -	$ -	$ -												
	2020-2022 plan total	$ -	$ -	$ -												

1. Supervisory Control and Data Acquisition (SCADA)
2. GIS Based Applications
3. Web Based Weather Resources
4. BVES-Owned Weather Stations
5. Weather Forecasting
6. Remote Monitoring (via Camera)
7. Grid Automation
8. Situation Awareness Enhancement
9. Implement iRestore app

5.3.3 Grid Design and System Hardening

The BVES grid design and system hardening investments will reduce the risk of potential ignition sources. Reducing ignition sources is one of the most critical elements at mitigating a wildfire. BVES is making a number of system hardening investments, each one specifically designed to reduce ignition sources, while taking into consideration the investment cost effectiveness.

The BVES distribution system is comprised of 13 distribution substations, 23 distribution circuits, approximately 8,700 poles, 2.7 miles of underground and 86 miles overhead of 34.5 kV distribution line, 86 miles underground, and 490 miles overhead of 4 kV distribution line. This distribution system is unique since all facilities are contained within Tier 2 or Tier 3 with some locations with steep terrain and difficult access. Additionally, this primarily rural distribution system has significant amounts of legacy tree attachments, expulsion fuses and bare distribution wire. These factors are prevalent and should be mitigated to reduce wildfire ignition risk through industry recognized best practices system-hardening investments detailed in this section. Given the circumstances and although these programs are capital intensive, BVES is of the opinion that these initiatives are justified, and no reasonable alternatives exist.

It is BVES's vision to complete all planned system hardening investments within 10 years, while a significant portion of the investments should be completed in the next 2 to 3-year time frame. The estimated completion dates, by investments, are:

Plan to Complete System Hardening Including Estimated Completion Date

- Fuse replacements: End of calendar year 2021
- Tree Attachment Removals: End of calendar year 2022
- Pole Loading Assessment and Replacement Program: completion of high-risk circuits by end of calendar year 2022
- Evacuation Route Hardening: Pilot program to be completed by end of year 2021. Based on the analysis of the pilot, it is proposed the evacuation route hardening will be completed by the end of calendar year 2026.
- Covered Wire Program (34.5 kV sub-transmission): All bare wire in Tier 3 to be covered by end of calendar year 2021 and all bare wire in Tier 2 to be covered by end of 2025.
- Covered Wire Program (4 kV distribution): All bare wire in Tier 2 dense vegetation areas to be covered by end of calendar year 2030. This is approximately 47.5% of current bare 4 kV wire (86 circuit miles).

BVES recognizes this is an aggressive schedule, but the safety of the general public is a top priority. When completed, these programs should eliminate the need for the utility to initiate a PSPS in most plausible scenarios. Specific information for each investment is detailed below.

Safety and Technical Upgrades of Pineknot Substation

Plan: As identified in its previous WMP, BVES planned to convert the existing Pineknot Substation from an overhead-type to dead front pad-mounted design. This will improve the safety, reliability, and efficiency of the substation by eliminating a wiring configuration that poses a safety and fire risk due to its exposure to the elements, such as vegetation contact. Additionally, the utility will replace all substation equipment with enclosed pad mount transformers, voltage regulators, re-closers, and bus work, further enhancing wildfire mitigation and reliability.

Timeline and Execution: This project was completed on January 24, 2020.

Cost Effectiveness and Expense: The cost of the changes to the Pineknot Substation were addressed in the BVES's GRC Commission Decision 19-08-027 of August 15, 2019. No incremental expense is anticipated.

Safety and Technical Upgrades of Palomino Substation

Plan: BVES will convert the existing Palomino Substation from an overhead-type to a pad-mounted design with dead front SCADA-enabled. This will improve the safety, reliability, and efficiency of the substation by eliminating a wiring configuration that poses a safety and fire risk due to its exposure to the elements, such as vegetation contact. Additionally, the utility will replace all substation equipment with enclosed pad mounted transformers, voltage regulators, re-closers, and bus work, further enhancing wildfire mitigation and reliability.

Timeline and Execution:

- Design is complete
- Electrical equipment (transformers, switches, regulators) are ordered with delivery scheduled by October 2020
- RFP for the civil (infrastructure work) has been issued and BVES expects to award construction contract by September 2020
- Plan to complete civil work by October 2020
- Plan to complete electrical work, testing, and place in service by December 2020

Cost Effectiveness and Expense: The cost of the changes to the Palomino Substation were addressed in the BVES's GRC Commission Decision 19-08-027 of August 15, 2019. No incremental expense is anticipated.

Internal Review and Quality Check: The Utility Manager will collect and submit a summary report of the progress of the project each quarter to the President & Treasurer as well as appropriate BVES Managers and Supervisors. Based on the progress of the project, the Utility Manager will make recommendations to the President & Treasurer on actions to be implemented to stay on track. This could include work orders, contracts, purchase orders, and other mechanisms.

Risk Reduction Efficiency: The existing substation uses an overhead, open bus type design. Vegetation (leaves, branches, trees, etc.) that contacts the energized bus could cause an ignition potentially leading to a wildfire and/or extensive power outage. The new substation design uses a pad-mount dead-front design. There are no exposed energized conductors or equipment. The substation design will essentially eliminate all ignition sources within the substation. The new "no-possible-contact" design reduces the ignition risk to near zero, essentially the maximum reduction possible when compared to an open bus design combined with vegetation management.

Alternative Approaches: The BVES GRC included two alternatives substation designs. (1) Replace the substation using the existing open bus design or (2) replace the substation using a pad-mount dead front design. Open bus design alternative allows potential ignition sources should equipment fail in service or if

an object (i.e. tree limbs) contact the energized bare conductors. The alternative of a pad-mount dead front design essentially eliminates this risk. If equipment should fail, it is enclosed in a pad-mount, essentially eliminating ignition sources. It is designed so that no objects or vegetation can touch the equipment because it is enclosed in the pad-mount. Due to the reduced risk of ignition, the pad-mount dead front design was selected.

Undergrounding the Ute Lines (No Longer Considered Cost Effective)

Plan: BVES formerly proposed to underground the Ute Lines in its previous filings. Such a project would require Southern California Edison (SCE) to transfer its Ute Lines (34.5 kV) assets to BVES. This asset consists of approximately 1.5 miles of overhead sub-transmission bare line (34.5 kV) that connects the BVES system at two points with the SCE Goldhill Switch Station. These lines provide approximately 72% of supply capacity and under normal conditions 100% of BVES's source of power supply.

BVES originally proposed in its 2019 WMP to acquire these lines due to complications resulting the June 2016 Holcomb Fire. The fire severely damaged the assets and resulted in a single point of failure of supplies to the BVES service area. By acquiring these lines and converting them to underground facilities along the side of the existing road, BVES would have removed overhead facilities from a forested and environmentally sensitive area. In D.19-05-040, the Commission ordered BVES to file an application to request acquiring the assets from SCE.

Since the initial project concept, BVES as well as the California utility industry at large, have developed greater understanding of the capabilities of covered wire systems including their lower cost relative to undergrounding and their ability to substantially reduce the risk of wildfire. Consequently, BVES has determined it would be more cost effective for BVES and its customers to work with SCE.to harden these lines.

Execution: BVES will pursue other options with SCE and the Commission to resolve the inherent wildfire risk exposure, and system safety and reliability risk of the Ute lines.

Expense: BVES is no longer proposing to seek to acquire ownership from SCE and then underground the line While undergrounding electrical lines mitigates or eliminates most ignition sources, from a cost effectiveness standpoint (see cost assumptions) and covered conductor section below, undergrounding electrical lines is the most expensive approach to mitigate ignitions.

Cost Assumptions

- Covered conductor installed: $450,000 to $850,000 per circuit mile[39]
- Underground conductor installed: Approximately $3,000,000 per circuit mile[40]

Construct an Energy Storage Facility within BVES's Service Territory

Plan: BVES proposes to construct an energy storage project of approximately 8 MW/32 MWh (four-hour) Lithium-Ion NMC BESS utility-grade battery at Big Bear Area Regional Wastewater Agency (BBARWA). This project will complement the Bear Valley Solar Energy Project (BVSEP), 8-megawatt (MW) alternating current single-axis tracker solar generation facility, to be constructed on the same leased land (BBARWA) and directly feeding the distribution system benefiting all customers. The Energy Storage and the Solar facility is currently being planned and evaluations are being made whether or not they will be standalone or hybridized. One of the purposes of the storage project is to minimize the impact of the loss of all SCE energy imports to the BVES service area due to SCE directed PSPS of the SCE supply lines to BVES. SCE lines are subject to PSPS and while these lines may be required to be de-energized by SCE, the

[39] Cost variation based on requirement to replace poles due to loading and wind criteria

[40] Cost per circuit mile is CPUC estimate

BVES service area may not require PSPS. If these proposed projects are approved, they will allow BVES to internally supply its customers by utilizing its existing peaking power plant (8.4 MW), along with the BVSEP and the energy storage battery to minimize the effects of any PSPS event.

Execution: BVES is in the planning stages for this project and expects to file an application with the Commission for the energy storage project should it be determined that the project is in the best interest of BVES's customers. In accordance with the recently filed 2020-2030 Integrated Resource Plan, BVES anticipates operations to begin in July 2022.[41]

Expense: BVES has not determined the full cost of the project since the optimal size and capacity are still being evaluated. Costs for the project will be addressed in the project application to the Commission.

Internal Review and Quality Check: N/A

Risk Reduction Efficiency: N/A. This program is aimed at reducing the impacts of power outages from proactive de-energization and preserving essential services rather than reducing ignition risk.

Alternative Approaches: BVES considered multiple battery chemistries and applications through a cost-benefit analysis study followed with a storage reliability study in recent years. Due to market saturation, industry demonstration, and forecasted reduction in storage device costs, BVES anticipates deploying lithium-ion technology. One possible alternative to the energy storage project is an expansion of the solar power project. Although an expansion would increase the amount of renewable energy available during daylight hours, the expanded solar project would not provide energy during non-daylight hours, requiring additional power resources to cover load during such periods. The energy storage concept, with its ability to provide energy during non-daylight hours, coupled with the solar power project, provided the best alternative.

Conventional Fuse Replacement

Plan: Fuses are devices that protect the distribution system from faulted or damaged lines and equipment. BVES, like other utilities, has historically used conventional fuses to protect lines. In the wake of SB901 and the increased availability of alternative fusing, many utilities are beginning to replace conventional fuses with current limiting fuses (non-expulsion, ELF) on branch line fusing opportunities system wide.[42] BVES is following this trend by installing electronic programmable fused (vacuum style) system-wide such as the S&C TripSaver II. Conventional fuses expel hot particles and gases when operated, which can start wildfires. In contrast, current limiting fuses and electronic fuses expel no materials, limit the available fault current, and may even reduce the duration of faults. BVES plans on replacing approximately 628 conventional fuses with electronic fuses and approximately 2,576 conventional fuses with ELF.

Execution: As identified in its previous WMP, BVES plans to continue this rollout, that began in June 2019, until all conventional fuses are replaced with either current limiting fuses or electronic fuses. BVES proposed to complete this project in 24 months, performing the fuse replacements in the higher risk areas first. Supporting Table 5-4 shows the approximate number of fuses that will be replaced by year.

[41] BVES. "2020 – 2030 Integrated Resource Plan." https://www.bvesinc.com/media/managed/integrated-resource-plan/bear_v1_public.pdf. September 1, 2020.

[42] The ELF fuse is made by Eaton Cooper Power. It is designed to help protect electric infrastructure.

Supporting Table 5-4. Planned Fuse Replacements

Year	Electronic Fuses	Current Limiting ELF
June 2019 to May 2020	314	1,288
June 2020 to May 2021	314	1,288

Source: BVES

As of July 31, 2020, BVES has replaced a total of 1,400 conventional fuses with 170 electronic fuses and 1,230 current limiting fuses.

Expense: The cost of implementing this fusing plan was not addressed in BVES's GRC Commission Decision 19-08-027 of August 15, 2019. BVES estimates the total cost of this fusing project to be $5.2 million. The incremental costs of this project will be booked into the Wildfire Mitigation Plan Implementation Memorandum Account.

Internal Review and Quality Check: The Utility Manager will collect and submit a summary report of the progress of the investment each month to the President & Treasurer as well as appropriate BVES Managers and Supervisors. Based on the investment progress, the Utility Manager will make recommendations to the President & Treasurer on actions to be implemented to stay on track. This includes work orders, contracts, purchase orders, and other mechanisms.

Risk Reduction Efficiency: BVES has approximately 3,200 fuses, all in high-risk wildfire areas. From 2015 through 2019, BVES had 84 conventional fuses that operated. Each one of these fuse operations resulted in expulsion of hot gases and particles that could have been a source of ignition leading to a wildfire. The replacement of convention fuses with current limiting or electronic fuses will essentially eliminate this ignition source. Conventional, expulsion fuses are a high-risk component of the electric grid. By replacing fuses with the potential to spark and impact dry vegetation which presents a high risk given BVES's location in HFTD Tier 2 and Tier 3 areas, the replacement with non-sparking (aka non-expulsion) reduces the risk to near zero, a significant improvement.

Alternative Approaches: Three options were originally considered and evaluated. Option 3 was recommended and moved forward due to the overall cost effectiveness and the ability to mitigate ignitions.

Option 1- Leave existing conventional fuses in place. Fuses operate due to a fault on the system. Reducing faults that occur due to lightning strikes, vegetation contacts, equipment failures, and vehicle hitting poles, will reduce the number of conventional fuse operations. Unfortunately, many faults are beyond BVES's ability to reduce. Leaving conventional fuses permanently in place was determined to constitute an unacceptable ignition risk.

Option 2- Develop a stand-alone program. An independent conventional fuse replacement program that did not consider other work being performed on the pole. This could execute the fuse replacements program faster, but at a significantly higher cost since BVES may be visiting the same pole more than one time to perform work.

Option 3- Combined fuse replacements with other work. When other work, such as a pole replacement, is scheduled to be performed on a pole that has a conventional fuse, the fuse is replaced at the same time as the other work. This results in significant labor savings by reducing truck rolls by combining the other work with the fuse replacement program.

Tree Attachment Removal

Plan: Tree attachments are pieces of electrical infrastructure fastened to trees instead of poles for infrastructural support. Although this infrastructure approach initially reduces costs, it inherently introduces ignition risk by holding energized wires in direct proximity to vegetation.

BVES had approximately 1,207 legacy tree attachment service connections in its service area upon the filing of its 2019 WMP, mostly located in Forest Service controlled areas. Currently, the count of remaining tree attachments stands at approximately 776. The practice of installing distribution and service lines using tree attachments is no longer an acceptable construction method under G.O. 95. Elimination of attachments will enhance the safety and reliability of the distribution system and reduce the risk of electrical wildfires. BVES has been removing tree attachments due to the significant risk of heat and fuel source contact.

Execution: The majority of the work to remove tree attachments is performed by existing BVES line crews supplemented by the use of contracted line crews. Replacing tree attachments with poles is a difficult and labor-intensive process. In many cases, it is nearly impossible to get work trucks (digger and bucket trucks) to the job site in Forest Service controlled areas. As a consequence, BVES crews must manually carry or rig poles to the jobsite, hand-dig the holes to accommodate poles, manually hoist the poles into the holes, and climb the pole to perform the electrical work. Additionally, rocks impose a significant problem when hand-digging, and often the planned spot must be relocated. This causes additional unplanned labor hours in digging new holes and re-planning pole placement and associated guying. All of these tasks complicate completion of the necessary work safely and a cause of dramatic increase in labor hours per job.

As noted above, BVES has been removing its tree attachments and plans to continue removals at a rate of approximately 220 attachments each year. As of July 31, 2020, BVES has removed 431 tree attachments and installed 295 new poles. BVES estimates that all attachments will be removed by the end of 2022.

Expense: The cost of the Tree Attachment Removal project is addressed in the BVES's GRC Commission Decision 19-08-027 of August 15, 2019. No additional expense is anticipated.

Internal Review and Quality Check: The Utility Manager will collect and submit a summary report of the progress of the program each quarter to the President & Treasurer as well as appropriate BVES Managers and Supervisors. Based on the program progress, the Utility Manager will make recommendations to the President & Treasurer on actions to be implemented to stay on track. This includes work orders, contracts, purchase orders, and other mechanisms.

Risk Reduction Efficiency: Tree attachments are a legacy practice where pieces of electrical infrastructure are fastened to a tree for infrastructural support. The practice of installing distribution and service lines using tree attachments has long been suspended. Given that BVES's service area is entirely located in HFTD Tiers 2 and 3, tree attachments have been recognized as a higher risk event (see table 4-9) and are planned to be removed within three years. Elimination of tree attachments will enhance the safety and reliability of the distribution system and reduce the risk of wildfires.

Alternative Approaches:

Tree attachment work orders are developed to provide the appropriate remediation design consistent with GO 95 standards and Forest Service permit requirements. There are no alternatives to eliminating the inherent and substantial wildfire risk of electrical equipment attached to trees, other than removing such equipment and installing it on poles. BVES considered the alternative of increasing the rate of removal of such equipment but concluded that the rate which was proposed, and approved by the Commission in D.19-08-027, struck an appropriate balance of cost and use of available resources in light of the competing need to implement other wildfire mitigation programs.

Evacuation Route Hardening (Pilot Project)

Plan: BVES's service area has three predetermined evacuation routes, developed by the local sheriff department and other government officials, to evacuate the public in the event of a wildfire. The hardening of BVES electrical assets (poles, wires, equipment) along the evacuation routes is crucial to ensure they do not fail during a wildfire which would limit mobility along the evacuation routes required to safely perform the evacuation. The pilot project would determine availability, cost effectiveness, and ability to install technology such as fire-resistant pole wrap, steel poles, concrete poles, ductile iron poles, and fire-resistant fiberglass poles. While these proposed measures will not reduce ignition sources, it is intended to increase resiliency to demonstrate the ability to keep evaluation routes safe from failed BVES electrical assets during a wildfire.

Execution: BVES proposes in its 2020 WMP submission a pilot program to test various solutions such as fire-resistant overhead facilities to protect existing wood poles with fire resistant material along with other types of optional strengthening materials. To date BVES has tested two technologies (fire resistant wrap and fire-resistant fiberglass poles). For technologies that BVES does not test directly such as concrete and steel poles, BVES staff will work with other utilities to gain from their experience.

Once viable solutions have been tested and analyzed, BVES will commence a program to harden its facilities along evacuation routes. It is anticipated that this program may be completed by the end of calendar year 2026. The goal of this program is to harden overhead facilities along evacuation routes to prevent such facilities from falling into evacuation routes during a wildfire.

Expense: Although it is difficult to accurately project the costs of this pilot program due to the various technologies under consideration, BVES estimates a total expense of approximately $200,000 in capital expenses for this pilot project. This cost is not addressed in BVES's General Rate Case Commission Decision 19-08-027 of August 15, 2019. Therefore, BVES will record the incremental costs of this program into the Wildfire Mitigation Plan Implementation Memorandum Account.

Internal Review and Quality Check: The Utility Manager will collect and submit a summary report of the progress of the pilot project to the appropriate BVES Managers and Supervisors. A final recommendation, based on pilot results, will be submitted to the President & Treasurer.

Risk Reduction Efficiency: This pilot program will not reduce the risk of ignition resulting in a wildfire. The pilot program is to develop tools and approach to add resiliency and safety during an evacuation due to a wildfire.

Alternative Approaches: There is no alternative to hardening evacuation routes, but there are alternatives as to how the evacuation routes may be hardened. This pilot program will explore various options such as fire-resistant pole wrap, steel poles, and concert poles.

Pole Loading Assessment and Remediation Program

Plan: In compliance with GOs 95 and 165, BVES has an ongoing program to assess and remediate noncompliant distribution poles that pose a fire risk. Since the entire BVES service area is in a High Fire-Threat District (Tier 2 and 3), any pole failure is considered a high fire risk. BVES plans to significantly accelerate this program by increasing its annual pole evaluation to 1,600 poles per year. By assessing poles and remedying failures at a faster rate, BVES can significantly reduce its fire risk.

Execution: Pole loading evaluation process requires a field assessment as well as a desktop analysis to estimate each pole safety factor. Field assessment includes the physical attributes of the pole, its attachments, and local weather conditions. Data collected from the field validate the pole's attributes as well as the size and type of equipment it supports. Collected data will include BVES conductors and

equipment as well as joint pole owners, and renter attachments. The scope of the collected data is as follows:

- Pole class, strength (determined by intrusive testing), length, wood species, and groundline circumference;
- Height, size, number, type and span length of attached conductors, as well as the size and weight of attached equipment;
- Height, number, and guy wires supporting the pole and its attachments.

Contractors utilize GE MapsightTM handheld devices to collect field data. Collecting the data to perform a pole loading calculation normally requires access to poles, including those located in remote terrain and other difficult to reach locations such as forested areas and customer backyards. Assessors must be close enough to the pole to measure the groundline circumference and have sufficient room around the pole to measure attachment heights and span lengths. The measurements are entered by the contractor into BVES's pole loading software (e.g. SPIDACalc), the appropriate wind loading case is then selected, and the safety factors are calculated by the software.

BVES is evaluating wood poles in the BVES service area over a five-year period (2018 to 2022) as described in BVES's General Rate Case Application A.17-05-004 submitted on May 1, 2017 and approved in Commission Decision 19-08-027 of August 15, 2019. Poles that fail the inspection criteria shall be replaced or remediated as applicable.

As of July 31, 2020, BVES has evaluated 2,525 poles; 1,050 failed the inspection criteria; 547 poles were replaced and 113 remediated. Corrective action for the remaining poles that failed inspection is being undertaken. As noted above, this is an ongoing project that is expected to be completed by 2022.

Expense: The cost of Pole Loading Assessment and Remediation Program is addressed in the BVES General Rate Case Commission Decision 19-08-027 of August 15, 2019. No additional expense is currently anticipated.

Internal Review and Quality Check: The Utility Manager will collect and submit a summary report of the progress of the investment each quarter to the President & Treasurer as well as appropriate BVES Managers and Supervisors. Based on the program progress, the Utility Manager will make recommendations to the President & Treasurer on actions to be implemented to stay on track. This includes reviews of work orders, contracts, purchase orders, and other documents.

Risk Reduction Efficiency: Bear Valley is above 3000 ft sea level and is designed as heavy loading district. Overhead distribution lines are exposed to severe weather including heavy snow, ice and high winds. G.O. 95 Rule 43.1 requires BVES to design, build, and maintain their overhead facilities to withstand foreseeable fire-wind conditions in the service territory. Poles that are not compliant with G.O. 95 safety factors will be identified, and the appropriate remediation will be designed and implemented. Compliance with GO 95 is critical to mitigate wildfires. Depending on the nature and extent of the noncompliance, the remediation will require either repair (e.g., the installation or modification of guy wires) or complete replacement of the pole, including removal and reinstallation of all attachments, all within the time frames required by G.O. 95. G.O. 95 is aimed at the safety of personnel and the public and also at preserving the reliability of the power grid. Risk is significantly reduced when poles are brought into compliance with laws directed at preserving safety and reliability.

Alternative Approaches: There are no alternative approaches to reducing wildfire risk due to non-compliant poles other than adequately testing all of the poles and taking remedial action, where required. There are alternatives as to the rate and manner in which pole testing is conducted. In order to promote efficiency and minimize duplication of work, and subject to the remediation time frames in G.O. 95, the remediation designs may be integrated with other potential work proposed in the same area. It is more operationally efficient and cost effective to coordinate pole replacement work with other planned work. For example, it would be duplicative to replace a single pole under the pole assessment and remediation

program only to have it removed a few years later when the pole line is replaced, or the line is upgraded. In addition, the program may require a sufficient number of pole replacements on a line or in a concentrated area that it is prudent to undertake a more comprehensive replacement design, as opposed to mere replacement of individual poles. The remediation work is performed by BVES or contractor resources based on available capacity, cost, and other related factors.

Covered Conductor

Plan: Covered conductors are any conductors (wires) protected or covered by layers of insulation. Vendors have designed these wires so that they can withstand incidental contact with vegetation or other debris. Bare wires were historically used because they provided a reliable, cost-effective solution for delivering energy to customers. Additionally, many California utilities have historically used bare wires as a best practice for reliability purposes. Based on pilot programs, BVES has reevaluated its structure design in the context of wildfire risk and decided to replace bare conductors with covered conductors on all sub-transmission lines (34.5 kV) and to replace all bare 4 kV distribution wire in high risk areas within the service area with covered wire. The replacement program will be prioritized based on higher-risk wires to increase the mitigation of risks in the shortest reasonable time period.

In its previous WMP, BVES conducted pilot projects to determine the optimal covered conductor equipment. The following list below provides a summary of the pilot projects and results:

- **Covered Conductor Replacement Pilot Program (Completed):** As part of the first pilot, BVES replaced approximately 1 circuit mile of bare wire in the North Shore area utilizing covered tree wire (Priority` Wire 394.5 AAAC). The pilot project evaluated three principal areas: (1) material sourcing, (2) engineering specifications and characteristics, and (3) installation in the field. The covered wire performed well and met all of BVES's expectations. BVES performed a second pilot in the Moonridge area using covered tree wire from Southwire using 336.4 ACSR. The second pilot was completed in June 30, 2020 with the replacement of approximately 1 circuit mile. This successful second pilot performed well also and provided BVES an additional vendor for covered tree wire. As of July 31, 2020, BVES completed these pilot programs replacing a total of 2.16 circuit miles of bare wire with these covered wire products. The covered conductor replacement program is considered a success and BVES intends to proceed to a broader deployment.

- **Covered Conductor Wrap Pilot Program (Completed)**: BVES conducted a pilot program to determine the effectiveness of using a "wire wrap" to cover existing wire in other high threat areas. The wire wraps snap onto existing wire, so BVES does not have to replace the entire wire. The pilot project indicated that the wire wrap product does not meet BVES's specifications, primarily due to ampacity limitations on existing wire and product information not being readily available for research and testing. Because of this issue, it was determined that the product was not ready to be deployed in the field. BVES will continue to monitor developments with wire wrap and will reconsider this approach once the ampacity issue is satisfactorily resolved.

Based on the results of the covered conductor pilot programs, BVES intends to pursue a broader replacement of bare conductor with covered tree wire.

Expense for Pilot Programs: For the covered conductor pilot projects, no further expense is expected as these projects are completed. These costs will be booked into the Wildfire Mitigation Plan Implementation Memorandum Account.

Radford Line Covered Conductor Replacement Project: In its previous WMP, BVES planned to replace bare wire with a high-performance covered conductor on the Radford 34.5 kV line. BVES chose to cover this line specifically, which is located in the HFTD Tier 3 area, since it has the highest wildfire risk of all of BVES's overhead facilities. The line is located in a densely vegetated area that is difficult to patrol. Replacing the bare wire with covered wire will provide a high level of effectiveness for preventing a potential ignition leading to a wildfire.

Execution of Radford Line: As noted in BVES Advice Letter No. 374-E of November 20, 2019, when BVES bid out the "design and construction" for the project, the costs were significantly higher than the utility had originally planned ($2,500,000). BVES noted that there was risk that the Radford Line Covered Conductor Replacement Project may have to be deferred until 2021.

To mitigate costs, BVES determined that it would be prudent and reasonable to separate the design from the construction portions of the projects. This would remove construction uncertainties so that construction bidders remove some project risk contingencies and offer a more favorable price.

- As a first step BVES "bid-out" just the design portion of the Radford Line Covered Conductor Replacement Project. The design of the Radford project was completed in December 2019.
- As a second step BVES "bid-out", in a competitive Request for Proposal (RFP), the construction portion of the project. BVES awarded the construction in June 2020 with an estimated completion date of 2021.

Expense for Radford Line Covered Conductors: The updated estimated cost of the Radford Line Covered Conductor Replacement Project is expected to cost $5,600,000. This cost is not addressed in BVES's General Rate Case Commission Decision 19-08-027 of August 15, 2019. Therefore, the costs of this project will be booked into the Wildfire Mitigation Plan Implementation Memorandum Account.

Covered Wire Installation Program – 34.5 kV System: BVES plans to install covered wire on all sub-transmission lines (34.5 kV) in HFTD Tiers 2 and 3. This action will result in the entire overhead 34.5 kV system in the HFTD being underground or covered. This program will reduce the risk of sub-transmission lines contacting vegetation or other debris and causing an ignition to near zero.

Execution: BVES plans to replace all overhead sub-transmission bare wire with covered wire over a 6-year period of execution from 2020 to 2025 covering approximately 5 miles per year.

Expense Covered Conductor 35.5 kV: BVES estimates a total expense of $10,931,962 in capital expenses over the project's 6-year period of execution from 2020 to 2025, or $1,832,933 per year. This cost is not addressed in BVES's General Rate Case Commission Decision 19-08-027 of August 15, 2019. Therefore, the costs of this project will be booked into the Wildfire Mitigation Plan Implementation Memorandum Account.

Covered Wire Installation Program – 4 kV System: BVES plans to replace all bare 4 kV distribution wire in High Risk Areas within the HFTD with covered wire. This action will result in approximately 86 miles of the 4 kV distribution lines in the system in the HFTD being covered. This program will significantly reduce the risk of distribution lines contacting vegetation or other debris and causing an ignition. The high-risk areas selected have high vegetation density.

Execution: BVES plans to replace distribution bare wire with covered wire over a 10-year period of execution from 2021 to 2030 covering approximately 8.6 miles per year.

Expense Covered Conductor 4 kV: BVES estimates a total expense of $35,130,371 in capital expenses over the project's 10-year execution period, or $3,513,037 per year. This cost is not addressed in BVES's General Rate Case Commission Decision 19-08-027 of August 15, 2019. Therefore, the costs of this project will be booked into the Wildfire Mitigation Plan Implementation Memorandum Account.

Internal Review and Quality Check: The Utility Manager will collect and submit a summary report of the progress of the investment each quarter to the President & Treasurer as well as appropriate BVES Managers and Supervisors. Based on the investment progress, the Utility Manager will make

recommendations to the President & Treasurer on actions to be implemented to stay on track. This includes work orders, contracts, purchase orders, and other mechanisms.

Risk Reduction Efficiency: BVES used the Southern California Edison (SCE) estimated full deployment of covered conductor in high risk areas to mitigate approximately 60 percent of fires associated with electrical distribution facilities in defined risk tiers.[43] BVES believes SCE effectiveness results should be considered a relative measure, with underground conversion providing the baseline (100 percent) for purposes of our comparison.

In addition to mitigation effectiveness, it is also important to consider the estimated cost associated with each mitigation option. For Covered Conductor, the Companies relied on its costs associated with circuit rebuild program, of $850,000 per circuit mile. For underground conversion, BVES relied on CPUC estimated undergrounding cost, which is $3 million per circuit mile. These costs, combined with the relative mitigation effectiveness factors, allows comparison of each measure's mitigation-cost ratio, i.e., the relative mitigation effectiveness (using underground conversion as the baseline) achieved per dollar spent. These results are presented below:

Supporting Table 5-5: Mitigation Effectiveness-to-Cost Ratios for Covered Conductor and Underground Alternatives

SCE Mitigation Effectiveness-to-Cost Ratios for Undergrounding Alternatives			
Mitigation Option	**Relative Mitigation Effectiveness Factor[1]**	**Cost per Mile**	**Mitigation Effectiveness-to-Cost Ratio**
Re-conductor - Conventional poles and conductors	0.15	$300,000	0.5
Covered Conductors and Fire-Resistant Metal Poles	0.6	$480,000	1.4
Underground Conversion	1	$3,000,000	0.33

[1]Undergrounding serves as the baseline for measuring mitigation effectiveness.

The analysis above demonstrates that application of covered conductor is the most cost effective of the two mitigation measures

Alternative Approaches: BVES compared undergrounding versus covered conductors. Please see Risk Reduction Efficiency above**.**

[43] SCE application for approval of its Grid Safety and Resiliency Program, U 338-E, September 10, 2018

Table 23 below presents program details related to grid design and system hardening activities. This information is also included in the accompanying *Attachment 1* workbook.

Table 23. Grid Design and System Hardening

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
1. Capacitor maintenance and replacement program	2019 plan	Bear Valley Electric Service does not have a specific wildfire mitigation grid design and system hardening initiative focused on capacitor maintenance and replacement at this time. Bear Valley Electric Service has 25 capacitor locations and maintenance and replacement is included in the company's standard inspection, maintenance, and replacement protocols. The capacitors are fixed (either on service or off service) and part of our Overhead Facility Patrol and Inspection program objectives is to ensure they are not leaking or visually damaged. Any enhanced inspections or accelerated correction timeframe/replacements are captured in Table 24 Asset management and inspections.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															
2. Circuit breaker maintenance and installation to de-energize lines upon detecting a fault	2019 plan	Bear Valley Electric Service does not have a specific wildfire mitigation grid design and system hardening initiative focused on circuit breaker maintenance and replacement at this time. Circuit breakers are generally installed for all distribution circuits to detect fault current and protect equipment in the event that a fault is detected. Circuit breaker replacement and maintenance is included in the company's standard inspection, maintenance, and replacement protocols. Any enhanced inspections or accelerated correction timeframe or replacements are captured in Table 24 Asset management and inspections. Replacements of specific, targeted circuit breakers as a part of BVES's WMP to support overall advanced coordination and detection efforts are better captured in Table 23 Initiative 9. Installation of system automation equipment.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
3. Covered conductor installation	2019 plan	$ 458,000	$ 458,000	$ -	6.00	$ 76,333	Contact from object.	872,292.38	0.48	Wildfire-Significant Loss of Property	New	N/A - request by approval of 2020 WMP	WMP Memorandum Account	N/A - this initiative is not associated with specific regulations. The program exceeds standard design.	N/A - this initiative is not associated with a specific rule	2019 includes $458,000 for the Covered Conductor Replacement Pilot Program and $292,000 for the Covered Conductor Wrap Pilot Program. Program replaces all 205.2 line miles of 34.5 kV overhead sub-transmission lines (beginning in 2020) and 4 kV distribution lines (beginning in 2021) with covered wire over a 6-year period, 2020-2025.
	2019 actual	$ 350,191	$ 350,191	$ -	6.00	$ 58,365										
	2020	$ 1,832,933	$ 1,832,933	$ -	15.00	$ 122,196										
	2021	$ 5,345,970	$ 5,345,970	$ -	40.80	$ 131,029										
	2022	$ 5,345,970	$ 5,345,970	$ -	40.80	$ 131,029										
	2020-2022 plan total	$12,524,873	$ 12,524,873	$ -	96.60	$ 129,657										
4. Covered conductor maintenance	2019 plan	Bear Valley Electric Service does not have specific wildfire mitigation grid design and system hardening initiatives focused on covered conductor maintenance. As BVES progresses with its implementation of its wildfire mitigation initiatives, the utility will continue to evaluate covered conductor maintenance needs and initiatives specific to wildfire mitigation.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
5. Crossarm maintenance, repair, and replacement	2019 plan	Bear Valley Electric Service does not have a specific wildfire mitigation grid design and system hardening initiative focused on crossarm maintenance, repair, and replacement at this time. Routine crossarm maintenance, repair, and replacement are included in the company's standard inspection and correction programs, with an accelerated timeline for correction under the company's inspection program improvement, as included in Table 24 Asset management and inspections.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															
6. Distribution pole replacement and reinforcement, including with composite poles	2019 plan	$ 2,444,130	$ 2,444,130	$ -	N/A - this is a System Wide Initiative	N/A - this is a System Wide Initiative	All types of equipment/facility failure, wire-wire contact/contamination	872,292.38	0.36	Wildfire-Significant Loss of Property	Existing	D.19-08-027	GRC	In compliance with Regulation	GO-95	Test all poles to loading standards, GO95 requirements, intrusive inspection criteria and age and then, replaces or remediates non-compliant poles.
	2019 actual	$ 5,096,681	$ 5,096,681	$ -												
	2020	$ 2,444,130	$ 2,444,130	$ -												
	2021	$ 2,444,130	$ 2,444,130	$ -												
	2022	$ 2,444,130	$ 2,444,130	$ -												
	2020-2022 plan total	$ 7,332,390	$ 7,332,390	$ -												

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
7. Expulsion fuse replacement	2019 plan	$ 2,600,000	$ 2,600,000	$ -	N/A - this is a System Wide Initiative	N/A - this is a System Wide Initiative	Fuse failure-all.	872,292.38	0.34	Wildfire-Significant Loss of Property	New	N/A - this is an existing initiative	WMP Memorandum Account	Exceeds	GO 95	Replaces all conventional (expulsion) fuses with current limiting (ELF) and electronic fuses (Fuse TripSavers).
	2019 actual	$ 1,303,306	$ 1,303,306	$ -												
	2020	$ 2,600,000	$ 2,600,000	$ -												
	2021	$ -	$ -	$ -												
	2022	$ -	$ -	$ -												
	2020-2022 plan total	$ 2,600,000	$ 2,600,000	$ -												
8. Grid topology improvements to mitigate or reduce PSPS events	2019 plan	Bear Valley Electric Service does not have a specific wildfire mitigation grid design and system hardening initiative focused on grid topology improvements to mitigate or reduce PSPS events in addition to those described elsewhere in Table 23 such as Initiatives 16(a)-16(f).														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
9. Installation of system automation equipment	2019 plan	$ 1,073,541	$ 1,073,541	$ -	N/A - this is a System Wide Initiative	N/A - this is a System Wide Initiative	Contact from object, all types of equipment/facility failure, wire-to-wire contact/contamination	1,148,135.45	0.59	Wildfire-Significant Loss of Property. Loss of Energy Supplies	Existing	D.19-08-027	GRC	N/A - this initiative is not associated with a specific regulation	N/A - this initiative is not associated with a specific rule	Install grid automation. Fully instruments and automates BVES grid. Consists of installing a service area wide network operating on a SCADA system, substation automation, remote fault indicators, remote metering and power sensors and remote switching equipment to enable BVES to significantly improve its capability to detect and isolate faults rapidly before ever rolling out a crew. 8% complete as of January 2020.
	2019 actual	$ 612,829	$ 612,829	$ -												
	2020	$ 953,159	$ 953,159	$ -												
	2021	$ 939,156	$ 939,156	$ -												
	2022	$ 915,833	$ 915,833	$ -												
	2020-2022 plan total	$ 2,808,148	$ 2,808,148	$ -												

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
10. Maintenance, repair, and replacement of connectors, including hotline clamps	2019 plan	Bear Valley Electric Service does not have a specific wildfire mitigation grid design and system hardening initiative focused on maintenance, repair, and replacement of connectors, including hotline clamps at this time. Replacement of connectors, where applicable, is included in other programs such as installation of covered conductor.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															
11. Mitigation of impact on customers and other residents affected during PSPS event	2019 plan	Bear Valley Electric Service does not have specific wildfire mitigation grid design and system hardening initiatives focused on mitigation of impact on customers and other residents affected during PSPS event in addition to the initiatives in Table 23. Both of these programs are combined as relevant grid topology improvements pertaining to grid design and system hardening that reduce PSPS events inherently also mitigate the impact on customers. Furthermore, BVES's additional programs or efforts to mitigate the impact on customers and other residents affected during a PSPS event are captured in Table 28 Item 5.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
12. Other corrective action	2019 plan	$ -	$ -	$ -	0.00	$ -	Contact from object. Conductor failure-all.	1,148,135.45	0.22	Wildfire-Significant Loss of Property. Wildfire-Public Safety.	New	N/A - this is a new initiative	WMP Memorandum Account	Exceeds	GO 95	Replaces the 34.5 kV Radford Line (2.82 overhead circuit miles/8.46 line miles) with covered power lines and poles that are resistant to fire.
	2019 actual	$ -	$ -	$ -	0.00	$ -										
	2020	$ 156,236	$ 156,236	$ -	0.00	Costs for design										
	2021	$ 5,443,764 -	$ 5,443,764	$ -	8.46	$ 661,939										
	2022	$ -	$ -	$ -	0.00	$ -										
	2020-2022 plan total	$ 5,600,000	$ 5,600,000	$ -	8.46	$ 661,939										
13. Pole loading infrastructure hardening and replacement program based on pole loading assessment program	2019 plan	Bear Valley Electric Service's pole loading infrastructure hardening and replacement program based on pole loading assessment program is encompassed by and addressed in Table 24 Initiative 6. Intrusive pole inspections. Under this initiative, BVES tests all poles to loading standards, GO 95 requirements, intrusive inspection criteria and age, and then replaces or remediates non-compliant poles.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
14. Transformers maintenance and replacement	2019 plan	Bear Valley Electric Service does not have a specific wildfire mitigation grid design and system hardening initiative focused on transformer maintenance and replacement. Transformer replacement and maintenance is included in the company's standard inspection, maintenance, and replacement protocols. .														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															
15. Transmission tower maintenance and replacement	2019 plan	Bear Valley Electric Service does not have a specific wildfire mitigation grid design and system hardening initiative focused on transmission tower maintenance and replacement because BVES does not own any transmission.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
16. Undergrounding of electric lines and/or equipment	2019 plan	The SCE Ute Lines (1 & 2), which only serve BVES, consists of approximately 1.5 miles of overhead sub-transmission bare lines (34.5 kV) that connect the BVES system at two points with the SCE Goldhill Switch Station. The Ute Lines (1 & 2) run on the same poles for a large section of the circuit. These SCE assets are located in the U.S. Forest Service area and in an environmentally sensitive area known as the "pebble plane". These lines provide approximately 72% of rated supply capacity and, under normal conditions, 100% of BVES's supply loads. These lines allow BVES to adopt a defensive operational scheme during the fire season by allowing the de-energization of the Radford Line (from the Redlands), which mostly traverses a High Fire Threat District (HFTD) Tier 3 area. The Ute Lines (1 & 2) are completely in a HFTD Tier 2 area. Therefore, these lines are critical to BVES's energy supply and reliability and permit BVES to significantly mitigate risk of wildfire in its HFTD Tier 3 area. BVES does not intend to pursue this project further, but intends to pursue other options with SCE to resolve the inherent wildfire risk exposure, and system safety and reliability risk of the Ute lines. Under this WMP, BVES does not propose to underground any overhead lines.													
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															
17. Updates to grid topology to minimize risk of ignition in HFTDs	2019 plan	Bear Valley Electric Service does not have any specific grid design and system hardening wildfire mitigation initiatives focused on updates to grid topology to minimize risk of ignition in HFTDs at this time. The utility recognizes that it should continue to evaluate updates to grid topology as weather patterns change and overall modeling and assessments evolve. Other grid design and system hardening programs include, as a component, grid topology improvements to minimize the risk of ignition in the HFTD. BVES recognizes that it is challenging to mitigate wildfire risk through grid topology changes alone and therefore focuses more on augmentation of existing circuitry through system hardening efforts included throughout Table 23.													
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
18. Other / not listed	2019 plan	$ -	$ -	$ -	N/A - this initiative does not have a specific line mileage associated with its implementation	N/A - this initiative does not have a specific line mileage associated with its implementation	Contact from object. All types of equipment/facility failure.	1,143,070.47	0.72	Wildfire-Significant Loss of Property.	Existing	D.19-08-027	GRC	N/A - this initiative is not associated with a specific regulation	N/A - this initiative is not associated with a specific rule	Safety and Technical Upgrades to Palomino Substation. Converts substation from overhead-type to pad-mounted design with dead front SCADA enabled equipment.
	2019 actual	$ -	$ -	$ -												
	2020	$ 1,587,675	$ 1,587,675	$ -												
	2021	$ -	$ -	$ -												
	2022	$ -	$ -	$ -												
	2020-2022 plan total	$ 1,587,675	$ 1,587,675	$ -												
19. Other / not listed	2019 plan	$ 2,936,929	$ 2,936,929		N/A - this initiative does not have a specific line mileage associated with its implementation	N/A - this initiative does not have a specific line mileage associated with its implementation	Contact from object. All types of equipment/facility failure.	1,143,068.47	0.39	Wildfire-Significant Loss of Property.	Existing	D.19-08-027	GRC	N/A - this initiative is not associated with a specific regulation	N/A - this initiative is not associated with a specific rule	Safety and Technical Upgrades to Pineknot substation. Converts substation from overhead-type to pad-mounted design with dead front SCADA enabled equipment. Estimated $2,936,929.00 CAPEX over 1 year 2019-2020. 90% complete as of January 2020. Covered in BVES's General Rate Case A.17-05-004.
	2019 actual	$ 3,524,748	$ 3,524,748	$ -												
	2020	$ -	$ -	$ -												
	2021	$ -	$ -	$ -												
	2022	$ -	$ -	$ -												
	2020-2022 plan total	$ -	$ -	$ -												

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
20. Other / not listed	2019 plan	$ 732,018	$ 732,018	$ -	N/A - this is a System Wide Initiative	N/A - this is a System Wide Initiative	Contact from object. All types of equipment/facility failure. Wire-to-wire contact/contamination.	1,146,143.02	1.57	Wildfire-Significant Loss of Property. Wildfire-Public Safety.	Existing	D.19-08-027	GRC	Exceeding	GO 95	Replaces all tree attachments in the BVES service area with overhead on poles. Covered in BVES's General Rate Case A.17-05-004.
	2019 actual	$ 701,348	$ 701,348	$ -												
	2020	$ 732,018	$ 732,018	$ -												
	2021	$ 732,018	$ 732,018	$ -												
	2022	$ 732,018	$ 732,018	$ -												
	2020-2022 plan total	$ 2,196,054	$ 2,196,054	$ -												
21. Other / not listed	2019 plan	$ -	$ -	$ -	N/A	N/A	Wildfire-Public Safety.	1,022,629.33	0.6	Wildfire-Significant Loss of Property	New	N/A - this is a new initiative	WMP Memorandum Account	N/A - this initiative is not associated with a specific regulation	N/A - this initiative is not associated with a specific rule	Hardening of overhead facilities along evacuation routes to prevent facilities from falling into evacuation routes during a wildfire. Pilot program to be perform in 2020 plan at a cost of $200,000. Note that the estimates for 2021 and 2022 will be updated in next WMP based on pilot program results.
	2019 actual	$ -	$ -	$ -												
	2020	$ 200,000	$ 200,000	$ -												
	2021	$ 1,710,000	$ 1,710,000	$ -												
	2022	$ 1,710,000	$ 1,710,000	$ -												
	2020-2022 plan total	$ 3,620,000	$ 3,620,000	$ -												

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
22. Other / not listed	2019 plan				N/A	N/A	Loss of Energy Supplies.	2,602,297.79	2.81	N/A - this initiative does not address any other risk drivers	New	D.19-08-027	GRC	N/A - this initiative is not associated with a specific regulation	N/A - this initiative is not associated with a specific rule	BVPP Reliability Upgrades. Upgrades power plant electronic controls, emissions monitoring systems, catalyst reliability, and engine performance.
	2019 actual															
	2020	$ 925,485	$ 925,485	$ --												
	2021	$ 925,485	$ 925,485	$ --												
	2022	$ --	$ --	$ --												
	2020-2022 plan total	$ 1,850,969	$ 1,850,969	$ --												
23. Other / Not Listed	2019 plan															Construct an Energy Storage Facility within BVES's Service Territory. Costs not reflected in this filing as the project is still under consideration. Future WMPs will present firm amounts.
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															

1. Safety and Technical Upgrades of Pineknot Substation
2. Safety and Technical Upgrades of Palomino Substation
3. Construct an Energy Storage Facility within BVES's Service Territory
4. Fusing Upgrades
5. Tree Attachment Removal
6. Evacuation Route Hardening
7. Pole Loading Assessment and Remediation Program
8. Covered Conductor Replacement Pilot
9. Covered Conductor Wrap Pilot
10. Radford Line Covered Conductor Replacement Project

5.3.4 Asset Management and Inspections

The second wildfire prevention category, Inspection and Maintenance, consists of monitoring and maintaining the system. This includes conducting system patrols, leveraging technological inspections tools, and managing maintenance.

System Inspection and Maintenance Plan

Plan: Inspection plays an important role in wildfire prevention. BVES currently patrols its system regularly and has increased the inspection programs. The BVES inspection plan includes several components: ground inspections, electrical preventative maintenance (PM), LIDAR inspection, and GIS data collection and sharing. The list below outlines the plans for each of these inspections.

- **Ground Patrol Inspection**: In compliance with G.O. 95 and 165, BVES's Inspection Program requires overhead facilities to undergo an on-ground patrol inspection each year.

- **Second Ground Patrol (Pilot)**: BVES proposes to conduct one additional G.O. 165 independent patrol inspection, of the entire overhead system, so that two visual patrols of the entire overhead system are conducted annually. BVES believes this additional patrol is warranted due to the local climate; likelihood of icing conditions; tree limbs and branches being subject to weakening due to repeated high winds, snow, and ice weight (which may cause fatigue failure); high elevation; other local conditions; difficultly accessing vegetation for trimming near bare conductors; species growth rates and characteristics; and the fact that the service area is designated "very dry" or "dry" approximately 80 percent of the time in the NFDRS. This environment coupled with the fact that the fire season is now all year round creates a high-risk condition that can be mitigated by increasing patrols.

  Status and Results: The second ground patrol pilot was performed in the fall of 2019 and detected some potential ignition sources. The initial assessment is that the second ground patrol is effective. A second annual ground patrol will conducted in 2020. If substandard conditions are not found after running the pilot for 2-years, then the pilot will be concluded and discontinued.

  Remedies of Ignition Faults Detected: Substandard conditions detected on the second ground patrol would be addressed in the same manner as the first patrol which will be in compliance with G.O. 95 and 165.

- In addition to the two patrol inspections, BVES conducts a detailed inspection and on-ground inspection at least every five years in accordance with G.O. 165. The list below defines the difference between these two types of inspections.

  - A "patrol inspection" is a visual inspection designed to identify obvious structural problems and hazards. These patrols are designed to identify gross defects. Gross defects may include, but are not limited to, damaged poles, broken cross-arms, damaged insulators, sagging wires, leaking transformers, vegetation encroachment inside of minimum clearance standards, etc.

  - A "detailed inspection" is a more careful visual and routine diagnostic exam of individual pieces of equipment. The inspector will record the results of the diagnostic and visual examinations and rate the condition of the equipment. These inspections are designed to

identify any existing, including minor, defects. These may include, but are not limited to, open wire secondary clearance, corona effect on cross-arms, warning signage issues, visibility strips and pole-tag issues, rotten poles, vegetation encroachment inside of minimum clearance standards or encroachment that will lead to violation of minimum clearance standards before the next scheduled vegetation clearance crew visit.

BVES conducts these inspections in compliance with G.O. 165 and G.O. 95 (Rule 18). If any defects outlined by that rule are identified, BVES prioritizes the defect based on risk and resolves the issues in compliance with G.O. 95 Rule 18 timeframes.[44]

- **Electrical Preventative Maintenance Program**: BVES maintenance practice is a condition based "preventive maintenance" (PM) program. The equipment is maintained, based on regular scheduled intervals. As a general rule, the assets are not "run-to-failure".

  This PM program assesses major equipment assets located at BVES substations and in the field at locations in the BVES sub-transmission (34.5 kV) and distribution (up to 4.160 kV) system. The results of the program are designed to evaluate the condition of key distribution equipment assets, identify equipment at-risk of failure, improve performance, reduce costs, and extend equipment life. Most importantly, the program will mitigate the risk of catastrophic failure of equipment, which could result in fire, public and worker safety hazards, environmental damage, prolonged unplanned outages, and costly repairs or replacement of equipment.

  The PM program relies on inspection procedures that provide a level of assurance that the asset will perform correctly and can be scheduled for replacement before it fails in service. Unfortunately, even with a comprehensive PM program, some equipment will unexpectedly fail in service. When the inspection program or maintenance can no longer assure proper operation due to deterioration, obsolescence, or cost effectiveness, the asset is scheduled for replacement.

  Some of the more significant preventive maintenance programs in place at BVES include:

  - Intrusive Pole Inspection Program: When the poles become 15 years old, the first pole inspection is typically performed. It is then inspected every 10 years thereafter. When the inspection determines the pole no longer has the required strength, the pole is scheduled for replaced. This program determines the health of the existing pole.

  - Substation Transformer Inspection: Gas in oil analysis is performed every year. If gas is detected in the oil a cause analysis is performed to determine if the transformer can be repaired or requires replacement. Other inspections such as oil levels, temperature, and contamination are also performed. These inspections will determine when a transformer is nearing end of life so it can be scheduled for replacement.

  - Protective Substation Relays: These relays are inspected, tested, and calibrated on a periodic basis to assure proper operation. Presently the periodic inspection for relays is every 4 years. If proper operation cannot be assured, for instance due to obsolescence, the relay is scheduled for replacement.

  - Circuit Breakers: The circuit breakers are inspected and maintained periodically every 4 years. Depending on the type of breaker, these inspection and maintenance tests could include oil analysis, vacuum/gas checks, speed analysis, or other industry analysis standards.

[44] BVES uses the examples of defects and issues that are safety hazards, risks of at least moderate potential impact to safety or reliability, or risks of low potential impact to safety or reliability provided in GO-95 Appendices I and J. These appendices also provide examples of repair/resolution priorities and timeframes.

- Wire and Line Hardware: The equipment is visually inspected according the G.O. requirements. When the inspection determines equipment is nearing end of life, the equipment is scheduled for replacement. For instance, when the thin copper wire becomes brittle or can no longer carry the capacity a replacement program is developed to remove all of this type or age of assets from the grid.

- The above Preventative Maintenance (PM) programs are intended to provide a high level of reliability while seeking to assure the equipment will not fail in service. The PM program cannot be combined with inspection programs since the PM program requires “equipment specialist” that physically work on the equipment. The inspection programs are a visual inspection with no physical work.

LIDAR Inspection (Pilot): BVES plans to conduct two LIDAR sweeps per year to evaluate the effectiveness of clearance efforts and identify any potential wildfire hazards. This is an enhanced inspection using LIDAR (Light Detection and Ranging) inspections and analysis, which use a system of lasers and software to develop surveys of the overhead sub-transmission and distribution systems, to accurately determine vegetation clearances to conductors. BVES began using LIDAR through a pilot project initiative using both helicopter and fixed wing flights, as well as via a truck-mounted mobile system. Given the proximity of the majority of BVES’s electrical system to the road network, truck-mounted mobile LIDAR will be utilized more often because it is more cost-effective. This relatively quick and accurate inspection will allow BVES to verify, document and resolve vegetation issues before making contact with bare conductors.

Status and Results: The LIDAR pilot was able to detect potential wildfire ignition hazards source such as broken limbs near conductors and improper clearance and is considered a success at mitigating potential ignition sources. Consequently, BVES proposes the pilot continue to perform two LIDAR inspections be performed per year. If substandard conditions are not found after running the pilot for 2 years, then the pilot would be concluded and discontinued.

Remedies of Ignition Faults Detected: Substandard conditions detected on the second ground patrol will be addressed in the same manner as the first patrol in compliance with GO 165.

The LIDAR Inspection is performed by contractors using specialized software and hardware. It is not practical at this time to combine this program with other types of inspections due to the backlog of GIS work that needs to be expedited. This will be re-examined in the future.

Execution: BVES currently conducts on-ground patrol inspections and detailed inspections. The utility proposes to implement an additional on-ground patrol inspection, LIDAR inspection, electrical preventative maintenance program, along with data sharing with relevant agencies by request

BVES performs the vegetation and on-ground inspections at the same time. BVES does not believe that the effectiveness of these actions is enhanced by breaking the two up into separate actions. BVES’s system is relatively small - the total linear circuit miles of overhead sub-transmission (34.5 kV) and distribution (4 kV) in the BVES service area are 211 miles.

1) BVES’s checklist for on-ground patrols and inspections requires inspectors to check vegetation clearances.
2) G.O. 165 Inspection Requirements for Electric Distribution and Transmission Facilities do not require IOUs to separate the inspections into separate asset and vegetation inspections but is silent on the subject.

3) G.O. 95 Rule 18 outlines the priority levels that substandard conditions and safety hazards need to be addressed. Rule 18 does not separate vegetation conditions from equipment or other asset issues. All substandard conditions must be appropriately addressed.
4) BVES is periodically audited by the CPUC on its Distribution Inspection program and this practice has never been indicated as an issue. BVES is scheduled for an audit in October 2020.
5) In the Scope of Work for the 3rd Party (Second) Ground Patrol, BVES provides vegetation specifications G.O. 95 and PRC Code 4291– see Table 24 item 11. The third party ground inspector is knowledgeable about the requirements of GO-95 and Code 4291.

Expense: The cost of several of the system inspection and maintenance programs is partially included in BVES's General Rate Case A.17-05-004, approved in August 15, 2019. Specifically, the GRC includes:

- The annual inspection patrol in compliance with GO 165
- The 5-year detailed inspections in compliance with GO 165
- Electrical Preventative Maintenance Program
- GIS Data Collection and Sharing

BVES estimates the incremental costs of these programs immediately below. The actual, incremental costs will be booked into the Wildfire Mitigation Plan Implementation Memorandum Account.

- The second annual on-ground patrol inspection to be performed by a third party is estimated to cost $90,000 per year.
- LIDAR Inspection, which costs $117,120 per sweep. Therefore, the LIDAR inspection program costs would be $234,240 per year.

Table 24 below presents program details related to asset management and inspection activities. This information is also included in the accompanying *Attachment 1* workbook.

Table 24. Asset Management and Inspections

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
1. Detailed inspections of distribution electric lines and equipment	2019 plan	Bear Valley Electric Service has not specified a wildfire mitigation asset management and inspections initiative for detailed inspections of distribution lines and equipment. BVES's distribution inspection initiatives are best captured in Table 24 Item 11. Patrol inspections of distribution lines and equipment														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															
2. Detailed inspections of transmission electric lines and equipment	2019 plan	Bear Valley Electric Service does not have any transmission lines or equipment as all BVES's lines are below 65 kV.														
	2019 actual															
	2020															
	2021															
	2022															

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
	2020-2022 plan total															
3. Improvement of inspections	2019 plan	N/A - Elements already captured in other relevant programs	N/A - Elements already captured in other relevant programs	N/A - Elements already captured in other relevant programs	N/A - Elements already captured in other relevant programs	N/A - Elements already captured in other relevant programs	All types of equipment failure; Contact from object	N/A - Elements already captured in other relevant programs	N/A - Elements already captured in other relevant programs	N/A - Elements already captured in other relevant programs	New in 2019	CA GO 95 & 165	N/A - Elements already captured in other relevant programs	In compliance with Regulation	GO 95 & 165	Improvements of Bear Valley Electric Service's inspections have already been captured in other initiatives
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
4. Infrared inspections of distribution electric lines and equipment	2019 plan	$96,073	$ -	$96,073	70.27	$ 1,367	Contact from object, all types of equipment/facility failure, wire-to-wire contact/contamination	151,260.94	1.21	Wildfire-Significant Loss of Property	Existing	GRC	N/A - this is an existing initiative	Exceeding	GO-95	Contract Exacter Services. Conduct survey of BVES overhead system on 3-year cycle using infrared, ultrasonic and EMI sensors. Approximately 1/3 of OH system surveyed each year." to read: "Contract Exacter Services. Conducted survey of BVES overhead system using infrared, ultrasonic and EMI sensors."
	2019 actual	$60,104	$ -	$60,104	70.27	$ 855										
	2020	$ -	$ -	$ -	70.27	$ -										
	2021	$ -	$ -	$ -	70.27	$ -										
	2022	$ -	$ -	$ -	70.27	$ -										
	2020-2022 plan total	$ -	$ -	$ -	210.81	$ -										

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
5. Infrared inspections of transmission electric lines and equipment	2019 plan	Bear Valley Electric Service does not have any transmission lines or equipment as all of BVES's lines are below 65 kV.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															
6. Intrusive pole inspections	2019 plan	Test all poles to loading standards, GO95 requirements, intrusive inspection criteria and age and then, replaces or remediates non-compliant poles. Covered under table 23 section 6.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
7. LiDAR inspections of distribution electric lines and equipment	2019 plan	$ 220,000	$ -	$ 220,000	632.43	$ 347.86	Contact from object, all types of equipment/facility failure, wire-to-wire contact/contamination	1,145,870.45	3.05	Wildfire-Significant Loss of Property	New	N/A - this is a new initiative	WMP Memorandum Account	Exceeding	GO-165	Conduct LiDAR surveys of BVES overhead system on a semi-annual basis.
	2019 actual	$ -	$ -	$ -	-	-										
	2020	$ 240,000	$ -	$ 240,000	632.43	$ 379.49										
	2021	$ 240,000	$ -	$ 240,000	632.43	$ 379.49										
	2022	$ 240,000	$ -	$ 240,000	632.43	$ 379.49										
	2020-2022 plan total	$ 720,000	$ -	$ 720,000	1897.29	$ 379.49										
8. LiDAR inspections of transmission electric lines and equipment	2019 plan	Bear Valley Electric Service does not have any transmission lines or equipment as all of BVES's lines are below 65 kV.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
9. Other discretionary inspection of distribution electric lines and equipment, beyond inspections mandated by rules and regulations	2019 plan	Bear Valley Electric Service does not have any wildfire mitigation asset management and inspection initiatives focused on other discretionary inspections of distribution electric lines and equipment beyond inspections mandated by rules and regulations at this time that have not been captured in other initiatives.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															
10. Other discretionary inspection of transmission electric lines and equipment, beyond inspections mandated by rules and regulations	2019 plan	Bear Valley Electric Service does not have any transmission lines or equipment as all of BVES's lines are below 65 kV.														
	2019 actual															
	2020															
	2021															

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
	2022															
	2020-2022 plan total															
11. Patrol inspections of distribution electric lines and equipment	2019 plan	$ 90,000	-	$ 90,000	632.43	$ -	Contact from object, all types of equipment/facility failure, wire-to-wire contact/contamination	1,024,62 1.77	7.27	N/A - all risk drivers have been captured in the Ignition probability drivers targeted	New	N/A - this is a new initiative	WMP Memorandum Account.	Exceeding	GO-165 and PRC 4291	Conduct annual 2nd Ground Patrol of overhead facilities by 3rd party. This is in addition to BVES GO-165 annual ground patrol.
	2019 actual	$ -	$ -	$ -	-	$ -										
	2020	$ 90,000	$ -	$ 90,000	632.43	$ 142.31										
	2021	$ 90,000	$ -	$ 90,000	632.43	$ 142.31										
	2022	$ 90,000	$ -	$ 90,000	632.43	$ 142.31										
	2020-2022 plan total	$ 270,000.00	$ -	$ 270,000.00	$ 1,897.29	$ 142.31										
12. Patrol inspections of transmission electric lines and equipment	2019 plan	Bear Valley Electric Service does not have any transmission lines or equipment as all BVES's are below 65 kV.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022															

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
	plan total															
13. Pole loading assessment program to determine safety factor	2019 plan	Bear Valley Electric Service's wildfire mitigation asset management and inspections pole loading assessment program to determine safety factor is fully captured in Table 24 Initiative 6. Intrusive pole inspections.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															
14. Quality assurance / quality control of inspections	2019 plan	N/A - Elements already captured in other relevant initiatives	N/A - Elements already captured in other relevant initiatives	N/A - Elements already captured in other relevant initiatives	N/A - Elements already captured in other relevant initiatives	N/A - Elements already captured in other relevant initiatives	All	N/A - Elements already captured in other relevant initiatives	N/A - Elements already captured in other relevant initiatives	N/A - Elements already captured in other relevant initiatives	Existing	N/A - Elements already captured in other relevant initiatives	N/A - Elements already captured in other relevant initiatives	N/A - Elements already captured in other relevant initiatives	N/A - Elements already captured in	General initiative and best practices applied to and accounted for in other relevant initiatives
	2019 actual															
	2020															
	2021															
	2022															

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
	2020-2022 plan total															
15. Substation inspections	2019 plan	Bear Valley Electric Service's substation inspections are fully captured in Table 24 Item 11. Patrol inspections of distribution electric lines and equipment														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															
16. Other / not listed	2019 plan	$ 105,566	$ -	$ 105,566	N/A - this is a System Wide Initiative	N/A - this is a System Wide Initiative	Contact from object, all types of equipment/facility failure, wire-to-wire contact/contamination	1,145,870.45	6.93	N/A - all risk drivers have been captured in the Ignition probability	Existing	D.19-08-027	GRC	N/A - this initiative is not associated with specific regulations	N/A - this initiative is not associated	Electrical Preventative Maintenance Program. Program to conduct preventive maintenance and safety checks on major substation and field equipment. RSE is an estimate based on latest
	2019 actual	$ 32,395	$ -	$ 32,395												
	2020	$ 105,567	$ -	$ 105,567												
	2021	$ 107,678	$ -	$ 107,678												
	2022	$ 109,832	$ -	$ 109,832												
	2020-2022	$ 323,076	$ -	$ 323,076												

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
	plan total															available risk assessment.

1. First Annual On-Ground Inspection
2. Second Annual On-Ground Inspection
3. Electrical Preventative Maintenance Program
4. LIDAR Inspection

5.3.5 Vegetation Management and Inspections

Plan: BVES has a vegetation management plan in place. Mowbray's Tree Service Inc., a third-party contractor, executes the vegetation clearing efforts under the direction of BVES. The contractor's work is subject to BVES Quality Control checks. The goal of this plan is to proactively maintain vegetation, so it does not come into contact with electrical infrastructure, thereby preventing wildfires. The utility created the vegetation management plan with wildfire prevention in mind, collaborating with the City of Big Bear Lake, local Fire Departments, and the US Forest Service on an as-needed basis.[45] The plan will be reviewed and updated on an as-needed basis or every three-years, depending on changing conditions. The program includes three components: preventative vegetation management, corrective vegetation clearance, and emergency vegetation clearance. Each of these components need to adhere to particular specifications, detailed below.

- **Preventative Vegetation Management:** This scope of work encompasses ensuring vegetation on BVES overhead sub-transmission and distribution lines adheres to identified clearance specifications.
- **Corrective Vegetation Clearance:** This scope of work consists of completing corrective and emergent vegetation orders to fix clearance discrepancies that the contractor or BVES discovers. If an order is designated as High Priority, the contractor must prioritize that work and make the correction immediately.

[45] BVES has met with these stakeholders in the previous year to gather feedback and input on its vegetation maintenance program, emergency planning, and wildfire mitigation strategy.

- **Emergency Vegetation Clearance:** This scope of work includes completing maintenance on an as-needed basis for any major disaster or emergency events. For example, if a storm results in fallen trees and branches, the contractor must mobilize as soon as possible to clear the vegetation.

As mentioned above, all vegetation management work must adhere to certain specifications, as outlined by BVES. The utility-defined specifications comply with or exceed those outlined in Public Utilities Code, G.O. 95, Rules for Overhead Electric Line Construction, Rule 35 Vegetation management, and Appendix E Guidelines to Rule 35 and Commission Decisions, such as D.17-12-024. As previously described BVES has unique local conditions that require it, in certain circumstances, to go beyond the regulated vegetation clearance standards. These enhanced specifications include:

- A minimum radial clearance of 72 inches between bare conductors and vegetation. (BVES's bare conductors operate between 2.4 kV or more volts, but less than 72 kV, which means it must have a minimum radial clearance of 48 inches.)
- No vertical coverage above BVES sub-transmission lines (34.5 kV).
- All vegetation within the drip line of primary conductors that has the potential of growing into the secondary system or within 12 feet of the energized primary conductors within the 3-year vegetation management program cycle will be removed.
- Dead, rotten or diseased trees or portions of otherwise healthy trees – also known as "hazard trees" – that overhang or lean toward and may fall into a span of power lines will be removed. Note that this may apply to trees outside the clearance zone.
- Exceptions for tree trunks or major limbs that meet the following criteria: at the primary conductor level, mature tree trunks that are greater than 18 inches in diameter and major limbs that are greater than 10 inches in diameter with sufficient strength and rigidity may encroach within the minimum safe distance (72-inches) but not within 18 inches of the bare line conductors. The rigidity of the tree trunk or major limb must be such that it would be impossible for it to encroach within 12 inches of the bare conductor at any time during high wind, heavy icing and snow, or other conditions.

BVES will also consider the removal of any fast-growing trees, such as Poplars, Aspens, or Cottonwood, rotten or diseased trees, and healthy trees hanging over or leaning towards bare lines. All such trees will be trimmed to 12 feet minimum and evaluated for removal in each case.

Execution: BVES's contractor currently conducts vegetation maintenance on the system. To ensure quality, BVES staff (managers, supervisors, and other trained staff) conducts Quality Control (QC) checks of the contractor's work through detailed, routine inspections and patrols of its overhead circuits. Any discrepancies discovered are categorized by priority level (e.g. emergency, urgent, or routine) and subsequently corrected by the contractor. The contractor also provides weekly updates, which include the status of work completed and upcoming work such as tree removals, special support requests, corrective and emergent vegetation order status, and other items pertinent to progress of the work.

When executing tree removals, BVES and its contractor comply with permitting requirements mandated by the US Forest Service, County of San Bernardino, or City of Big Bear Lake as applicable. BVES currently does not remove trees on hillsides or on a large-scale, addressing any risks, such as erosion, wind shear, and flooding that may arise from trimming and removing trees. It will consider these risks moving forward should tree removal plans change.

Forester Consulting Services: BVES intends to engage a full-time contract utility forester in its service territory as part of the BVES team. The contract forester's job duties include inspections, auditing, customer contact and issue resolution, work plan development, specialized projects, contractor safety observations, and vegetation management program documentation and data analysis.

Expense: The cost of the Vegetation Management program is included in BVES's General Rate Case A.17-05-004 and through BVES's FHPMA per Commission Decision D.17-12-024, Decision Adopting Regulations to Enhance Fire Safety in the High Fire-Threat District. No additional expense is anticipated.

The utility estimates this O&M program will cost a total of $145,000 per year, increasing at approximately 2% per year, beginning in 2020. The cost of implementing the Forester program was not addressed in BVES's General Rate Case Commission Decision 19-08-027 of August 15, 2019. Therefore, those incremental costs will be booked into the Wildfire Mitigation Plan Implementation Memorandum Account.

Table 25 below presents program details related to vegetation management and inspection activities. This information is also included in the accompanying *Attachment 1* workbook.

Table 25. Vegetation Management and Inspections

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
1. Additional efforts to manage community and environmental impacts	2019 plan	Bear Valley Electric Service does not have a specific wildfire mitigation vegetation management and inspection initiative dedicated to this effort at this time. The utility recognizes that additional efforts to manage community and environmental impacts are critical to reducing wildfire risk and conducts such efforts on an as-needed basis, as well as incorporating additional efforts within other programs such as those in Table 29 and Table 30.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															
2. Detailed inspections of vegetation around distribution electric lines and equipment	2019 plan	$ 1,000,000	$ -	$ 1,000,000	N/A - this is a System Wide initiative	N/A - this is a System Wide initiative	Contact from object, all types of equipment/facility failure, wire-to-wire contact/contamination	872,292.38	0.27	Wildfire-Significant Loss of Property	Existing	D.19-08-027	FHPMA (not new)	Exceeding	GO -95	Increases vegetation clearances, criterial for tree removals, and eliminates overhang on sub-transmission. These are above the 2017 baseline
	2019 actual	$ 902,447	$ -	$ 902,447												
	2020	$ 2,600,000	$ -	$ 2,600,000												
	2021	$ 2,600,000	$ -	$ 2,600,000												
	2022	$ 2,600,000	$ -	$ 2,600,000												

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
	2020-2022 plan total	$ 7,800,000	$ -	$ 7,800,000												vegetation clearances that were in effect before CPUC Decision 17-12-024 was adopted.
3. Detailed inspections of vegetation around transmission electric lines and equipment	2019 plan	Bear Valley Electric Service does not have any transmission lines or equipment as all of BVES's lines are below 65 kV.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															
4. Emergency response vegetation management due to red flag warning or other urgent conditions	2019 plan	Bear Valley Electric Service does not have a specific wildfire mitigation vegetation management and inspection initiative dedicated to this effort at this time. The utility recognizes that emergency response vegetation management due to red flag warnings or other urgent conditions are critical to reducing wildfire risk and has already incorporated these efforts into BVES's existing Emergency Response and Preparedness Plan as well as the initiatives described in Table 26 Grid Operations and Protocols.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
5. Fuel management and reduction of " slash" from vegetation management activities	2019 plan	Bear Valley Electric Service does not have a specific wildfire mitigation vegetation management and inspection initiative dedicated to this effort at this time. Fuel management and reduction of "slash" from vegetation management activities have been incorporated into BVES's ongoing and newly proposed vegetation management initiatives as described in Table 25.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															
6. Improvement of inspections	2019 plan	N/A - Elements already captured in other relevant initiatives	N/A - Elements already captured in other relevant initiatives	N/A - Elements already captured in other relevant initiatives	N/A - Elements already captured in other relevant initiatives	N/A - Elements already captured in other relevant initiatives	Contact from object	N/A - Elements already captured in other relevant initiatives	N/A - Elements already captured in other relevant initiatives	Reduces escalation should an ignition event occur through removal of fuel	Existing	2017 GRC & 2019 WMP	N/A - Elements already captured in other relevant initiatives	In compliance with Regulation	GO 95	Program incorporated new requirements in 2019
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
7. LiDAR inspections of vegetation around distribution electric lines and equipment	2019 plan	Bear Valley Electric Service's LiDAR inspections of vegetation around distribution electric lines and equipment are captured in Table 24 Initiative 7. LiDAR inspections of distribution electric lines and equipment.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															
8. LiDAR inspections of vegetation around transmission electric lines and equipment	2019 plan	Bear Valley Electric Service does not have any transmission lines or equipment as all of BVES's lines are below 65 kV.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
9. Other discretionary inspection of vegetation around distribution electric lines and equipment, beyond inspections mandated by rules and regulations	2019 plan	Bear Valley Electric Service does not have any other discretionary inspections of vegetation around distribution electric lines and equipment beyond inspections mandated by rules and regulations and other described initiatives at this time.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															
10. Other discretionary inspection of vegetation around transmission electric lines and equipment, beyond inspections mandated by rules and regulations	2019 plan	Bear Valley Electric Service does not have any transmission lines or equipment as all of BVES's lines are below 65 kV.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
11. Patrol inspections of vegetation around distribution electric lines and equipment	2019 plan	Bear Valley Electric Service's patrol inspections of vegetation around distribution electric lines and equipment are fully captured in Table 25 Initiative 2. Detailed inspection of vegetation around distribution electric lines and equipment and Table 24 Initiative 11. Patrol inspections of distribution electric lines and equipment.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															
12. Patrol inspections of vegetation around transmission electric lines and equipment	2019 plan	Bear Valley Electric Service does not have any transmission lines or equipment as all of BVES's lines are below 65 kV.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
13. Quality assurance / quality control of inspections	2019 plan	N/A - Elements already captured in other relevant initiatives	N/A - Elements already captured in other relevant initiatives	N/A - Elements already captured in other relevant initiatives	N/A - Elements already captured in other relevant initiatives	N/A - Elements already captured in other relevant initiatives	All	N/A - Elements already captured in other relevant initiatives	N/A - Elements already captured in other relevant initiatives	N/A - Elements already captured in other relevant initiatives	Existing	N/A - Elements already captured in other relevant initiatives	N/A - Elements already captured in other relevant initiatives	N/A - Elements already captured in other relevant initiatives	N/A - Elements already captured in other relevant initiatives	General initiative and best practices applied to and accounted for in other relevant initiatives
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															
14. Recruiting and training of vegetation management personnel	2019 plan	$ -	$ -	$ -	N/A - this is a System Wide initiative	N/A - this is a System Wide initiative	Contact from object, all types of equipment/facility failure, wire-to-wire contact/contamination	151,260.94	0.67	Wildfire-Significant Loss of Property	New	N/A - this is a new initiative	WMP Memorandum Account	Exceeding	GO 95	Places a full-time contract utility forester as part of the BVES team. The job duties of the contract forester would include: Inspections: Inspect and evaluate circuits for hot spot locations, hazard tree identification and outage investigations. Auditing: Perform site-specific work audits to ensure contractors are performing within the specifications
	2019 actual	$ -	$ -	$ -												
	2020	$ 145,000	$ -	$ 145,000												
	2021	$ 147,900	$ -	$ 147,900												
	2022	$ 150,858	$ -	$ 150,858												

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
	2020-2022 plan total	$ 443,758	$ -	$ 443,758												set forth by BVES. Customer Contacts/Issue Resolution: initiate or follow up in a timely and professional manner on all customer issues that may arise in a manner that will support the policies and procedures of BVES. This includes customer notifications, permit negotiations, conflict resolution, outage support/investigations and providing shared resources to construction, substation, lines and/or various work groups related to BVES's Vegetation Management group. Administrative: Perform data entry, spreadsheet work, monitor crew activity sheets, track completed work, capture photo

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
																documentation of specific conditions and other administrative tasks as needed. Developing Work Plans: Develop work plans that specify the pruning and removal requirements to maintain the utility ROWs. These plans will be developed in an efficient and straightforward manner for a seamless transition to the tree contractors. Specialized Projects: Develop and manage specialized projects with an emphasis on reliability and risk management. Perform enhanced outage investigations, integrated storm hardening projects, performed risk assessment and prioritization studies, developed storm response protocols and implemented hazard tree

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
																programs that are focused on improving system safety. Contractor Safety Observations: Observe contractors as they work and provide safety behavior modification to help ensure a program that is best in class not only in vegetation management, but safety as well. RSE is an estimate based on latest available risk assessment.
15. Remediation of at-risk species	2019 plan	Remediation of at-risk species is a subset to the company's vegetation management practices to achieve clearances around electric lines and equipment as described in Table 25, particularly Table 24 Item 14. As such, Bear Valley Electric Service does not have a specific wildfire mitigation initiative for remediation of at-risk species at this time.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
16. Removal and remediation of trees with strike potential to electric lines and equipment	2019 plan	Removal and remediation of trees with strike potential to electric lines and equipment is a subset to the company's vegetation management practices to achieve clearances around electric lines and equipment as described in Table 25, particularly Table 24 Item 14. As such, Bear Valley Electric Service does not have a specific wildfire mitigation initiative for removal and remediation of trees with strike potential at this time.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															
17. Substation inspections	2019 plan	Substation vegetation management is a subset to the company's vegetation management initiatives as described in Table 25.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
18. Substation vegetation management	2019 plan	Substation inspections are a subset to the company's vegetation management inspections as described in Table 25 Initiatives 2. and 14.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															
19. Vegetation inventory system	2019 plan	Bear Valley Electric Service does not have a specific wildfire mitigation initiative dedicated to the creation and management of a vegetation inventory system at this time. The company's utility forester, as described in Table 25 Item 14, will maintain such a system.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
20. Vegetation management to achieve clearances around electric lines and equipment	2019 plan	Vegetation management to achieve clearances around electric lines and equipment is captured in Table 25 Items 2 and 14.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															
21. Other / not listed	2019 plan	N/A - the utility does not have any other or unlisted vegetation management initiatives	N/A - the utility does not have any other or unlisted vegetation management initiatives	N/A - the utility does not have any other or unlisted vegetation management initiatives	N/A - the utility does not have any other or unlisted vegetation management initiatives	N/A - the utility does not have any other or unlisted vegetation management initiatives	N/A - the utility does not have any other or unlisted vegetation management initiatives	N/A - the utility does not have any other or unlisted vegetation management initiatives	N/A - the utility does not have any other or unlisted vegetation management initiatives	N/A - the utility does not have any other or unlisted vegetation management initiatives	N/A - the utility does not have any other or unlisted vegetation management initiatives	N/A - the utility does not have any other or unlisted vegetation management initiatives	N/A - the utility does not have any other or unlisted vegetation management initiatives	N/A - the utility does not have any other or unlisted vegetation management initiatives	N/A - the utility does not have any other or unlisted vegetation management initiatives	N/A - the utility does not have any other or unlisted vegetation management initiatives
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															

1. Preventative Vegetation Management
2. Forester Consulting Services

5.3.6 Grid Operations and Protocols

The third wildfire prevention category, Operational Practices, encompasses standard company procedures related to wildfires, special work procedures, and wildfire infrastructure protection team definitions. These practices help the utility manage risk on a day-to-day basis through its operations.

Operational Considerations and Special Work Procedures

Plan: Understanding system demand allows BVES to create a hybrid operating system that can be optimized for two types of operations: (1) safety and reliability and (2) wildfire prevention during high risk periods. However, it should be noted that wildfire prevention measures during high fire risk weather conditions always override reliability optimization regardless of season or system demand. Generally, since the winter months bring the heaviest demand on the BVES distribution system, BVES optimizes the system for safety and reliability. These months are often wet and do not pose significant wildfire risks. Following the winter season, the operational focus becomes more defensive and optimized for wildfire prevention, given the hot, dry climate. Specifically, the system uses the following protocols:

- From approximately November 1 through March 31, the system is focused on safety and reliability with higher load settings to accommodate higher demand due to colder temperatures and reclosers set to automatic.
- From approximately April 1 through October 31, BVES adopts a more defensive operational scheme during the non-winter months. To accomplish this, the utility enacts certain operational settings:
    - All Fuse TripSavers are set to not reclose.
    - Auto-Recloser field trip settings adjusted for summer load.
    - Radford 34.5 kV line de-energized.

Although BVES generally follows a strict schedule, the utility monitors conditions, using the NFDRS, to determine if additional precautions should be taken.[46] The predictive service provides a forecast on fuel dryness and high-risk days as indicated in Supporting Table 5-7 below.

Supporting Table 5-7. Operational Direction Based on NFDRS Forecast

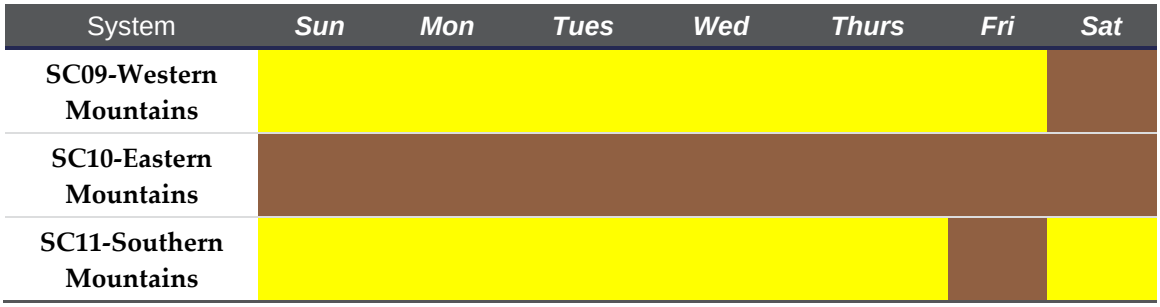
Fuel Dryness & High Risk Days	Rating	Description
Green	**Moist**	Little to no risk of fires.
Yellow	**Dry**	Low risk of large fires in the absence of a “High Risk” event.
Brown	**Very Dry**	Low/moderate risk of large fires in the absence of a “High Risk” event.

[46] The National Fire Danger Rating System (NFDRS) can be found at https://gacc.nifc.gov/oscc/predictive/weather/index.htm#. The entire BVES system is in Predictive Service Area SC10.

Orange	**High-Risk Day**	At least a 20% chance of a "Large Fire" due to a combination of either "Dry" or "Very Dry" fuel dryness and a critical burn environment (e.g., Santa Ana winds).
Red	**High-Risk Day**	At least a 20% chance of a "Large Fire" due to a combination of either "Dry" or "Very Dry" fuel dryness and an ignition trigger (lightening).

Furthermore, BVES staff and BVES's weather consultant review the NFDRS on a weekly basis or more frequently during high fire threat periods to make advanced preparations and on a daily basis to determine if additional steps should be taken. An example of the seven-day forecast is provided in Supporting Table 5-8 below.

Supporting Table 5-8. Example NFDRS Weekly Forecast



Source: BVES, based on actual weekly forecasts

In short, overall system configuration is optimized for fire prevention from approximately April 1 to October 31, using the seasonal characteristics of BVES's climate and load profile. The system is then further optimized based on the seven-day NFDRS forecast as well as other operational and weather information available to BVES.

Execution: As stated previously, BVES monitors the NFDRS fire danger forecast each day and then determines the proper operational focus from reliability to fire prevention. Exact steps depend on the level of fire-threat. As indicated in Supporting Table 5-9 below, "Brown", "Red", and "Orange" are considered elevated fire-threat conditions that require the BVES system to be configured for fire prevention over reliability concerns.

Supporting Table 5-9. Operational Direction Based on NFDRS Forecast

Operational Action	Green	Yellow	Brown	Orange	Red
Circuit Recloser Settings	Automatic Reclosing	Automatic Reclosing	Non-Automatic Reclosing	Non-Automatic Reclosing	Non-Automatic Reclosing
Patrol following circuit outage	No1	No1	Yes	Yes	Yes
TripSavers	Automatic	Automatic	Non-Automatic	Non-Automatic	Non-Automatic
Proactive De-energization (PDE)	No	No	Yes – "at risk" lines when wind gusts greater than 55 mph		

[1]No patrol is required. Re-test allowed following check of fault indicators, SCADA, other system indicators, and reports from the field. If the re-test fails, a patrol is mandatory.

When a Red Flag Warning condition is declared, Field Operations will closely monitor the NFDRS Forecast and other local forecasts to determine the appropriate operational conditions to be implemented. Additionally, BVES's weather consultant provides more detailed and frequent forecast updates. It should be noted that generally Red Flag Warning conditions are assigned to areas much larger than the BVES service area, such as the County of San Bernardino. Therefore, BVES factors in the localized conditions for its service area.

Expense: The cost of System Operations is included in BVES's current GRC. No additional expense is anticipated.

High-Speed Clearing (Automatic Reclosers (AR) and Fast-Curve Sensitive Relay Settings)

Plan: High speed clearing refers to the ability to clear faults using automatic reclosers and fast-curve sensitive relay settings. Traditionally, electrical circuits were designed to automatically open and close to detect and isolate faults. In many cases, the relays make three attempts to isolate a fault condition and each potential attempt could cause an electrical spark, which could be a source of ignition. Today, many utilities are implementing modern controls that allow them to designate a normal setting and a wildfire setting. The latter allows utilities to reduce the number of corrections attempts to prevent ignition. This can be coupled with Supervisory Control and Data Acquisition (SCADA) technology for remote control of the equipment. The list below details BVES's plans in regard to these technologies.

- **Supervisory Control and Data Acquisition (SCADA) Installations**: BVES plans to install SCADA system-wide with the enabling fiber optics communication system. This will allow for remote monitoring, operation, and control of its electrical system. Currently, BVES has SCADA installed on a small part of its system but will expand its rollout. Once the program is fully implemented, SCADA will monitor and control remotely: automatic reclosers, turn fast-curve settings on/off, and (IntelliRupters) switches.

- **Automatic Recloser Upgrades**: BVES plans to install S&C's Pulse Closer Fault Interrupter across its system. This technology provides the settings necessary to reduce electrical ignition, while also helping mitigate power outages and equipment damage by using low energy pulses to test for faults.

Execution (SCADA Installation): BVES has developed the necessary plans to install the SCADA investments system wide. Implementation was started in 2020 and is scheduled for completion in 2022.

Execution (Automatic Reclosers): BVES installed one Automatic Recloser in 2019 and completed the installation of two additional reclosers in May of 2020. The installation of the three closers completes the program.

Expense: The cost of the changes to the Grid Automation project were addressed in the BVES's General Rate Case Commission Decision 19-08-027 of August 15, 2019. No additional expense is anticipated.

Emergency Reports from Third Parties

Plan: The Utility Manager has issued operational guidelines in the event BVES receives a report of potential fire such as "arcing, sparks, smoldering, smoke, or fire" or other emergency reports involving the overhead distribution system. Examples of reports include customer or third party reported arcing, sparking, smoke, or fire sightings.

Execution: These procedures will be at the discretion of the Utility Manager and, given the event, will require prompt and decisive action to place the system in a safe condition.

Expense: These costs are recovered as part of BVES's normal operations and therefore, are covered through the GRC. No additional funding is needed at this time.

Wildfire Infrastructure Protection Teams

Plan: BVES has a dedicated Wildfire Infrastructure Protection Team (WIPT). Given the need for similar capabilities during wildfire incidences and other emergencies, the WIPT aligns with BVES's Emergency Response Team (ERT). Both teams consist of the Utility Manager, Field Operations Supervisor, Service Crew, and Customer Service staff.

Execution: The roles of each of the team members will also align with ERT roles and responsibilities. Specifically, the Utility Manager will oversee the WIPT. The Field Operations Supervisor will direct field activities and operations. The Service Crew (or Dutyman outside normal working hours) will provide initial field response. Additional linemen will be called out as needed. Furthermore, Customer Service staff and/or additional staff may be called out to assist with notification procedures as needed. Other staff may be called out at the direction of the Utility Manager to assist, as needed. For example, Engineering staff may be called out to assist linemen in monitoring local wind speeds.

Expense: These costs are covered as part of BVES's normal operations and therefore, are covered through the GRC. No additional funding is required.

Table 26 below presents program details related to grid operations and protocols. This information is also included in the accompanying *Attachment 1* workbook.

Table 26. Grid Operations and Protocols

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
1. Automatic recloser operations	2019 plan	$ 300,000	$ 300,000	$ -	N/A - this is a System Wide Initiative	N/A - this is a System Wide Initiative	Contact from object, all types of equipment/facility failure, wire-to-wire contact/contamination	1,115,048.65	3.72	Wildfire-Significant Loss of Property	Existing	D.19-08-027	GRC	N/A - this initiative is a non-standard operating practice unassociated with any specific regulation	N/A - this initiative is a non-standard operating practice unassociated with any specific regulation	Automatic Recloser Upgrades. Recloser replacement to reduce electrical sparking, while also helping mitigate power outages and equipment damage. Estimated 33% completion in 2019.
	2019 actual	$ 290,459	$ 290,459	$ -												
	2020	-	-	$ -												
	2021	-	$ -	$ -												
	2022	-	$ -	$ -												
	2020-2022 plan total	$ -	$ -	$ -												

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
2. Crew-accompanying ignition prevention and suppression resources and services	2019 plan	Bear Valley Electric Service does not currently deploy crew-accompanying ignition prevention and suppression resources and services as part of its routine operational practices. When an emergency occurs, the utility communicates and collaborates with local emergency response teams as described in Section 5.3.9, which can include crew-accompanying ignition prevention and suppression resources and services. Additionally, during elevated risk conditions or during fire season, BVES leverages specific work practices and protocols and makes available specific resources and tools for use by operations personnel as included in Table 26. However, the utility does not currently have a specific grid operations and protocols wildfire mitigation initiative focused on crew-accompanying ignition prevention and suppression resources and services. The use of these services will be re-evaluated and considered for future incorporation as part of the annual WMP review process.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															
3. Personnel work procedures and training in conditions of elevated fire risk	2019 plan	$ 42,000	$ -	$ 42,000	N/A - this is a System Wide Initiative	N/A - this is a System Wide Initiative	Contact from object, all types of equipment/facility failure, wire-to-wire contact/contamination	146,466.53	2.23	Wildfire-Significant Loss of Property	Existing	D.19-08-027	GRC	N/A - this initiative is a non-standard operating practice unassociated with any specific regulation	N/A - this initiative is a non-standard operating practice unassociated with any specific regulation	Wildfire Infrastructure Protection Teams. Roles and responsibilities for staff to respond to protect system infrastructure in case of emergencies.
	2019 actual	$ -	$ -	$ -												
	2020	$ 42,000	$ -	$ 42,000												
	2021	$ 42,840	$ -	$ 42,840												
	2022	$ 43,697	$ -	$ 43,697												
	2020-2022 plan total	$ 128,537	$ -	$ 128,537												

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
4. Protocols for PSPS re-energization	2019 plan	Bear Valley Electric Service considers re-energization after a PSPS event to be a subset of outage restoration and re-energization protocols generally included in Table 26. Therefore, the utility does not have a separate protocol for PSPS.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															
5. PSPS events and mitigation of PSPS impacts	2019 plan	$ 42,000	$ -	$ 42,000	N/A - this is a System Wide Initiative	N/A - this is a System Wide Initiative	All	777,385.29	18.51	Wildfire-Significant Loss of Property	Existing/New	D.19-08-027	GRC and Fire Hazard Prvt. Memorandum Account	In compliance	R.18-12-005	PSPS Protocols. Protocols and procedures to respond to and recover from de-energization events, which proactively prevent wildfires. Costs partially recovered. RSE is an estimate based on latest risk assessment.
	2019 actual	$ -	$ -	$ -												
	2020	$ 42,000	$ -	$ 42,000												
	2021	$ 42,000	$ -	$ 42,000												
	2022	$ 42,000	$ -	$ 42,000												
	2020-2022 plan total	$ 126,000	$ -	$ 126,000												

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
6. Stationed and on-call ignition prevention and suppression resources and services	2019 plan	Bear Valley Electric Service does not currently have stationed and on-call ignition prevention and suppression resources and services not captured in existing initiatives.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															
7. Other / not listed	2019 plan	N/A - costs recovered in BVES's General Rate Case a. 17-05-004.	N/A - costs recovered in BVES's General Rate Case a. 17-05-004.	N/A - costs recovered in BVES's General Rate Case a. 17-05-004.	N/A - this is a System Wide Initiative	N/A - this is a System Wide Initiative	Contact from object, all types of equipment/facility failure, wire-to-wire contact/contamination	1,022,629.33	N/A - this initiative is not associated with a specific Risk-Spend Efficiency	Wildfire-Significant Loss of Property	Existing	D.19-08-027	GRC	N/A - this initiative is a non-standard operating practice unassociated with	N/A - this initiative is not associated with any specific regulation	Operational Considerations/Special Work Procedures. Operational procedures that are conditions-based to optimize the distribution system for wildfire mitigation. Costs recovered in BVES's General Rate Case A.17-05-004.
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															

1. Operational Considerations and Special Work Procedures
2. High-Speed Clearing (Automatic Reclosers (AR) and Fast-Curve Sensitive Relay Settings)
3. PSPS Protocols
4. Wildfire Infrastructure Protection Teams

5.3.7 Data Governance

Data Taxonomy and Schema Alignment

BVES provided additional files in support of the WMP requirements and is updating its existing files to align with the WSD's GIS data reporting requirements, as shown in Sections 2, 3, and 6. Given the significant scope of the items required, a number of gaps still exist. BVES is working with a consultant to identify gaps and methods for closing these gaps. BVES will plan to submit updates on its GIS and general data collection efforts in subsequent filings. Specifically, BVES's status on the conditions outlined in Guidance-10 are as follows:

i. Due to the amount of data generated from BVES's grid hardening, vegetation management, and asset inspections over the prior reporting period, BVES is still in the process of updating its GIS data. BVES currently plans to engage an external consultant to identify the best and most expedient method for updating these files. Additionally, BVES is looking to better utilize current tools such as SharePoint or new tools to better organize its data from various platforms including GIS, work orders, inspection reports, and monthly and quarterly reporting.

ii. The type of hardening, vegetation management, and asset inspection work performed, and the number of circuit miles covered will be updated and included as part of the gap analysis along with the locational data from condition i, above.

iii. As stated under Guidance-1, BVES plans to evaluate, revise, and improve both the Risk-Based Decision-Making Framework and the Fire Safety Circuit Matrix in 2020 for use in the 2021 WMP update. BVES will consider feedback from the 2020 WMP and review feedback on other CA utility WMPs. These feedback sources will be used to enhance risk modeling and initiative prioritization. The revisions will also be reflected in GIS, where applicable.

iv. As stated in condition i. and ii., BVES is in the process of updating its GIS data and associated data collection and planning processes. BVES currently has its Radford Line grid hardening initiative in GIS and plans to include work scheduled for the following reporting period in subsequent filings

GIS Data Collection & Sharing: BVES currently creates and collects Geographic Information System (GIS) data about its infrastructure. The data includes system infrastructure locations and related information for mapping and cataloging purposes. The Engineering & Planning Supervisor oversees updates to the database to ensure accuracy. While it currently does not share data, BVES understands the importance of collaborating with key stakeholder agencies, such as the CPUC and CALFIRE, and plans to provide its data in accordance with CPUC proceeding I.17-06-027, Pole OII Phase I, which relates to sharing pole databases. Additionally, the utility will provide information to stakeholder agencies on a case-by-case basis at the discretion of the Engineering & Planning Supervisor, Utility Manager, and President & Treasurer.

Execution: BVES is assessing its data collection, data management and data sharing policies. BVES is currently experiencing a backlog of data management recorded activity. BVES supplements its internal GIS organization with consulting services in an attempt to fast track and move the initiative forward. The utility is collaborating with community partners and stakeholder agencies to assure that requested GIS information will be available and, as appropriate, accessible. Responsible personnel are capturing reports, findings, and relevant data outlined in the data

architecture and information management. The GIS data is based on the required ESRI ArcGIS platform. BVES plans on providing additional training for existing staff with expanded capabilities to support this initiative. In addition to plans for employee training, BVES will conduct a GIS capability assessment to assure it can manage data on an enterprise-wide basis, especially as it corresponds to initiatives presented in this Final Action Statement 2020 WMP filing.

Table 27 below presents program details related to data governance activities. This information is also included in the accompanying Attachment 1 workbook.

Table 27. Data Governance

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
1. Centralized repository for data	2019 plan	$ 46,382	$ -	$ 46,382	N/A - this is a System Wide Initiative	N/A - this is a System Wide Initiative	All	148,458.96	3.20	Wildfire-Significant Loss of Property.	Existing	D.19-08-027	GRC	N/A - this initiative is unassociated with any specific regulation	N/A - this initiative is unassociated with any specific regulation	GIS Data Collection & Sharing. Maintain and share Geographic Information System (GIS) database on system infrastructure for asset management and planning with key stakeholders.
	2019 actual	$ 46,382	$ -	$ 46,382												
	2020	$ 46,382	$ -	$ 46,382												
	2021	$ 46,382	$ -	$ 46,382												
	2022	$ 46,382	$ -	$ 46,382.												

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
	2020-2022 plan total	$ 139,147	$ -	$ 139,147												
2. Collaborative research on utility ignition and/or wildfire	2019 plan	Bear Valley Electric Service does not have a specific wildfire mitigation data governance plan focused on collaborative research on utility ignition or wildfire at this time. The company generally collaborates with Mutual Aid Partners and first responders to develop protocols, procedures, and communication plans to prevent, manage, and respond to utility ignition or wildfire.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															
3. Documentation and disclosure of wildfire-	2019 plan	Bear Valley Electric Service does not have a specific data governance wildfire mitigation program focused on documentation and disclosure of wildfire-related data and algorithms that maps to the tracking and level of detail requested in this table at this time.														
	2019 actual															
	2020															
	2021															
	2022															

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
	2020-2022 plan total															
4. Tracking and analysis of near miss data	2019 plan	Bear Valley Electric Service does not have a specific wildfire mitigation data governance initiative focused on tracking and analysis of near-miss data that maps to the tracking and level of detail requested in this table at this time.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															
5. Other / not listed	2019 plan	Bear Valley Electric Service does not have any other wildfire mitigation data governance initiatives at this time.														
	2019 actual															
	2020															
	2021															
	2022															

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
	2020-2022 plan total															

1. GIS Data Collection & Sharing

5.3.8 Resource Allocation Methodology

Table 28 below presents program details related to resource allocation methodology activities. This information is also included in the accompanying *Attachment 1* workbook.

Table 28. Resource Allocation Methodology

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
1. Allocation methodology development and application	2019 plan	N/A - While the utility is committed to the continued development and improvement of the company's risk-based decision-making framework, many of the elements requested in this 2020 WMP filing may not be applicable to Bear Valley Electric Service, specifically many of the components requested in this section. Bear Valley Electric Service cannot provide information regarding BVES's wildfire mitigation resource allocation methodology focused on allocation methodology development and application to the level of tracking and detail requested in this table at this time. At the guidance of the Wildfire Safety Division of the California Public Utilities Commission, these elements are marked "N/A" to indicate "does not apply" or "not applicable," with supplementary explanations where applicable throughout the company's filing.													
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
2. Risk reduction scenario development and analysis	2019 plan	N/A - While the utility is committed to the continued development and improvement of the company's risk-based decision-making framework, many of the elements requested in this 2020 CA WMP filing may not be applicable to Bear Valley Electric Service, specifically many of the components requested in this section. Bear Valley Electric Service cannot provide information regarding BVES's wildfire mitigation resource allocation methodology focused on risk reduction scenario development and analysis to the level of tracking and detail requested in this table at this time. At the guidance of the Wildfire Safety Division of the California Public Utilities Commission, these elements are marked "N/A" to indicate "does not apply" or "not applicable," with supplementary explanations where applicable throughout the company's filing.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															
3. Risk spend efficiency analysis	2019 plan	N/A - While the utility is committed to the continued development and improvement of the company's risk-based decision-making framework, many of the elements requested in this 2020 CA WMP filing may not be applicable to Bear Valley Electric Service, specifically many of the components requested in this section. Bear Valley Electric Service cannot provide information regarding BVES's wildfire mitigation resource allocation methodology focused on risk spend efficiency analysis to the level of tracking and detail requested in this table at this time. At the guidance of the Wildfire Safety Division of the California Public Utilities Commission, these elements are marked "N/A" to indicate "does not apply" or "not applicable," with supplementary explanations where applicable throughout the company's filing.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															
4. Other / not listed	2019 plan	N/A - While the utility is committed to the continued development and improvement of the company's risk-based decision-making framework, many of the elements requested in this 2020 CA WMP filing may not be applicable to Bear Valley Electric Service, specifically many of the components requested in this section. Bear Valley Electric Service cannot provide information regarding BVES's wildfire mitigation resource allocation methodology focused on any other unlisted initiative(s) to the level of tracking and detail requested in this table at this time. At the guidance of the Wildfire Safety Division of the California Public Utilities Commission, these elements are marked "N/A" to indicate "does not apply" or "not applicable," with supplementary explanations where applicable throughout the company's filing.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															

5.3.9 Emergency Planning and Preparedness

Attachment 1 Subsection 5.3.9 Emergency Planning and Preparedness

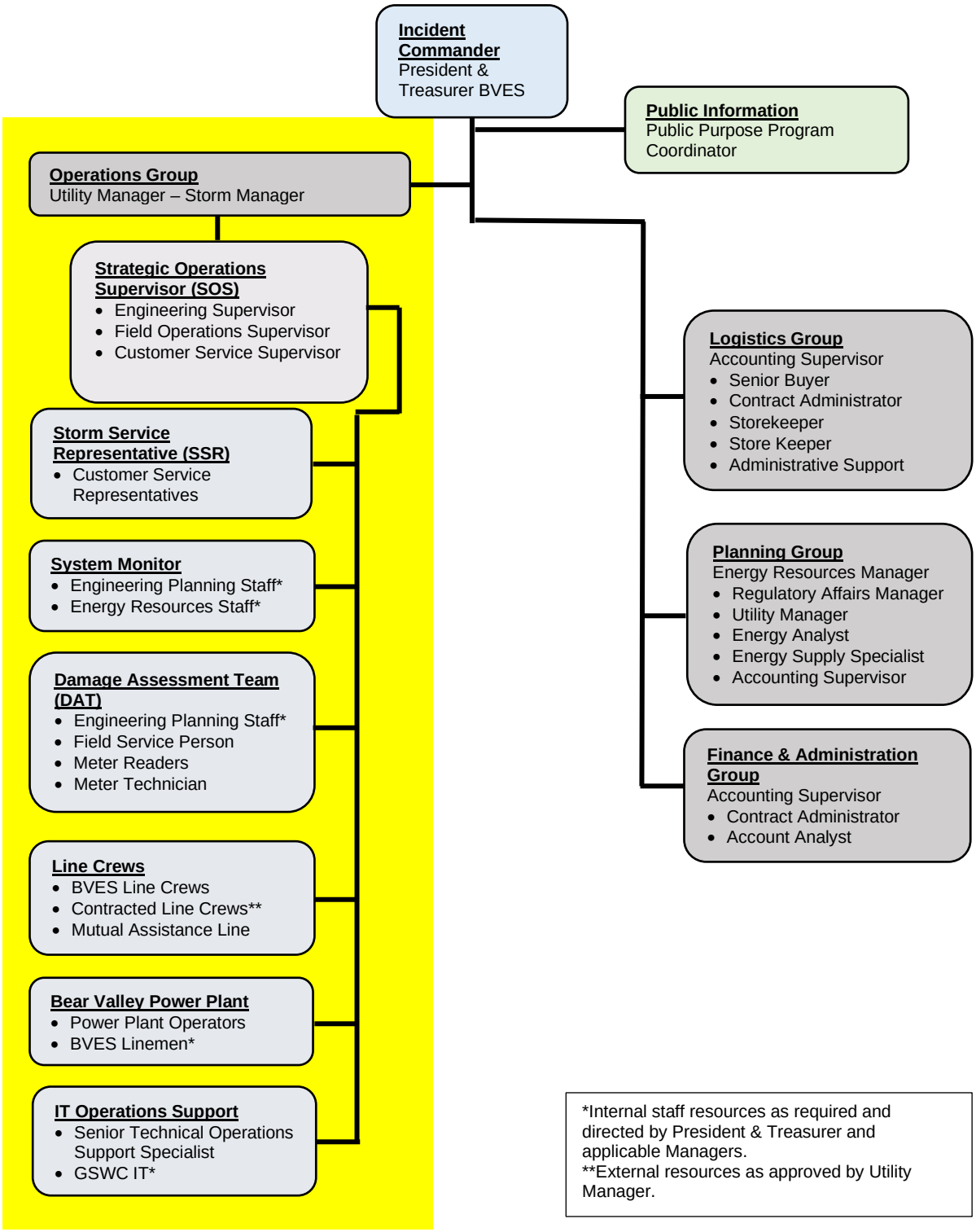
Include a general description of the overall emergency preparedness and response plan, and detail:

1. **A description of how plan is consistent with disaster and emergency preparedness plan prepared pursuant to Public Utilities Code Section 768.6, including:**
   - **a. Plans to prepare for and restore service, including workforce mobilization (including mutual aid and contractors) and prepositioning equipment and employees**
   - **b. Emergency communications, including community outreach, public awareness, and communications efforts before, during, and after a wildfire in English, Spanish, and the top three primary languages used in California other than English or Spanish, as determined by United States Census data**
   - **c. Showing that the utility has an adequate and trained workforce to promptly restore service after a major event, taking into account mutual aid and contractors**
2. **Customer support in emergencies, including protocols for compliance with requirements adopted by the CPUC regarding activities to support customers during and after a wildfire, including:**
   - **a. Outage reporting**
   - **b. Support for low income customers**
   - **c. Billing adjustments**
   - **d. Deposit waivers**
   - **e. Extended payment plans**
   - **f. Suspension of disconnection and nonpayment fees**
   - **g. Repair processing and timing**
   - **h. Access to utility representatives**
3. **Coordination with Public Safety Partners, such as stationing utility personnel in county Emergency Operations Centers**

Describe utility efforts to identify which additional languages are in use within the utility's service territory, including plan to identify and mitigate language access challenges.

BVES responds to emergencies in accordance with its Emergency Preparedness and Response Plan, which is compliant with GO 166 Standards for Operation, Reliability, and Safety During Emergencies and Disasters. A copy of the Emergency Preparedness and Response Plan is forwarded to the Commission annually per GO 166. In responding to emergencies, the Company's staff shall be organized largely based on the Standardized Emergency Management System (SEMS) as interpreted by the Company and outlined in the Emergency Preparedness and Response Plan. Figure 5-3 illustrates how the BVES staff aligns with the SEMS organizational structure during an emergency.

Figure 5-3. BVES Emergency Organization



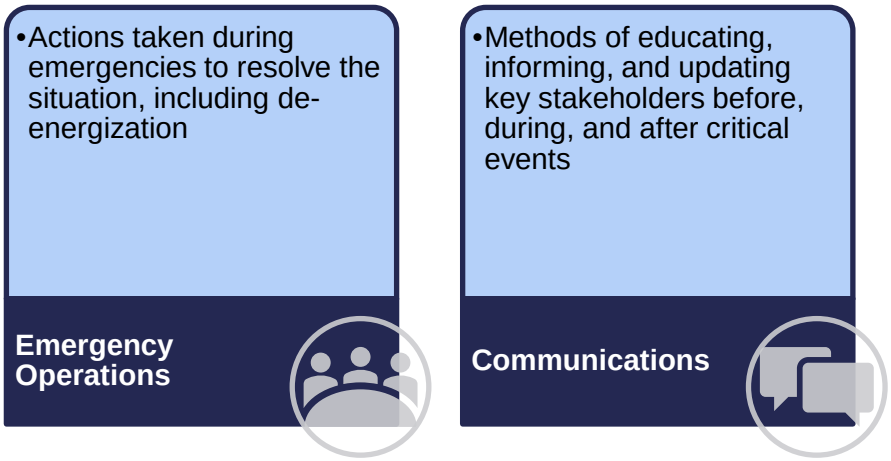
Source: BVES

Additional guidance is provided in this section. These procedures apply to both situations that may affect the electrical system (e.g. proactive de-energization) or the area at-large (e.g. wildfire event). This section details these plans, including compliance, and roles and responsibilities for executing the plan.

Plan Overview

BVES believes it is important to have proactive planning and close coordination with local governments, first responders, mutual aid and expert agencies, other stakeholders, and customers. The Emergency Preparedness and Response Plan reflects this philosophy. Specifically, the Emergency Preparedness and Response Plan includes two main components: (1) an emergency protocol plan and (2) a communications plan, similar to the PSPS steps.[47] Figure 5-4 below describes these two complementary components.

Figure 5-4. Emergency Preparedness and Response Components



Due to BVES's unique service territory, there are several key stakeholders that will be involved in emergency preparedness and response. These stakeholders include local governments and agencies as well as location-specific organizations, including resorts and business groups. With this understanding, BVES has outlined all key stakeholders. Supporting Table 5-10 provides the stakeholder list. BVES will review the list annually and update it, as needed.

[47] PSPS phases and activities are presented in Table 4.11.

Supporting Table 5-10. BVES Emergency Preparedness and Response Stakeholder List

Stakeholder Group	Description
Customers	• Any person or organization who receives electricity from BVES or is impacted by BVES's services to the community
Local Government / Agencies	• Big Bear Area Regional Wastewater Agency (BBARWA) • Bear Valley Community Hospital • Bear Valley Unified School District • Big Bear Chamber of Commerce • Big Bear Airport District • Big Bear City Community Services District (CSD) • Big Bear Fire Department • Big Bear Lake Water Department (DWP) • Big Bear Mountain Resort • Big Bear Municipal Water District (MWD) • San Bernardino County Sheriff's Department • CAL FIRE • California Highway Patrol Arrowhead Area • California Department of Transportation • City of Big Bear Lake • San Bernardino Fire Department and Office of Emergency Services • Southwest Gas Corporation • US Forest Service
Mountain Mutual Aid Association	• Organization with 31 members, including utilities, business groups, and non-government organizations committed to the community
State	• Warning center at the Office of Emergency Services San Bernardino • Director of Safety Enforcement Division • Others, as requested

Source: BVES

Emergency Operations

BVES's emergency preparedness is based in solid incident command and operational protocols. This portion of the plan focuses on the specific steps BVES will take to respond to emergency situations. These steps include:

- Conducting and coordinating emergency response drills and exercises with emergency responders, regulatory agencies, the local government and other stakeholders.
- Operating according to the PSPS guidelines, including de-energization and re-energization strategies as presented in Table 4.11 and section 5.3.10.
- Following procedures for operating distribution lines in affected areas.
- Carefully coordinating inspection and restoration in a safe and collaborative manner.

BVES will continue to refine these operations in future iterations of the plan. Additional information appears in section 5.3.10 and Table 4.1.

Emergency Communications

Emergency preparedness and response protocols is grounded in educating, informing, and updating key stakeholders. Reporting varies based on outage type, as outlined in the list below.

- **Major Outage:**[48] Consistent with Public Utilities Code Section 364, a major outage occurs when 10 percent or more of the electric utility's serviceable customers experience a simultaneous, non-momentary interruption of service. For utilities such as BVES, with fewer than 150,000 customers within California, a major outage occurs when 50 or more percent of the electric utility's serviceable customers experience a simultaneous, non-momentary interruption of service.
- **Standard 6:** BVES will provide an initial notification within one hour of the identification of a major outage (or another newsworthy event). The utility shall also notify the CPUC and Warning Center at the Office of Emergency Services of the location, possible cause and expected duration of the outage. The Warning Center at the OES is expected to notify other state and local agencies of the outage. Subsequent contacts between state and local agencies and the utility shall be conducted between personnel identified in advance, as set forth in Standard 4.B. From time to time, the Commission staff may issue instructions or guidelines regarding reporting.
- **PSPS:** BVES considers PSPS to be an emergency event. A comprehensive list of emergency communications aligned with each phase is presented in Table 4.11.

Communications Plans with Stakeholder

The Energy Resource Manager oversees communications plans and activities. Reporting to the energy Resource Manager is the Customer Service Supervisor, who manages communication activities. BVES's communication plan includes a two-pronged approach (1) proactive preparation before emergencies occur and (2) notifications during and after emergency events. Communications protocols vary slightly when dealing with stakeholders that include customers, first responders, the local mutual aid association, local government, among the key stakeholders. Additional information about communication plans is found in Table 4.11 and section 5.3.10.

The list below describes the goals and methods of informing each of these groups.

- **Customer Outreach and Notifications:** The goal of customer outreach is to educate and prepare customers for fire prevention, proactive de-energization and other utility infrastructure-related emergencies. All communications are planned in English, Spanish, Tagalog, Vietnamese, Chinese, French, Mixteco and Zapoteco. Indigenous communities surrounding the service area are investigated to account for the unique languages representing English as a Second Language (ESL) speakers. BVES collaborates with other community organizations to assure that a local community resource center is available to customers during emergencies. BVES aligns its communication with other organizations so it is clear and consistent among the local and state organizations.
    - **Before Emergencies:** Proactive outreach includes regular messages related to fire prevention, such as vegetation management, distribution inspection de-energization policies, and operational initiatives. This engagement occurs through public workshops, BVES newsletters, social media, website posts, and other forms of media. Special

[48] Major Outages are reported using the CPUC Online Reporting System at http://www.cpuc.ca.gov/emrep/. Reports of major outages may also be made to the CPUC by calling 1-800-235-1076.

presentations related to fire prevention and preparing for emergencies, including PSPS events, are provided through multiple outlets, including printed material, public service announcements, social media, and special briefings by BVES.

- **During / After Emergencies:** Notifications include BVES-prepared customer-facing statements for staff to disseminate in the case of de-energization (e.g. PSPS) and emergencies, including information about timing and location of such events. These notifications occur through news outlets, printed materials, digital media, radio forums, website updates, social media updates, text messages, local government and agency media (e.g. City of Big Bear Lake's email blasts), and interactive voice response (IVR) calls. Additional forms of communication may be leveraged as new technologies and software become available.

  Post-event BVES provides billing and repair support for affected customers. Billing support may include billing adjustments, deposit waivers, suspension of disconnection, and extended payment plans for standard and low-income customers. Repair support may include regular communications about repair processing and timing and individualized support from a utility representative.

- **Local Government and Agency Engagement and Notification:** Communications with local government agencies is essential to BVES's outage and emergency response plans. BVES leadership strives to engage with local agencies in a direct and expedient manner. Coordination and preparation for emergencies, including PSPS, is a shared responsibility between BVES, public safety partners, and local governments; however, BVES is ultimately responsible and accountable for the safe deployment of PSPS. BVES prepares and informs relevant agencies, before, during, and after outages, PSPS, or emergencies. BVES's protocols include establishing a two-way communication channel to help facilitate communications to collaboratively manage the potential impacts of events. Specific actions related to PSPS appear in Table 4.11 and Section 5.3.10.

  - **Before Emergencies**: BVES participates in proactive briefings with the local government to collaboratively plan to minimize the impacts of potential emergencies. These briefings include in-person meetings, emails, and coordinated training and drills. BVES solicits feedback from the local government and other agencies on its emergency preparedness communication plans and overall protocols, to incorporate ongoing improvements.
  - **During / After Emergencies:** When an emergency occurs, BVES notifies all relevant local government and agencies immediately to ensure proper response coordination. The Customer Care & Operations Support Superintendent and other staff performing customer and public information functions work closely to coordinate with counterparts including the local government and other agencies, providing outage and emergency notifications, estimated time to restore service, and periodic updates as available. BVES continues to provide timely communications to all parties until the situation has been resolved. These notifications happen through phone, text, email and in-person communications.

- **Mountain Mutual Aid Association (MMAA) Participation:**[49] The MMAA works in conjunction with the local fire department. BVES's outreach and engagement with the MMAA is similar to the collaborative approach used with local government and agency communications. Specifically, the goal is to inform, prepare, and coordinate closely with community first responders and aid workers. PSPS details are provided in Table 4.11 and Section 5.3.10.
    - **Before Emergencies**: Proactive briefings center on how the plan impacts the surrounding community based on BVES's utility infrastructure. Briefings may be conducted through email, training, remote collaboration tools, and in-person meetings, among others. BVES gains valuable feedback from MMAA to harmonize its emergency preparedness, communication plans, and overall protocols to align with other community partners aligned in their goal of public safety.
    - **During / After Emergencies:** When an emergency occurs, BVES notifies MMAA members immediately to effectuate a coordinated response. BVES continues to provide timely communications and participate in coordinated activities until the situation has been resolved. Communication and notifications happen through phone, text, email and in-person communications, among others.
- **CPUC Reporting:** BVES's communication with the CPUC aligns with mandates and requirements. Details of PSPS activities appear in Table 4.11 and Section 5.3.10.
    - **Before Emergencies**: BVES submits its Fire Prevention Plan, Wildfire Mitigation Plan, and Emergency Response Plans for review and input. All plans are designed to work together to minimize the impact of outages and infrastructure-related events and, most importantly, protect the public safety.
    - **During / After Emergencies:** BVES notifies the Director of Safety Enforcement Division (SED) within 12 hours of the power being shut off per ESRB-8. BVES also notifies the CPUC and Warning Center at the Office of Emergency Services in San Bernardino within one hour of shutting off the power if the outage meets the major outage criteria of GO-166.

      BVES provides a written report to the Director of SED no later than 10 business days after a shut-off event ends per ESRB-8. The utility complies with all analysis and report requests during and after any emergencies. Outage data shall also be included in BVES's annual reliability indices report to the CPUC.

Plans to Prepare for and Restore Service

In the event of a wildfire or other emergency event, BVES invokes its Emergency Preparedness and Response Plan and staffs up its Emergency Operations Center to coordinate activities to restore service. The BVES restoration strategy and priorities is detailed in its Emergency Preparedness and Response Plan. Phases and actions specifically related to PSPS appear in Table 4.11.

[49] The Big Bear Valley Mountain Mutual Aid Association is made up of public and private sector agencies in the Big Bear Valley area and has been in place for over 20 years. The purpose of the association is disaster preparedness and management. The Big Bear Valley Mountain Mutual Aid Association Citizen Corps Sub-Council is primarily interested in the Community Emergency Response Team (C.E.R.T.) program, and will be working with the mutual aid association during times of disasters or other needs utilizing C.E.R.T. The Big Bear Valley Mountain Mutual Aid Citizen Corps Sub-Council will be operating under the guidance of San Bernardino County. http://www.bigbearfire.org/services/fire-risk-reduction/mountain-mutual-aid

Restoration and Resources

BVES WIPT oversees response and restoration activities. In the event that additional staff is needed, BVES leverages mutual aid agencies, including the City of Big Bear Lake staff and local aid organizations. The utility also engages temporary employees and contractors on an as-needed basis.

Plan Compliance

The emergency preparedness and response plans described in this section comply with Public Utilities Code Section 768.6 and 8386[50,51]. Specifically, the plan complies with the following mandates:

- Sharing plans with relevant cities and counties to provide input and feedback.
- Plans to update and improve the WMP annually and comprehensively every three years.
- Accounting of responsibilities of persons responsible for executing the WMP.
- Appropriate and feasible procedures for notifying customers who may be impacted.
- Plans to prepare for and restore service, including workforce mobilization (including mutual aid and contractors) and prepositioning equipment and employees Plans for community outreach and public awareness before, during, and after a wildfire.
- Emergency communications that includes plans to translate messages into English, Spanish and the top three languages in CA based on US Census data currently Tagalog, Vietnamese, & Chinese.
- Protocols for compliance with CPUC reporting guidelines.

As the CPUC develops new mandates and requirements, BVES updates its customer support and communications plans accordingly.

Customer Support in Emergencies

In the event the Governor of California declares a state of emergency because a disaster has either resulted in the loss or disruption of the delivery or receipt of utility service, or resulted in the degradation of the quality of utility service, BVES shall implement certain customer service actions described below. This section provides an overview of the protocols for compliance with requirements adopted by the CPUC regarding activities to support customers. The protocols span outage reporting, customer billing, support for low income customers, and other forms of customer support.

Support for Low Income Customers
The Customer Care team will freeze low income customers' accounts, stop billing, and stop all California Alternative Rates for Energy (CARE) High-Usage tracking. The Superintendent will work with implementation contractors and emergency assistance programs to update affected customers on eligibility requirements and enroll them in assistance programs.

Billing Adjustments
The Customer Care team freezes accounts and stop billing during the wildfire event to ensure bills are not estimated or generated for affected customers. All customers affected by disaster will be notified that billing will be discontinued and BVES will prorate bills, including any monthly minimum charges, to the

[50] FindLaw, California Code, Public Utilities Code – PUC 768.6, https://codes.findlaw.com/ca/public-utilities-code/puc-sect-768-6.html
[51] FindLaw, California Code, Public Utilities Code – PUC 8386, https://codes.findlaw.com/ca/public-utilities-code/puc-sect-8386.html.

customer during the wildfire event. Billing will resume once the case is closed by the Customer Care & Billing (CC&B) technical team, upon notice from the Superintendent.

Deposit Waivers
The Customer Care team provides a designated customer contact for all affected customers. The BVES contact reports within CC&B for up to one year from the date the emergency ends. This allows BVES to easily track the customer's account, so when service is re-established, the utility knows to waive any associated fees and to expedite customer re-connection.

Extended Payment Plans
The Customer Care team freezes all payments on affected customers' account to avoid affecting their credit. All affected customers are notified that an extended payment plan option is available for any past due payments.

Suspension of Disconnection and Nonpayment Fees
The Customer Care team freezes affected customer accounts, so disconnections and nonpayment fees are not generated during the wildfire event. Once the emergency ends, the Superintendent or Specialist contacts the CC&B team to "close" all affected customer cases. This automatically transitions the customer's account back to the normal state. BVES simultaneously begins assisting with service restoration and deposit waivers.

Repair Processing and Time
During emergencies, BVES establishes specialized repair teams to expedite repair processing. If additional support is needed, BVES leverages mutual aid programs with other emergency response resources and works with electrical contractors to ensure timely service restoration. Exact timing is dependent on the nature of the situation.

Access to Utility Representatives
The BVES Engineering Inspector arranges for connections and facilitates expedited services. Leveraging its IVR system, BVES is able to manage thousands of phone calls simultaneously and redirect customers to the appropriate utility representative.

Activities related to emergency planning and response are part of ongoing efforts and are not bound by a specified execution date. BVES continues to work with partners to seek input on emergency response planning and enhance with unique efforts or cooperative plans.

Table 29 below presents program details related to emergency planning and preparedness. This information is also included in the accompanying *Attachment 1* workbook.

Table 29. Emergency Planning and Preparedness

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
1. Adequate and trained workforce for service restoration	2019 plan	N/A - this is not a specifically budgeted program	N/A - this is not a specifically budgeted program	N/A - this is not a specifically budgeted program	N/A - this is a System Wide Initiative	N/A - this is a System Wide Initiative	N/A - response related	BVES currently has adequate and trained workforce for service restoration. No risk reduction has been calculated since this action is considered a "control". No RSE was calculated due no incremental cost being incurred or planned to date.	N/A - as a System Wide Initiative, this initiative does not have a specific risk-spend efficiency	Reduces impact to customers and community from an event causing interruptin g of service; reduces risk of escalation	Existing	GRC	N/A - this is an Existing initiative	In compliance	GO 166	N/A - no additional comments
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															
2. Community outreach, public awareness,	2019 plan	N/A - this is	N/A - this is not a	N/A - this is not a specifically	N/A - this is a System	N/A - this is a System Wide	Contact from object	N/A - as a System Wide Initiative, this initiative does not have a	N/A - as a System Wide Initiative, this	Reduces impact to customers and community	Existing	GRC	N/A - this is an Existing	In compliance	GO 167	N/A - no additional comments
	2019 actual															
	2020															
	2021															

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
and communications efforts	2022							specified risk reduction	initiative does not have a specific risk-spend efficiency	from an event causing interruptin g of service; reduces risk of escalation						
	2020-2022 plan total															
3. Customer support in emergencies	2019 plan	N/A - this is not a specifically budgeted program	N/A - this is not a specifically budgeted program	N/A - this is not a specifically budgeted program	N/A - this is a System Wide Initiative	N/A - this is a System Wide Initiative	N/A - response related	BVES has an Emergency Response Plan that addresses customer support in emergencies and a disaster relief plan. No risk reduction has been calculated since this action is considered a "control". No RSE was calculated due no incremental cost being incurred or planned to	N/A - as a System Wide Initiative, this initiative does not have a specific risk-spend efficiency	Reduces impact to customers and community from an event causing interruptin g of service; reduces risk of escalation	Existing	GRC	N/A - this is an Existing initiative	In compliance	R.18-12-005	N/A - no additional comments
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
								date. BVES will continue to review this program and may in future WMPs include enhancements that may incur incremental costs.								
4. Disaster and emergency preparedness plan	2019 plan	N/A - this is not a specifically budgeted program	N/A - this is not a specifically budgeted program	N/A - this is not a specifically budgeted program	N/A - this is a System Wide Initiative	N/A - this is a System Wide Initiative	Contact from object, all types of equipment/facility failure, wire-to-wire contact/contamination	BVES has an Emergency Response Plan for service restoration and a disaster relief plans in place. No risk reduction has been calculated since this action is considered a "control". No RSE was calculated due no incremental cost being incurred or	N/A - this initiative does not have a specific Risk-spend efficiency	Wildfire-Significant Loss of Property	Existing	D.19-08-027	N/A	In compliance	GO 166	Emergency Reporting & Procedures. Protocols and procedures for staff to respond to faults, emergencies, outages, disaster events (such as earthquake, wildfire, etc.), etc.
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
								planned to date. BVES will continue to review this program and may in future WMPs include enhancements that may incur incremental costs.								
5. Preparedness and planning for service restoration	2019 plan 2019 actual 2020 2021 2022 2020-2022 plan total	N/A - this is not a specifically budgeted program	N/A - this is not a specifically budgeted program	N/A - this is not a specifically budgeted program	N/A - this is a System Wide Initiative	N/A - this is a System Wide Initiative	N/A - response related	BVES has an Emergency Response Plan for service restoration in place. No risk reduction has been calculated since this action is considered a "control". No RSE was calculated due no incremental cost being incurred or planned to	N/A - this initiative does not have a specific Risk-spend efficiency	Wildfire-Significant Loss of Property	Existing	D.19-08-027	CEMA if applicable	In compliance	GO 166	Post-Incident Recovery, Restoration & Remediation. Protocols and procedures to respond to and recover from any wildfire or related emergency events.

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
								date. BVES will continue to review this program and may in future WMPs include enhancements that may incur incremental costs.								
6. Protocols in place to learn from wildfire events	2019 plan	Bear Valley Electric Service leverages the protocols included in the company's Emergency Preparedness and Response Plan to learn from wildfire events in the same manner the utility learns from any emergency event. Therefore, Bear Valley Electric Service does not have specific protocols in place to learn from wildfire events that are not already covered in a previous program.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															
7. Other / not listed	2019 plan	Bear Valley Electric Service does not have emergency planning and preparedness initiatives other than those listed above at this time.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															

1. Post Incident Recovery, Restoration & Remediation:
2. Emergency Reporting:

5.3.10 Stakeholder Cooperation and Community Engagement

Stakeholder cooperation and community engagement are ongoing activities that are organized as needed throughout the year. BVES has conducted community outreach related to its PSPS plan but otherwise does not have a specific engagement plan for the upcoming years. Routine engagements are included as part of BVES's emergency response planning efforts. In accordance with D.20-03-004, BVES conducted a no-contact electronic customer survey on its 2019 public awareness and outreach efforts regarding its WMP. The survey results are currently being analyzed. BVES will report on the survey and utilize the results to improve future outreach activities. Customers could have received or seen various WMP/PSPS related content as part of BVES's outreach.[52]

[52] List of outreach and shared content can be found here: https://www.bves.com/media/managed/wmp/BVES_WMP_PSPS_Outreach_2019_2020.pdf.

Going forward, BVES will be working with its contracted public relations firm Randle Communications to provide additional outreach in prevalent languages, including English, Spanish, French, Tagalog, Vietnamese, and Chinese, as well as Mixteco and Zapoteco. BVES's plans for the 2020 season are the following:

- New plans:
  - Send a bi-fold/postcard or similar via bill-insert or separate mailer in at least Spanish and English. An online version of the bifold/postcard will be made available on the BVES website in other top languages, such as French, Tagalog, Vietnamese, and Chinese, as well as languages spoken by indigenous communities, such as Mixteco and Zapoteco.
  - Design and create a WMP/PSPS Newspaper advertisement in English and add it into BVES's newspaper ad rotation.
  - Design and create a WMP/PSPS Radio advertisement in English and add it into BVES's radio ad rotations.
  - Design and create a WMP/PSPS advertisement in English for a Mountain Transit bus.
  - Conduct and analyze another no-contact electronic survey sometime between October and early December 2020, regarding WMP outreach for the 2020 wildfire season. The Survey will be available in at least English and Spanish, but possibly French, Tagalog, Vietnamese, Chinese, Mixteco, and Zapoteco.
  - Use new two-way texting capabilities to notify BVES customers about a PSPS event or other emergency in English.
  - Post the 2020 WMP equipment upgrades, vegetation management, and operational improvements in English, Spanish, French, Tagalog, Vietnamese, and Chinese on BVES's website.
- BVES will continue to perform the following:
  - Advertise via the local radio and newspaper for the end of the year meeting in English (during which BVES presents information to the public about its WMP and PSPS plans).
  - Conduct the end of the year meeting in English.
  - Keep BVES's WMP in English on the BVES website and updated.
  - Keep the WMP video in English on BVES's website.
  - Highlight the WMP video and WMP in English on BVES's Facebook regularly.
  - Promote the WMP equipment upgrades, vegetation management, and operational improvements in English on Facebook

regularly throughout the course of the year.

- Include the WMP/PSPS plans in English in the annual/bi-annual BVES newsletters.
- Attend Fire Safe Council Meetings with the community.

Table 30 below presents program details related to stakeholder cooperation and community engagement activities. This information is also included in the accompanying *Attachment 1* workbook.

Table 30. Stakeholder Cooperation and Community Engagement

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
1. Community engagement	2019 plan	BVES is in the initial stages of implementing a community engagement program specific to wildfire mitigation and PSPS at this time. The utility values community engagement as a wildfire risk mitigation strategy and has incorporated community engagement as a component of its overall Emergency Preparedness and Response Programs as included in Section 5.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															
2. Cooperation and best practice sharing with agencies outside CA	2019 plan	N/A - this is not a specifically budgeted program	N/A - this is not a specifically budgeted program	N/A - this is not a specifically budgeted program	N/A - this is a System Wide Initiative	N/A - this is a System Wide Initiative	This initiative targets all ignition probability drivers	N/A - as a System Wide Initiative, this initiative does not have a specified risk reduction	N/A - as a System Wide Initiative, this initiative does not have a specific risk-spend efficiency	Reduces risk of escalation through support of accelerated restoration	Existing	N/A - none	N/A - this is an Existing initiative	N/A - there is not a clear threshold for compliance for this initiative	N/A - none	N/A - none
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022															

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
	plan total															
3. Cooperation with suppression agencies	2019 plan	During emergency situations, Bear Valley Electric Service's emergency management group communicates and collaborates with federal and state emergency responders and mutual assistance groups, including fire suppression agencies. The emergency manager has contact information for [state, county and tribal emergency managers, the state's Emergency Operations Center Emergency Support Functions (ESF) personnel, and the Geographic Area Coordination Centers dispatch centers for fire-related emergency response. Bear Valley Electric Service views cooperation with suppression agencies as a component of the company's Emergency Planning and Preparedness Programs and does not have a separate program for cooperation with suppression agencies specific to this Wildfire Mitigation Plan at this time as such.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															
4. Forest service and fuel reduction cooperation and joint roadmap	2019 plan	While collaboration such as this is critical to the overall reduction of wildfire risk in the state of CA, Bear Valley Electric Service does not have program dedicated to cooperation with the Forest Service and fuel reduction and the development of a joint roadmap specific to this Wildfire Mitigation Plan. The utility views these efforts on an as-needed basis and incorporates additional efforts to manage community environments within other programs, such as those included in the company's overall vegetation management and inspections programs described in Section 5.														
	2019 actual															
	2020															
	2021															
	2022															
	2020-2022 plan total															
5. Other / not listed	2019 plan	Bear Valley Electric Service does not have stakeholder cooperation and community engagement initiatives other than those listed above.														
	2019 actual															
	2020															
	2021															

Initiative activity	Year	Total per-initiative spend	Subtotal A: Capital expenditure	Subtotal B: Operating expenses	Line miles to be treated	Spend/ treated line mile	Ignition probability drivers targeted	Risk reduction	Risk-spend efficiency	Other risk drivers addressed	Existing/ new	Existing: What proceeding has reviewed program	If new: Memorandum account	In / exceeding compliance with regulations	Cite associated rule	Comments
	2022															
	2020-2022 plan total															

1. Local Government and Agency Briefs
2. Community Engagement

5.3.11 Definitions of Initiative Activities by Category

Category	Initiative	Definition
A. Risk mapping and simulation	A summarized risk map that shows the overall ignition probability and estimated wildfire consequence along the 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.
	Climate-driven risk map and modelling 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.
	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).
	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.
	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.).

Category	Initiative	Definition
B. Situational awareness and forecasting	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.
	Continuous monitoring sensors	Installation, maintenance, and monitoring of sensors and associated equipment used to monitor the condition of electric lines and equipment.
	Fault indicators for detecting faults on electric lines and equipment	Installation and maintenance of fault indicators.
	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.
	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.
	Weather forecasting and estimating	Development methodology for forecast of weather conditions relevant to utility
	Impacts on electric lines and equipment	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.
C. Grid design and system hardening	Capacitor maintenance and replacement program	Remediation, adjustments, or installations of new equipment to improve or replace existing capacitor equipment.
	Circuit breaker maintenance and	Remediation, adjustments, or installations of new equipment to improve or replace existing fast switching circuit breaker equipment to improve the ability to protect
	installation to de-energize lines upon detecting a fault	Electrical circuits from damage caused by overload of electricity or short circuit.

Category	Initiative	Definition
	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.
	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.
	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.
	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.
	Expulsion fuse replacement	Installations of new and CAL FIRE-approved power fuses to replace existing expulsion fuse equipment.

Category	Initiative	Definition
	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.
	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).
	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.
	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).
	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.
	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 BVES's pole loading assessment program.
	Transformers maintenance and replacement	Remediation, adjustments, or installations of new equipment to improve or replace existing transformer equipment.
	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).
	Undergrounding of electric lines and equipment	Actions taken to convert overhead electric lines and equipment to underground (i.e., located underground and in accordance with GO 128).

Category	Initiative	Definition
	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.
D. Asset management and inspections	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.
	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.
	Improvement of inspections	Identifying and addressing deficiencies in inspections protocols and implementation by improving training and the evaluation of inspectors.
	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.
	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.
	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).
	Other discretionary inspection of distribution 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.
	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.
	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.

Category	Initiative	Definition
	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.
	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.
	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.
E. Vegetation management and inspection	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
	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.
	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.
	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.
	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.
	Improvement of inspections	Identifying and addressing deficiencies in inspections protocols and implementation by improving training and the evaluation of inspectors.
	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).

Category	Initiative	Definition
	Other discretionary inspections of vegetation around distribution electric lines and equipment	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.
	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.
	Quality assurance / quality control of vegetation 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.
	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 BVES's wildfire mitigation plan, in addition to rules and regulations for safety.
	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.
	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.
	Substation inspection	Inspection of vegetation surrounding substations, performed by qualified persons and according to the frequency established by the utility, including record-keeping.
	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.
	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.
	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.

Category	Initiative	Definition
F. Grid operations and protocols	Automatic recloser operations	Designing and executing protocols to deactivate automatic reclosers based on local conditions for ignition probability and wildfire consequence.
	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
	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.
	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.
	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.
	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.
G. Data governance	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.
	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.
	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.
	Tracking and analysis of near miss data	Tools and procedures to monitor, record, and conduct analysis of data on near miss events.
H. Resource allocation methodology	Allocation methodology development and application	Development of prioritization methodology for human and financial resources, including application of said methodology to utility decision-making.
	Risk reduction scenario development and analysis	Development of modelling capabilities for different risk reduction scenarios based on wildfire mitigation initiative implementation; analysis and application to utility decision-making.

Category	Initiative	Definition
	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.
I. Emergency planning and preparedness	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.
	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.
	Customer support in emergencies	Resources dedicated to customer support during emergencies, such as website pages and other digital resources, dedicated phone lines, etc.
	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.
	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.
	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.
J. Stakeholder cooperation and community engagement	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.
	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.
	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.

Category	Initiative	Definition
	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).

5.4 Enterprise-Wide Safety Risk and Wildfire-Related Risk Assessment

Attachment 1 Section 5.4 Methodology for enterprise-wide safety risk and wildfire-related risk assessment

Describe methodology for identifying and evaluating enterprise wide safety risk and wildfire related risk, and how that methodology is consistent with the methodology used by other electric utilities or electrical corporations. If the risk identification and evaluation methodology is different, the utility shall explain why in this section.

The CPUC has not required BVES to conduct a Risk Assessment and Mitigation Phase (RAMP). However, BVES evaluates enterprise risk using a risk-based decision-making framework and has adopted a Fire Circuit Safety Matrix to prioritize wildfire risk and evaluate wildfire risk mitigation. The combination of these methods allows for both a comprehensive analysis of enterprise wide safety risk and wildfire related assessment to generate an effective proxy wildfire ignition risk assessment. BVES Risk-Based Decision-Making Framework effectively targets circuits and assets to assure initiatives that provide the greatest mitigation benefits are properly prioritized. Within the next 3 years, BVES will work to develop a model to quantify ignition risk drivers and associated probabilities to assist in determining which initiative mitigations to targeted circuits and assets that will provide the greatest benefit to wildfire risk reduction.

Enterprise Risk Mitigation Strategy

Using its risk understanding, BVES developed a risk mitigation strategy, prioritizing the most cost effective and most operationally effective strategies for its risk-based decision-making framework filing. The methodology identifies inherent risk, existing controls, residual risk, and future mitigation efforts after determining the likelihood and impact of wildfire risk in the service territory. BVES's Risk-Based Decision-Making Framework is consistent with peer investor-owned utilities', including SCE.[53] For example, SCE's framework consists of six steps: (1) risk identification, (2) risk analysis, (3) risk evaluation, (4) risk mitigation identification, (5) decision-making and planning, and (6) monitoring and reporting. From a fundamental perspective, identifying threats, risk characterization, assigning appropriate measures, implementing remedies, and monitoring the results are components of the described assessment strategies contained within this plan and is similar to the approach used by other utilities. **Figure 5-5** provides an overview of the steps.

Figure 5-5. BVES Risk-Based Decision-Making Framework

[53] https://www.edison.com/content/dam/eix/documents/investors/wildfires-document-library/201809-gsrp-filing.pdf

The BVES Risk Register Model evaluates the enterprise risk reduction relative to the cost of the mitigation using a Risk Spend Efficiency (RSE) analysis. This analysis focuses on a review of ongoing and potential new projects to mitigate the three primary wildfire related risk events:

1. Wildfire Public Safety
2. Wildfire – Significant Loss of Property
3. Loss of Energy Supplies

The enterprise risk evaluation considers a reasonable worst case and associated controls for the three primary wildfire related risk events. For each primary risk event, BVES subject matter experts determined the frequency of occurrence and impact scores for each of the weighted risk scoring inputs listed below:

- System reliability impacts
- Regulatory compliance and Legal implications
- Quality of service to Customers
- Personal & Public Safety
- Environmental Impacts

Using a 7x7 log score model matrix, an impact risk score is determined for each weighted scoring input. The weighted impact scores are accumulated to arrive at a total risk score. The risk scoring inputs, and total risk score form the basis of evaluation for each identified wildfire mitigation activity or initiative. Mitigation activities can be applied to a single or multiple risk events.

BVES subject matter experts evaluated the risk reduction for each scoring input to arrive at weighted mitigated risk score. The risk benefit for each combination of mitigation activity and risk event is determined by subtracting the mitigated risk score from the total risk score. BVES subject matter experts also define an equivalent annual cost for each mitigation activity. The risk register determines the risk spend efficiency (RSE) by dividing the risk benefit by the equivalent annual cost.[54]

The review produced a list of mitigation projects and programs and quantified the risk benefit (reduction) and the RSE. This process allows BVES to better evaluate projects in terms of risk reduction and select the best alternatives where an alternative exists. This analysis resulted in the two figures below. Support **Figure 5-6** below provides a representation of Risk Reduction and RSE of Mitigation Initiatives for the primary wildfire Public Safety Risk and prioritized drivers of ignition risk. As stated earlier, BVES's goal is to implement effective wildfire risk mitigation initiatives in the most cost effective and operationally effective manner possible. It is noted that these critical hardening programs are capital intensive and generally yield lower RSE values. For example, covered conductor projects and vegetation management present lower RSE results, however, these programs are prudent, and are critical to hardening BVES's system, as well as taking proactive measures to mitigate wildfire risks that have been widely adopted across California and elsewhere.

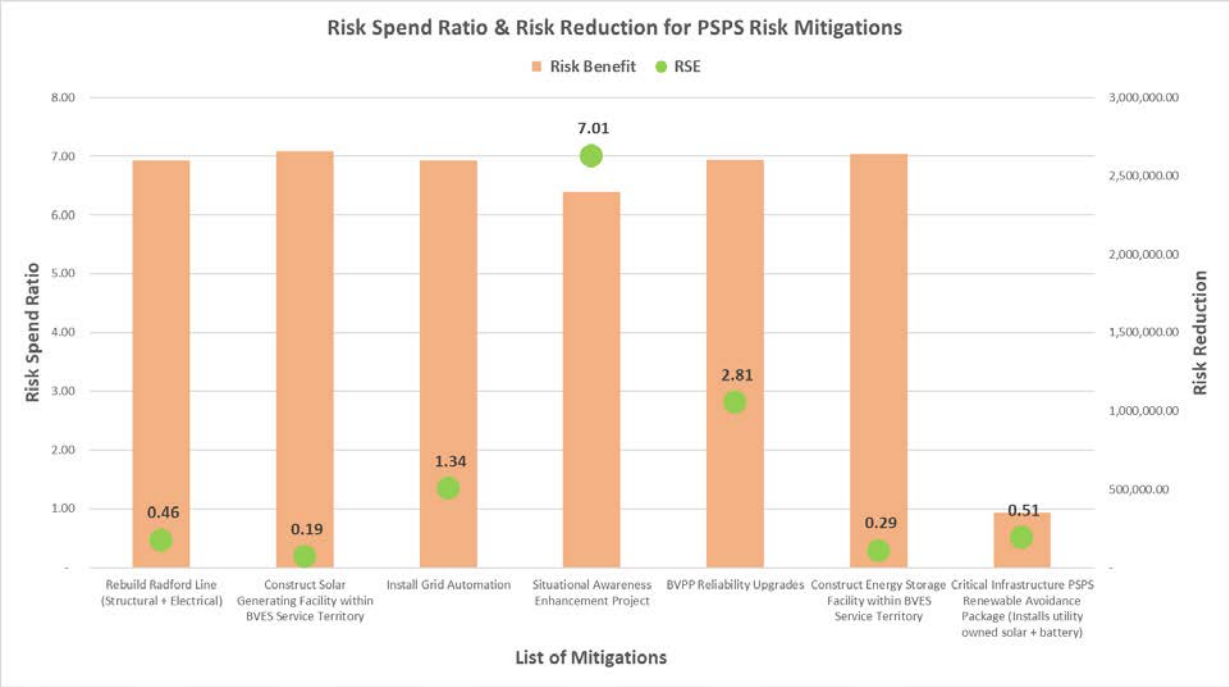
[54] See Appendix/attached Risk Management Program Manual (2017)

Figure 5-6. Risk Reduction and Efficiencies of Mitigation Initiatives

Source: BVES

Figure 5-7 displays the RSE for each PSPS mitigation.

Figure 5-7. Risk Spend Ratio / Risk Reduction for PSPS Mitigations



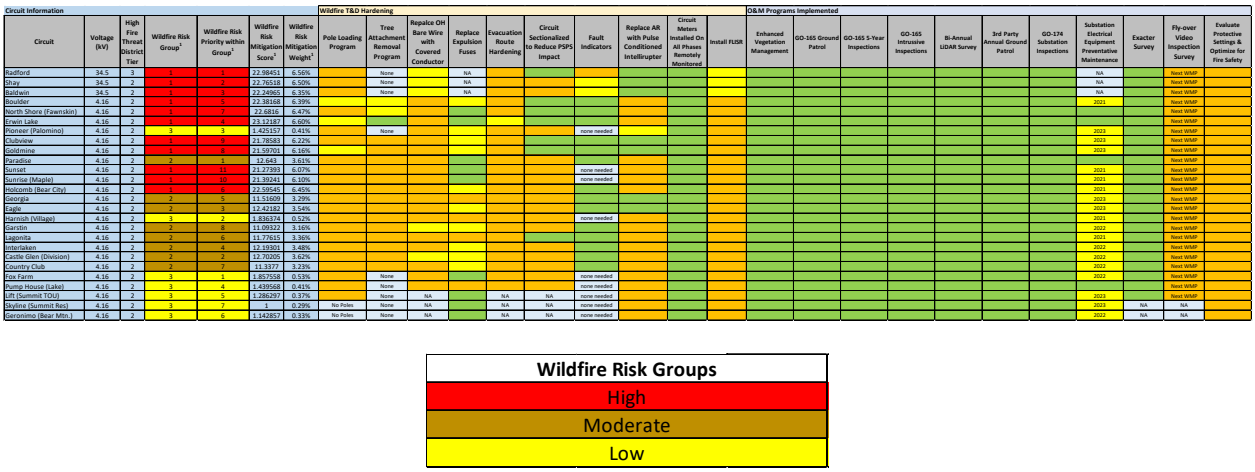
Source: BVES

Fire Safety Circuit Matrix

BVES developed a balanced scorecard approach with the use of a Fire Safety Circuit Matrix (a screenshot is demonstrated below in **Figure 5-8.**) The purpose of the Fire Safety Circuit Matrix is to characterize all BVES distribution circuits in wildfire risk groups of High, Moderate, and Low. Within each wildfire risk group, circuits are prioritized. The matrix contains data regarding number of customers, # of wood poles, bare wire OH circuit miles, tree attachments, # of expulsion fuses and other related factors. These factors are compiled and weighted to arrive at the wildfire risk mitigation score. Currently, 11 circuits are rated High, eight circuits are rated Moderate and seven circuits are rated Low. In addition to evaluating the risk reduction and RSEs must account the timing and proper sequencing of the various wildfire mitigation initiatives. For example, while the Situational Awareness Enhancement Project offers a relatively high RSE, it should not be fully completed until the Grid Automation project is near completion in 2022.

The matrix also tracks the status Wildfire Hardening Programs and the status of O&M Program implementation (Not Started, In Progress, Complete or Implemented, Not Applicable). BVES intends to use the Fire Safety Circuit Matrix as a “living document” and as mitigations are implemented and at least annually, Wildfire Risk Group, Priority and Mitigation Weight should be re-evaluated. Additionally, the Fire Circuit Safety Matrix can be used to gauge progress and set 3- and 10-year targets for the reduction of the wildfire mitigation score and associated wildfire ignition risk reduction. It should be noted that the wildfire risk mitigation score relies heavily on industry recognized system hardening best practices such as replacement of OH bare wire with covered conductor, wood pole reinforcements, elimination of tree attachments and replacement of expulsion fuses. Due to the primarily rural nature of the BVES distribution system, potential for high consequence wildfires are prevalent and these mitigation measures are necessary and appropriate to reduce wildfire ignition risk.

Figure 5-8. Fire Safety Circuit Matrix



Circuit Information						Wildfire T&D Hardening									O&M Programs Implemented										
Circuit	Voltage (kV)	High Fire Threat District Tier	Wildfire Risk Group[1]	Wildfire Risk Priority within Group[1]	Wildfire Risk Mitigation Score[2]	Wildfire Risk Mitigation Weight[3]	Pole Loading Program	Tree Attachment Removal Program	Replace OH Bare Wire with Covered Conductor	Replace Expulsion Fuses	Evacuation Route Hardening	Circuit Sectionalized to Reduce PSPS Impact	Fault Indicators	Replace AR with Pulse Conditioned Intellirupter	Circuit Meters Installed On All Phases Remotely Monitored	Install FLISR	Enhanced Vegetation Management	GO-165 Ground Patrol	GO-165 5-Year Inspections	GO-165 Intrusive Inspections	Bi-Annual LiDAR Survey	3rd Party Annual Ground Patrol	GO-174 Substation Inspections	Substation Electrical Equipment Preventative Maintenance	Exacter Survey	Fly-over Video Inspection Survey	Evaluate Protective Settings & Optimize for Fire Safety
Radford	34.5	3	1	1	22.98451	6.56%		None		NA														NA		Next WMP	
Shay	34.5	2	1	2	22.76518	6.50%		None		NA														NA		Next WMP	
Baldwin	34.5	2	1	3	22.24965	6.35%		None		NA														NA		Next WMP	
Boulder	4.16	2	1	5	22.38168	6.39%																		2021		Next WMP	
North Shore (Fawnskin)	4.16	2	1	7	22.6816	6.47%																				Next WMP	
Erwin Lake	4.16	2	1	1	23.12187	6.60%																				Next WMP	
Pioneer (Palomino)	4.16	2	3	3	1.425157	0.41%		None					none needed											2023		Next WMP	
Clubview	4.16	2	1	9	21.78583	6.22%																		2023		Next WMP	
Goldmine	4.16	2	1	8	21.59701	6.16%																		2023		Next WMP	
Paradise	4.16	2	2	1	12.643	3.61%																				Next WMP	
Sunset	4.16	2	1	11	21.27393	6.07%							none needed											2021		Next WMP	
Sunrise (Maple)	4.16	2	1	10	21.39241	6.10%							none needed											2021		Next WMP	
Holcomb (Bear Chy)	4.16	2	1	6	22.59545	6.45%																		2021		Next WMP	
Georgia	4.16	2	2	5	11.51609	3.29%																		2023		Next WMP	
Eagle	4.16	2	2	3	12.42182	3.54%																		2023		Next WMP	
Harnish (Village)	4.16	2	3	2	1.836374	0.52%							none needed											2021		Next WMP	
Garstin	4.16	2	2	8	11.09322	3.16%																		2022		Next WMP	
Lagonita	4.16	2	2	6	11.77615	3.36%																		2021		Next WMP	
Interlaken	4.16	2	2	4	12.19301	3.48%																		2022		Next WMP	
Castle Glen (Division)	4.16	2	2	2	12.70205	3.62%																		2022		Next WMP	
Country Club	4.16	2	2	7	11.3377	3.23%																		2022		Next WMP	
Fox Farm	4.16	2	3	1	1.857558	0.53%		None					none needed											2022		Next WMP	
Pump House (Lake)	4.16	2	3	4	1.439568	0.41%		None					none needed													Next WMP	
Lift (Summit TOU)	4.16	2	3	5	1.286297	0.37%		None	NA		NA	NA	none needed											2023		Next WMP	
Skyline (Summit Res)	4.16	2	3	7	1	0.29%	No Poles	None	NA		NA	NA	none needed											2023	NA	NA	
Geronimo (Bear Mtn.)	4.16	2	3	6	1.142857	0.33%	No Poles	None	NA		NA	NA	none needed											2022	NA	NA	

Wildfire Risk Groups
High
Moderate
Low

Source: BVES

BVES plans to evaluate, revise and improve both the Risk-Based Decision-Making Framework and the Fire Safety Circuit Matrix in 2020 for use in the 2021 WMP update. BVES will consider feedback from the 2020 WMP and review feedback on other CA utility WMPs. These feedback sources will be used to enhance risk modeling and initiative prioritization.

Description of How the Plan Accounts for Identified Risks

Since BVES identified risk mitigation strategies based on its list of potential risk events, the WMP aligns closely with its risk-based decision-making framework. **Supporting Table 5-11** below details how the WMP accounts for identified risks. Each mitigation measure may span several different categories and help mitigate multiple risks.

Supporting Table 5-11. Risk & Risk Mitigation Mapping

Risk Event	*Proposed Mitigation Measures*
Design & Construction	
Line Attached to Fallen Tree	• Continue Tree Attachment Replacement Program
Ignition Caused by Equipment/Infrastructure Settings	• Continue Fusing Upgrades (install current limiting fuses & electronic fuses) • Continue covering bare lines, prioritizing high-risk areas (e.g. the Radford Line) to prevent ignition • Underground high-risk overhead lines, where appropriate • Continue to enclose substations and related infrastructure
Inspection & Maintenance	
Pole Failures	• Continue Vegetation Management Program • Continue Pole Loading Assessment & Remediation

Downed Wire	• Continue Vegetation Management Program • Continue Pole Loading Assessment & Remediation • Continue to install grid automation equipment • Continue Tree Attachment Replacement Program • Implement Down Wire Detection Relay Installment Program • Continue increased on-ground inspections
Aging Infrastructure	• Continue Pole Loading Assessment & Remediation Program • Continue Electrical Preventative Maintenance Program • Continue Upgrade Program for Substations • Continue increased on-ground inspections • Continue LIDAR inspections
Vegetation in Proximity to Infrastructure	• Continue increased on-ground inspections • Continue LIDAR inspections • Continue Vegetation Management Program • Continue covered wire program • Implement Forrester Program
Quickly Changing Environmental Conditions Due to Climate Change	• Continue increased on-ground inspections • Continue weather consultant services • Continue weather station installation and integration with SCADA • Continue expanding use of HD cameras to monitor remote areas with stakeholder engagement
Operational Practices	
Unclear Protocols & Procedures During High-Risk Conditions	• Continue to update protocols and procedures on an as-needed basis
Situational & Conditional Awareness	
Inability to Visualize Equipment in Hard-to-Patrol Areas	• Continue increased on-ground inspections • Continue expanding use of HD cameras to monitor remote areas • Continue LIDAR inspections • Continue to install grid automation equipment
Imprecise Weather Forecasting	• Continue using consultant meteorologist to analyze weather data • Continue to monitor publicly available weather data in the area • Monitor BVES-owned weather stations (all remaining for target to be installed by May 2020)

Response & Recovery	
Fatality caused by wildfire / emergency	• Continue vegetation management program • Continue Pole Loading Assessment & Remediation • Continue fusing program (install current limiting fuses and electronic fuses) • Continue covered wire program • Continue Tree Attachment Replacement Program • Rebuild Radford Line (Structural + Electrical)
Sustained outages affecting health	• Continue Vegetation Management Program • Continue Pole Loading Assessment & remediation • Continue Electrical Preventative Maintenance Program • continue to install grid automation equipment • Continue covered wire program

Source: BVES

Based on the identified items, BVES evaluated the impact for risk mitigation, feasibility, and cost-effectiveness of each item. The items that passed the evaluation are included in BVES wildfire mitigation portfolio and described in Section 5.3. BVES will continue to monitor additional items not currently planned for inclusion and explore new technologies as they arise.

5.5 Planning for Workforce and Other Limited Resources

Attachment 1 Section 5.5 Planning for workforce and other limited resources

Include a showing that the utility has an adequately sized and trained workforce to promptly restore service after a major event, taking into account employees of other utilities pursuant to mutual aid agreements and employees of entities that have entered into contracts with the utility.

Successful implementation of the Plan requires adequate staffing. BVES uses a combination of in-house and contracted resources. Program owners are described in Section 1.2. BVES plans to hire and contract with additional resources to carry out projects and programs identified in this WMP in the near-term. Additional resources needed for Plan implementation are described below in addition to existing mutual aid agreements executed between public safety partners and the utility for emergency events. Additional response effort descriptions are also provided above in Section 5.3.9. For related initiatives, the utility plans to procure the following resources within the next WMP term:

- Inspectors – Inspects overhead lines and equipment to comply with G.O. 165 and 174 inspection requirements and G.O. 95 and 128 construction standards as well as National Electrical Safety Code (NESC) and other related industry standards and codes.

- Wildfire Mitigation and Reliability Engineer – Oversees wildfire mitigation initiatives by collecting and analyzing a comprehensive set of data and metrics and serves as the company liaison for first responders and public safety partners.

- Project Coordinator – Manages schedule, logistics, labor resources, and budget to achieve WMP project implementation and provides periodic project progress updates.

During emergency response, BVES has emergency contracts in place for plausible services that may be needed and maintains active membership in the California Utilities Emergency Association, which aims to facilitate communication and cooperation among member utilities for emergency response efforts. Additionally, BVES is an active member of the Mountain Mutual Aid Association which has significant community-based resources to assist during emergencies.

Recruiting and Training Personnel

As discussed in Section 5.1.C and 5.5, BVES uses a combination of permanent and outsourced resources. Over the last year, BVES updated responsibilities of existing positions and identified the need for additional positions for ongoing WMP support.

i. BVES outsources all vegetation management and the contractor BVES uses has no projected shortfalls in staffing. Under this arrangement, all of BVES's vegetation management personnel are qualified and undergo extensive training.

   BVES has re-instituted its lineman apprenticeship program that had been dormant.

ii. BVES recently established a relocation policy that allows new hires to relocate from out of state to increase the talent sourcing pool. Because of BVES's remote location, employees must live in the service territory. BVES screens candidates initially through remote interviews using online collaboration tools. Candidates that are favorably screened are brought to Big Bear Lake for in-person mutual assessment and service territory orientation.

   BVES uses a local temp agency to source local talent for certain positions, for example project coordinators and skilled accountants for work order documentation and processing.

iii. As a general rule, BVES hires experienced personnel but has improved its capabilities and willingness to train new staff that demonstrate strong potential for success to the specifics of utility skillsets. BVES keeps a monthly headcount and is developing the requested metrics as our recruiting and apprenticeship programs mature, including from out of state and other California utilities.

5.6 Expected Outcomes of Three-Year Plan

BVES's risk-based approach intends to direct activities where it will have the most impact. The utility will continue to monitor trends to gauge improvements from our programs and projects. For the upcoming three years, BVES anticipates completing the scheduled initiatives described above as well as bolstering inspection practices through proposed and adopted methods and technologies.

5.6.1 Planned Utility Infrastructure Construction and Upgrades

Attachment 1 Subsection 5.6.1 Planned Utility Infrastructure Construction and Upgrades

Explain how the utility expects the geographic location of transmission and distribution lines to shift over the three-year plan period and discuss its impact on 1) the utility's risk exposure and 2) the utility's wildfire mitigation strategy. Outline portions of grid within HFTD that are highest cost to serve, by highlighting circuits or portions of circuits that exceed $0.5M per customer in capital cost required to harden. Provide justification for the level of hardening required and why the lowest cost path to harden this equipment exceeds $0.5M per customer, including by describing the various alternatives that were considered to reduce ignition probability and estimated wildfire consequence. For each of these sections of the grid, outline any analysis that was conducted around islanding, serving with microgrids, or providing backup generation, all to reduce the impact of PSPS events and reduce ignition probability and estimated wildfire consequence at the lowest possible cost.

Discuss how the utility wildfire mitigation strategy influenced its plan for infrastructure construction (in terms of additions or removal of overhead lines, including undergrounding of overhead lines) as detailed in Section 3.4.2. Discuss how the utility wildfire mitigation strategy influenced its plan for upgrades to overhead lines and substations as detailed in the Section 3.4.2.

The geographic location of transmission and distribution lines are not expected to shift significantly over the next three-year plan period. The utility does not have associated risk exposure due to this assumption. Additionally, the cost implications for system hardening per year does not meet the $0.5 million threshold. BVES does not have plans in the foreseeable future for shifted, new circuit construction for either transmission or distribution. The WMP significantly influences future planning of new or hardened infrastructure as climate change impacts continue to encourage and/or exacerbate conditions suitable for wildfires. The utility still prioritizes reliability, capacity, and safety-related initiatives where applicable but has sought to embed wildfire mitigation initiatives as the new normal in California electric utility operations.

Table 31 below presents anticipated incidents per year based on the insight from historical incidents and WMP implementation to date. This information is also included in the supplemental *Attachment 1* workbook.

Table 31. Change in drivers of ignition probability taking into account planned initiatives, for each year of plan

Incident type by ignition probability driver	Detailed risk driver	Are near misses tracked?	Number of incidents per year			Average percentage likelihood of ignition per incident			Number of ignitions per year		
			2020	2021	2022	2020	2021	2022	2020	2021	2022
Contact from object	All types of object contact	Y	4	4	2	0.00%	0.00%	0.00%	0	0	0
	Animal contact	Y	1	1	0	0.00%	0.00%	0.00%	0	0	0
	Balloon contact	Y	0	0	0	0.00%	0.00%	0.00%	0	0	0
	Vegetation contact	Y	3	3	2	0.00%	0.00%	0.00%	0	0	0
	Vehicle contact	Y	0	0	0	0.00%	0.00%	0.00%	0	0	0
All types of equipment / facility failure	All types	Y	16	14	11	0.00%	0.00%	0.00%	0	0	0
	Capacitor bank failure	Y	0	0	0	0.00%	0.00%	0.00%	0	0	0
	Conductor failure—all	Y	3	3	2	0.00%	0.00%	0.00%	0	0	0
	Conductor failure—wires down	Y	3	3	2	0.00%	0.00%	0.00%	0	0	0
	Fuse failure—all	Y	4	3	3	0.00%	0.00%	0.00%	0	0	0
	Fuse failure—conventional blown fuse	Y	4	3	3	0.00%	0.00%	0.00%	0	0	0
	Lightning arrestor failure	Y	0	0	0	0.00%	0.00%	0.00%	0	0	0
	Switch failure	Y	0	0	0	0.00%	0.00%	0.00%	0	0	0
	Transformer failure	Y	2	2	1	0.00%	0.00%	0.00%	0	0	0
Wire-to-wire contact / contamination		Y	2	1	0	0.00%	0.00%	0.00%	0	0	0
Other		Y	0	0	0	0.00%	0.00%	0.00%	0	0	0

5.6.2 Protocols on Public Safety Power Shutoff

Attachment 1 Subsection 5.6.2 Protocols on Public Safety Power Shutoff

Describe protocols on Public Safety Power Shutoff (PSPS or de-energization), to include:

1. **Strategy to minimize public safety risk during high wildfire risk conditions and details of the considerations, including but not limited to list and description of community assistance locations and services provided during a de-energization event.**
2. **Outline of tactical and strategic decision-making protocol for initiating a PSPS/de-energization (e.g., decision tree).**
3. **Strategy to provide for safe and effective re-energization of any area that was de-energized due to PSPS protocol.**
4. **Company standards relative to customer communications, including consideration for the need to notify priority essential services – critical first responders, public safety partners, critical facilities and infrastructure, operators of telecommunications infrastructure, and water utilities/agencies. This section, or an appendix to this section, shall include a complete listing of which entities the electrical corporation considers to be priority essential services. This section shall also include description of strategy and protocols to ensure timely notifications to customers, including access and functional needs populations, in the languages prevalent within the utility's service territory.**
5. **Protocols for mitigating the public safety impacts of these protocols, including impacts on first responders, health care facilities, operators of telecommunications infrastructure, and water utilities/agencies.**

Collaboration with Outside Agencies

As part of a small, tight-knit community, collaboration is built into the daily values and way of working at BVES. BVES collaborates with Cal OES, county and local governments, independent living centers, and community representatives. As a result of the March 12, 220 D.20-03-004, BVES submitted Advice Letter No. 389-E to address outreach with local communities, public safety partners, and local agencies with regard to emergency notification and communication procedures before, during, and after a wildfire.

It is within BVES's core values to conduct root cause analyses and strive for continuous improvement. As our data sets enrich and we collaboratively leverage information with partners such as universities and research centers, CAL FIRE, Big Bear Fire Department, the local weather service provider and other utilities in and around California. BVES has been recently working with potential Community Based Organizations (CBOs) to forge partnerships that will help promote BVES's outreach material and vital information. BVES has engaged local CBOs by phone and/or email to gauge their willingness, and for insight regarding various language options. CBO feedback may provide further insight into language

barriers in the Big Bear Valley, where BVES operates. CBOs will have access to information regarding BVES's outages or emergency messages, as well as program offerings. BVES will keep CBOs well informed, as these organizations provide critical feedback regarding the effectiveness of BVES's outreach and language preferences. This material may be displayed directly by the CBO or distributed electronically.

BVES has reached out to the following CBOs:

- City of Big Bear Lake
- Big Bear Lake Chamber of Commerce
- Big Bear Lake Resort Association/Visit Big Bear Center
- The Local Post Office(s)
- American Associate of University- AAUW
- American Legion Post 584
- Doves of Big Bear Valley
- Soroptimist International of Big Bear Valley
- The Salvation Army Pine Summit
- Senior Citizens of Big Bear Valley
- AARP Local Chapter 2598
- Big Bear Lions Club
- YMCA Camping Services of Metropolitan Los Angeles
- Bear Valley Hummingbird Project, Inc.
- Friends of the Big Bear Valley Library
- Rotary Club of Big Bear Lake
- Big Bear Lake Elks #1787

BVES has been fortunate to not have any wildfire events in its service territory in recent history and also has not had a sufficient reason to implement a PSPS event. During the 2019 calendar year, BVES conducted various outreach efforts to reach its customers and help expand their awareness. In 2019, BVES's outreach was primarily conducted in English. BVES had its 2019 WMP equipment upgrades, vegetation management, and operational improvements listed online to the public in the following languages: English, Spanish, French, Tagalog, Vietnamese, and Chinese. BVES will also include Mixteco and Zapoteco. In BVES's service territory, the majority of customers are English speaking along with a small amount of Spanish speaking customers. When a customer calls BVES's Customer Service Department for information on the WMP, BVES has Spanish-speaking representatives that can assist. BVES has a small number of customers with primary languages other than English or Spanish. As a resort town, the majority of residents that own homes in Big Bear are seasonal/part-time customers. Part-time and full-time customers typically interact using English or Spanish. Vacationers that might come up and rent a cabin for the weekend could speak another language, but vacationers are not part of Big Bear's full or part- time residents.

In 2019/2020, BVES did the following:

- BVES's WMP and PSPS plans were featured in BVES's summer 2019 and winter 2019/2020 newsletters in English.

- Sent BVES's E-communication customers the WMP video in August 2019 in English.

- Sent the WMP video to BVES's communication outlets in August 2019 in English.
- Posted the WMP video on BVES's Facebook page and the BVES.com homepage in August 2019; the WMP video is currently still posted on both pages in English.
- Provided WMP postcards in English and BVES's President & Treasurer spoke about the WMP in front of the attendees at a Mountain Rim Fire Safe Council meeting regarding Wildfire Prevention and Preparedness in September 2019.
- Hosted two community meetings at a local hotel in December 2019. BVES's President & Treasurer presented on a handful of topics, including BVES's WMP and PSPS plan. WMP Postcards in English were available at these meetings.
- Provided WMP postcards in English at a start-up meeting for the Fire Safe Council for Big Bear Valley in February 2020 (BVES is an active member of the Fire Safe Council start-up for the Big Bear Valley).
- Posted approved WMP in English on the BVES website in 2019 and 2020 after the 2019 and 2020 WMP filings, respectively.
- Posted the equipment upgrades, vegetation management, and operational improvements included in the 2019 WMP online to the public in the following languages: English, Spanish, French, Tagalog, Vietnamese, and Chinese.
- Comments and fillings regarding the 2019/2020 WMP are continuously being updated and posted on the website in English.
- Continued to promote the WMP in English on Facebook throughout the course of the year.
- BVES's President & Treasurer is the president of the Bear Valley Mutual Aid Association; he has briefed the individuals in the group about BVES's PSPS plans and WMP in English.
- Several web based PSPS overview workshops were held for public safety partners and customers to inform on the initiatives within the WMP and emergency planning and PSPS protocols ahead of and during the 2020 fire season.
- BVES is developing a Community Resource Center to assist customers affected by PSPS events that is expected to be operational by the end of September 2020.
- BVES's President & Treasurer reached out to local government, agencies, first responders, and stakeholder organizations with three briefings on the BVES's WMP and PSPS and opened the sessions for their comments.
- BVES reached out to Southern California Edison leadership to conduct joint talks on how to be collaborate and mitigate the risk of an SCE directed PSPS by address issues that affect the likelihood of such events and reduce the impact if such an event occurs.
- BVES is implementing all of the language requirements of D.20-03-004 and including the outreach in both written and audio formats.

Public Safety Power Shut Off (PSPS) or Proactive De-Energization

Plan: PSPS refers to the proactive de-energization of the grid in high fire danger conditions. This is a preventative measure to help keep customers, employees, and the public safe. A combination of ignition (heat) from electrical infrastructure and fuel from nearby materials, such as vegetation, can result in a wildfire. While BVES will attempt to control the latter through its vegetation management program, it will control the former by implementing PSPS in certain high-risk fire danger conditions, as described in this section.

BVES is not able to reliably determine the strength or health of vegetation surrounding bare conductors outside of the required vegetation clearance zones as well as other structures that may come loose and impact BVES distribution facilities.[55] Therefore, BVES proactively de-energizes facilities during any high fire-threat and high wind conditions in close consultation and coordination with local governments and agencies.

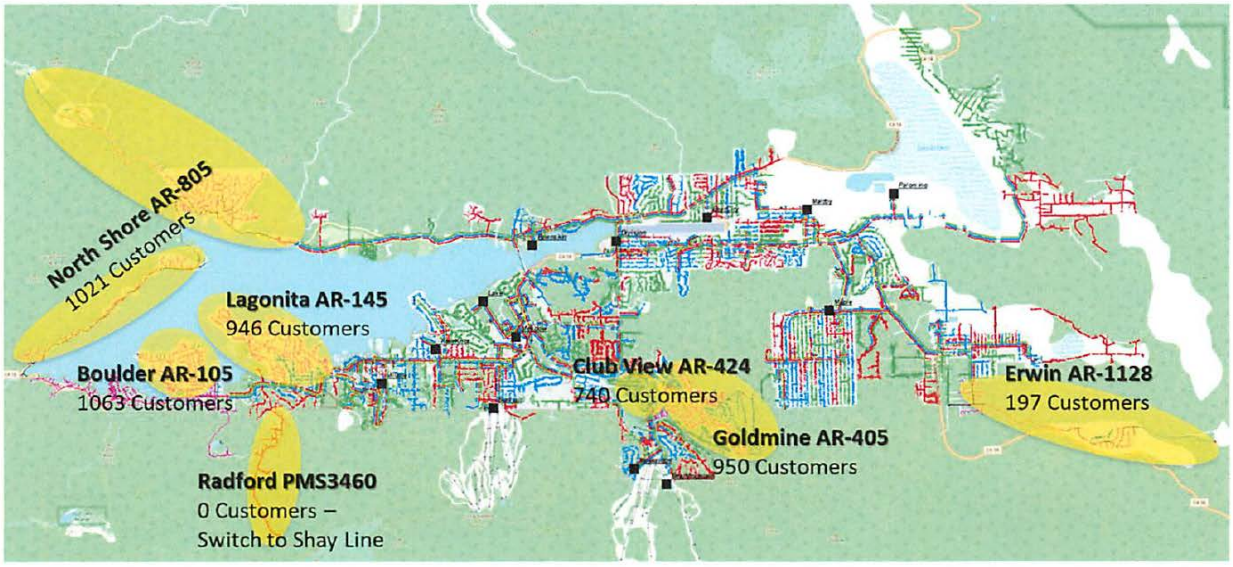
As described in Section 4, BVES faces substantial wildfire risk due to its climatic, weather, and topographical conditions, and therefore monitors the NFDRS and wind speeds at least daily during fire season. These two variables contribute to extreme fire danger conditions. If the NFDRS is “brown”, “orange” or “red,” signals for high fire danger, BVES will actively monitor forecasted wind speeds, using weather monitoring equipment and local forecasts.

As of the time of issuance of this plan, BVES has never experienced the criteria to invoke PSPS and, therefore, has not initiated PSPS procedures. A review of weather data from the National Weather Service over the past five years, indicates that there were only three brief occasions (each less than an hour) in which PSPS may have been considered. By far, the more likely scenario that would impact BVES’s customers is when SCE directs PSPS actions on its lines leading a partial or complete loss of the three SCE supply lines into the BVES service area. It is possible that the extreme fire threat weather and conditions causing SCE to de-energize its supply lines to BVES may not exist in the BVES service area. In this case, BVES would seek to supply power to its customers using all available power resources such as the Bear Valley Power Plant (BVPP). During the fire season, the capacity of the BVPP (8.4 MW) is insufficient to supply all loads which are typically 12 MWs to 18 MWs. Therefore, rolling blackouts and curtailment requests would be necessary.

BVES has identified seven sections of “at-risk” areas based on type of distribution facilities (overhead bare conductors, high voltage, etc.), tree and vegetation density, available dry fuel, and other factors that make certain locations vulnerable to wildfire risk. The “at-risk” line sections are identified shown in the map in **Figure 5-9** and further outlined in Supporting Table 5-12 below. These line sections may be de-energized by “opening” the sectionalizing switches; each circuit section affects a varying number of customers, as outlined in the table below.

[55] Note that health impacts the moisture content of plants. Drier or “less healthy” vegetation is more prone to cause fires.

Figure 5-9. "At-Risk" Line Sections



Source: BVES

Supporting Table 5-12. Circuits Identified for De-Energization & Customers Affected

Circuit (AR To Be Opened)	Number of Customers
Radford 34.5 kV	0[56]
North Shore 4 kV (Open AR)	1,021
Erwin 4 kV (Open AR 1128)	197
Boulder 4 kV (Open AR 105)	1,063
Lagonita 4 kV (Open AR 145)	946
Club View 4 kV (Open AR 424)	740
Goldmine 4 kV (Open AR 405)	950

Source: BVES

Execution: BVES's procedures include two aspects: (1) field operations and (2) communications. The first includes the planned actions of service crews and BVES staff and the second includes notifications to stakeholders. Supporting Table 4-11 in Section 4 outlines these procedures in detail.

For the purpose of the procedures, the Utility Manager will be in charge of the execution. The Field Operations Supervisor will direct field activities and operations. The Service Crew (or Dutyman outside normal working hours) will provide initial field response. Additional linemen will be called out as needed. Furthermore, Customer Service staff and/or additional staff may be called out to assist with notification procedures as needed. Other staff may be called out at the direction of the Utility Manager to assist, as needed. For example, Engineering staff may be called out to assist linemen in monitoring local wind speeds. Collectively, these staff described above are referred to as the ERT.

When PSPS is deemed necessary, BVES crews will manually shut off at risk circuits, lines, and other infrastructure. In the future, as it implements SCADA and other technologies, BVES will consider remote shut-off implementation. The utility has worked closely and will continue to work closely with local stakeholders that own or operate critical facilities, including hospitals and police and fire departments, to

[56] When this line is de-energized, the load is shifted to the Shay 34.5 kV line.

ensure their facilities remain operational or have back-up plans in PSPS situations. Additionally, BVES will plan to update these plans in accordance with changes to the CPUC proceeding 18-12-005, Order Instituting Rulemaking to Examine Electric Utility De-Energization of Power Lines in Dangerous Conditions.

Expense: Based on past weather (2014-2018), BVES anticipates the ERT could be called out approximately 9 times per year for an average of 12 hours. Expense for regular (straight time) work hours are covered in the GRC as O&M; however, the overtime (double time) is not. Given that only 23.8% of time is regular work hours, BVES anticipates approximately $42,000 per year in overtime expense not covered in current rates. All incremental costs related to PSPS will be booked into the Fire Hazard Prevention Memorandum Account.

Minimizing Public Safety Risk and Communication Strategy

Customers and other impacted stakeholders need to understand the purpose of PSPS, BVES's process for initiating it, how to manage safely through a PSPS event, and the impacts if deployed. To accomplish this, the BVES plans to:

- Develop and use a common nomenclature that integrates with existing state and local emergency response communication messaging and outreach and is aligned the California Alert and Warning Guidelines.
- Develop notification and communication protocols and systems that reach customers no matter where the customer is located and deliver messaging in an understandable manner.
- Communicate to customers in different languages and in a way that addresses different access and functional needs using multiple modes/channels of communication.
- Identify, within the billing system, AFN customers for direct targeted messages and support.
- Coordinate a Community Resource Center with local organizations.

BVES will conduct the PSPS Preparatory phase annually well before extreme fire threat conditions are expected; or when lessons learned, or other conditions warrant updating plans, training, or outreach. During this time, BVES intends to develop communication and notification plans jointly with Cal OES, county and local governments, independent living centers, and representatives of people/communities with AFN. BVES also intends to work with these partners, along with the CPUC, CAL FIRE and other public safety partners, to plan de-energization simulation exercises throughout the utility service territories in the areas with the highest historical and forecasted risk for de- energization in advance of fire season.

Beginning in the Warning phase of the PSPS procedures and approximately 4 days prior to a PSPS event, BVES will email a "4 Day Alert" to local government, agencies, and partner organizations primary and secondary points of contact as well as alerting the emergency management community, first responders and local government first.

Two to three days prior to a potential event, BVES will begin posting notices on their website and social media, issue press releases to local media, and send notices via IVR as well as continuing to email notices to local government, agencies, and partner organizations primary and secondary points of contact. BVES will continue with these notifications along the following intervals prior to and during the PSPS event:

- 2-3 days prior notice
- 1-2 days prior notice
- 1-4 hours prior "De-energization imminent notice"
- During event "De-energization notice" and "De-energization updates" when warranted
- "Intent to Restore" notice during re-energization "Restoration Complete" notice once power is restored

Mitigating the public safety impact of PSPS on critical personnel and infrastructure

With regard to potential hazards that impact the safety and health of BVES employees, contracted and mutual assistance personnel, first responders, and the public, safety is BVES's top priority. Therefore, it is vitally important to identify potential hazards so that resources may be properly allocated to assessing, mitigating, and eliminating the hazards.

Additionally, interdependencies between BVES, government agencies, other utilities (water, gas, and electric), and critical infrastructure mean that outages may have significant impact on those entities providing their services; especially if their backup systems fail. Therefore, the Emergency Operations Center (EOC) Team must be fully aware of how outages are impacting the area and coordinate a prioritized restoration plan that appropriately considers the above.

One aspect of this is BVES's coordination in the Big Bear Valley Mountain Mutual Aid Association (MMAA) meetings and activities. The MMAA's vision is to prepare Big Bear Valley citizens, tourists, businesses, and governments to maximize their resistance to disaster through preparedness, mitigation, response, and recovery activities. Active participation is especially important in establishing strong personal business relationships with key players and stakeholders in the community such that during an emergency event, the BVES Team is working with stakeholders it is already familiar with.

MMAA has the ability to provide a wide range of direct support to BVES restoration activities during emergency response including traffic controls, road-clearing services, coordination with local government agencies, other utilities, and other nongovernmental organizations, and communications with the public. Additionally, one of the most significant strengths of MMAA is its ability to coordinate through its member organizations support and relief for customers experiencing extended sustained major power outages. This may include, but is not limited to, health and welfare checks, shelters, meals, cooling centers, and restroom and shower stations.

Post Incident Recovery, Restoration and Remediation Activities

Plan: Outage events and emergencies are rarely similar in all respects; therefore, this general restoration strategy is constructed to provide BVES's EOC management with a restoration strategy that can be employed as required to deal with the unique aspects of each major outage and emergency event.

The restoration strategies and guidance assume that the BVES system is in its normal winter line-up as follows:

- BVPP is available for normal full power operations (8.4 MW).
- Goldhill SCE sub-transmission power lines and facilities from Cottonwood (Doble, Cushenberry, Goldhill Switch Station, and Ute 1 & 2) are fully operational and connected to the BVES system at the Shay and Baldwin auto-reclosers (34 MW).
- Radford SCE sub-transmission power lines and facilities from Zanja (Radford) are fully operational and connected to the BVES system at the Radford Auto-Re-closer (5 MW).
- BVES T&D systems are in the normal line-up.

Therefore, staff must ensure that when implementing guidance provided in the Emergency Response Plan (ERP), they fully understand the current line-up of the BVES system and, if there are deviations to the normal winter line-up, they must properly account for these deviations in their restoration actions. It should be noted that under normal conditions the Field Operations Supervisor controls the system line-up and during EOC activation the system line-up is controlled by the Storm Operations Supervisor (SOS).

Execution: The Utility Manager will direct the specific restoration priorities keeping safety (public and worker) as the top priority. In most cases, based on best available information regarding the situation and

available restoration resources, resources will be dispatched to restore systems to achieve the following restoration priorities:

- **Public safety** in the affected areas;
- **Worker safety** in performing the restoration work;
- **Critical infrastructure** Sheriff's Department, hospital, Fire Department, key City & County facilities, other utility facilities (e.g., water, sewage, gas, communications), Airport, Traffic Control, Incident Commander Site, Incident Base Camp, Incident Evacuation Centers, and Radio Stations);
- Major commercial activities critical to **continuity of community services** e.g., gas stations, food stores, supply stores, repair shops, eateries and lodging facilities to support outside first responders (e.g., CAL FIRE), and financial institutions;
- **Life-support customers**;
- Reduce the **Number of customers** affected; and
- Reduce the **Length of time** customers have been without power;

In directing restoration efforts to achieve the above priorities, the Operations Group will generally find it most efficient to dedicate restoration resources to restoring the following types of facilities in the following order of priority to optimally restore electric service:

- Energy supply sources (SCE supply lines, BVPP, etc.)
- Sub-transmission circuits (34.5 kV)
- Substations
- Distribution circuits (4 kV)
- Feeders
- Distribution transformers
- Service Lines

Supporting Table 5-12 below provides guidance on the restoration priorities for sub-transmission circuits, substations, and distribution circuits. This guidance must be tempered by many factors including, but not limited to, the actual cause of the outage(s), available resources, time to conduct repairs, access to repair sites. Therefore, the Utility Manager must have wide discretion when developing the specific restoration priorities and may choose to deviate from the general guidance.

Supporting Table 5-12. Restoration Priorities for Sub-Transmission Circuits, Substations, and Distribution Circuits

Priority	Sub-Transmission Circuit	Substation	Distribution Circuit		Comments
1	Baldwin	Meadow	Garstin		• Key critical infrastructure. Connects BVPP.
2	Shay	Pineknot Village Malby Division	Interlaken Boulder Harnish Country Club	Georgia Paradise Erwin Lake Castle Glen	• Additional critical infrastructure. • Major commercial activities & airport. • Large number of residential customers.

3	Radford	Moonridge Maple Bear City Fawnskin Palomino	Eagle Lagonita Fox Farm Clubview Sunset	Goldmine Holcomb Pioneer Sunrise	• Mostly residential customers.
4	NA	Bear Mountain Summit Lake	Geronimo Skyline	Lift Pump House	• Mostly interruptible customers.

Source: BVES

Generally, the restoration protocol is as follows. When wind speeds in the affected area where PSPS was invoked calm below 50 mph for a minimum period of 20 minutes, crews may assess the fire weather conditions have subsided to "safe levels." However, crews may extend the calm period beyond 20 minutes if they assess that further gusts of greater than 50 mph are likely based on their direct observation of local conditions or forecasts indicate a high probability of winds picking up to greater than 50 mph. Crews should communicate with the Field Operations Supervisor prior to assessing the situation as "safe levels" so that an evaluation of actual conditions in the field may be merged with the latest forecasted information. Restoration activities include:

- Validating that the extreme fire weather conditions have subsided to safe levels.
- Conducting field inspections and patrols of facilities that were de-energized.
- Re-energization of inspected (and repaired if necessary) circuits.

Expense: The outreach program incurs incremental expenses to cover the costs of additional public outreach such as public relations services, translations services, advertising, website and social media enhancements, community briefs, etc. BVES's estimate for 2020 is approximately $44,750. Additionally, BVES is developing a Community Resource Center for PSPS events and these costs will also be incremental to its ongoing expenses.

In compliance with CPUC regulations, BVES has a Public Safety Power Shutoff plan.[57] BVES continually evaluates the factors that determine high risk areas. BVES annually conducts public outreach sessions with the community and emergency response partners. The BVES Team proactively monitors conditions conducive to wildfires, with the following steps: Forecasted Event: Should the threat arise, BVES will notify local governments and agencies first, followed by notifying the community using website, social media, local media, and Interactive Voice Response (IVR). Imminent Event: If there is a strong potential for imminent power shutoffs, BVES will update this information. Validated Weather Conditions: Customers will be proactively notified by BVES IVR automated outreach, when extreme danger and fire weather are confirmed. This will be supplemented with web site and social media postings and a press release to local media and press conferences. Local government and agencies will be notified via their preferred choice. The same method will be employed when BVES has validated that the weather has returned to safe conditions. Additional outreach includes door hangers, outreach by customer-facing staff, advertising, community workshops and presentations, mail (e.g., flyers, newsletters), bill inserts, and other communication systems. BVES will communicate notifications and communication updates in all of the language requirements of D.20-03-004 including English, Spanish, Tagalog, Vietnamese, and Chinese. BVES will also communicate in Mixteco and Zapoteco. BVES will bolster communication protocols if additional languages are deemed appropriate in the future.

[57] https://w/ww.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Safety/BVES%20SED%20Res%20ESRB-8%20Report%20Outreach%20Notification%20Mitigation%20080818.pdf

6. UTILITY GIS ATTACHMENTS

BVES is providing an update to its GIS files. Since the previous May 22, 2020 Errata filing, BVES has captured more of the requested data in GIS. However, BVES is still in the process of updating its GIS database to include all the items and files required by the WSD's requirements and reformatting its current files to comply with the WSD's requirements for this 2020 WMP refiling. The current submission represents progress towards these goals, though, BVES recognizes that there are still significant gaps. BVES will provide updates on its progress in subsequent filings.

6.1 Recent Weather Patterns

BVES uses various sources to monitor and determine weather patterns. BVES has installed 18 weather stations over the past two years and plans to install 2 additional stations by the end of 2020. It regularly monitors the weather from these stations and also monitors the National Weather Service. BVES has provided the following weather pattern data in GIS:

- Average annual number of red flag warning days per square mile

BVES plans to submit wind data in subsequent filings. Additionally, BVES plans to submit its weather station locations as part of its WSD GIS Data Reporting Requirements.

6.2 Recent Drivers of Ignition Probability

BVES did not have any ignitions within the 2015 – 2020 timeframe, as shown in Table 11. Therefore, BVES has no GIS data to submit for this category for this filing. BVES continues to monitor ignitions and will submit this data in future filings as applicable.

6.3 Recent use of PSPS

BVES did not initiate any PSPS events within the 2015 – 2020 timeframe, as shown in Table 12. Therefore, BVES has no GIS data to submit for this category for this filing. BVES continues to monitor the need for initiating PSPS events and will submit this data in future filings as applicable.

6.4 Current Baseline State of Service Territory and Utility Equipment

As part of this filing, BVES provides current baseline state of service territory and utility equipment data in GIS. This data includes:

- HFTD Tier designation
- Urban vs. rural vs. highly rural regions of utility service territory
- WUI regions of utility service territory
- Location of critical facilities
- Location of customers (based on meter locations)

- Overhead distribution lines
- Location of substations

Additionally, BVES is continuing to update its data to include all of its assets and fields required by the WSD's GIS requirements and will provide this information in subsequent filings.

6.5 Location of Planned Utility Equipment Additions and or Removal

BVES plans to continue its fuse upgrades, tree attachment removal projects, pole loading and remediation program, covered wire projects, and other projects as detailed in Section 5. However, it does not currently have this information in GIS. BVES plans to add this information in future filings.

6.6 Planned 2020 WMP initiative activity by end-2022

BVES has included its planned Radford Line initiatives in GIS. It does not have other planned activities in GIS at this time, however, the utility plans to continue building out its database and data management architecture and will provide data as available in future filings.

APPENDIX A. DEFICIENCIES AND CONDITIONS APPLICABLE TO BEAR VALLEY ELECTRIC SERVICE

This Appendix is intended to serve as supplemental information to the WSD and is not considered to be part of BVES's WMP. If any conflicts or discrepancies exist between the WMP and this Appendix, the WMP shall prevail.

A.1 BVES-1: Focus on grid hardening

Class	*B*
Deficiency	*BVES is focused almost entirely on grid hardening without much analysis of whether this is the most cost effective and efficacious approach. Without a stated long-term vision, it is not possible to assess why BVES has this singular focus.* *BVES does provide RSE estimates for a significant number of initiatives and provides a high-level comparative analysis in Figures 3-4 and 3-5 of its WMP. However, BVES reports that "Underground of the Ute line" has a wildfire RSE of 0.13 in Figure 3-4 and that the same initiative has a PSPS RSE of 0.3. It is not clear how BVES calculated these or what assumptions it made. Therefore, it is unclear specifically how BVES applies these estimates to inform its allocation of resources across initiatives and whether the spend allocated to undergrounding is the most effective use of BVES's limited resources.*
Condition	*In a first quarterly report, BVES shall:* *i. explain why it is focused heavily on system hardening, including giving information on how other mitigations compare in terms of cost and efficacy;* *ii. articulate a vision for where it plans to go over the next 3 and 10 years;* *iii. provide an explanation for the RSE estimates in Figures 3-4 and 3-5 of the BVES WMP, including the assumptions made and how wildfire RSE and PSPS RSE were calculated; and* *iv. outline in detail how BVES's RSE estimates were used to determine which initiatives it is pursuing, including the level of spend allocated to its undergrounding program.*

BVES-1 is addressed in Sections 4.1, 5.3.3 and 5.4.

i. Figure 5-6 provides a representation of Risk Reduction and RSE of Mitigation Initiatives for the primary wildfire Public Safety Risk and prioritized drivers of ignition risk. As stated earlier, BVES's goal is to implement effective wildfire risk mitigation initiatives in the most cost and operationally effective manner possible. It is noted that these critical hardening programs are capital intensive and generally yield lower RSE values. For example, covered conductor projects and vegetation management present lower RSE results, however, these programs are prudent, and are critical to hardening BVES's system, as well as taking proactive

measures to mitigate wildfire risks that have been widely adopted across California and elsewhere. Figure 5-7 displays the RSE for each PSPS mitigation.

ii. **Expense:** BVES is no longer proposing to seek to acquire ownership from SCE and then underground the line. While undergrounding electrical lines mitigates or eliminates most ignition sources, from a cost effectiveness standpoint (see cost assumptions below), undergrounding electrical lines is the most expensive approach to mitigate ignitions.

Cost Assumptions

- Covered conductor installed: $450,000 to $850,000 per circuit mile[58]

- Underground conductor installed: Approximately $3,000,000 per circuit mile[59]

iii. It is BVES's vision to complete all planned system hardening investments within 10 years, while a significant portion of the investments should be completed in the next 2 to 3-year time frame. The estimated completion dates, by investments, are:

Plan to Complete System Hardening

Fuse replacements: End of calendar year 2021

Tree Attachment Removals: End of calendar year 2022

Pole Loading Assessment and Replacement Program: Estimated end of calendar year 2022

Evacuation Route Hardening: Pilot program to be completed by end of year 2021. Based on the analysis of the pilot, it is proposed that the evacuation routes hardening will be completed by the end of calendar year 2026.

Covered Wire Program (34.5 kV sub-transmission): All bare wire in Tier 3 is planned to be covered by end of calendar year 2021 and all bare wire in Tier 2 is planned to be covered by end of 2025.

Covered Wire Program (4 kV distribution): All bare wire in Tier 2 dense vegetation areas is planned to be covered by end of calendar year 2030. This is approximately 47.5% of current bare 4 kV wire (86 circuit miles).

BVES recognizes this is an aggressive schedule, but the safety of the general public is a top priority. These programs, once completed, should also eliminate the need for BVES to invoke PSPS in most plausible scenarios.

iv. The enterprise risk evaluation considers a reasonable worst case and associated controls for the three primary wildfire related risk events. For each primary risk event, BVES's subject matter experts determined the frequency of occurrence and impact scores for each of the weighted risk scoring inputs listed below:

- System reliability impacts
- Regulatory compliance and legal implications

[58] Cost variation based on requirement to replace poles due to loading and wind criteria

[59] Cost per circuit mile is CPUC estimate

- Quality of service to customers
- Personal & Public Safety
- Environmental Impacts

Using a 7x7 log score model matrix, an impact risk score is determined for each weighted scoring input. The weighted impact scores are accumulated to arrive at a total risk score. The risk scoring inputs, and total risk score form the basis of evaluation for each identified wildfire mitigation activity or initiative. Mitigation activities can be applied to a single or multiple risk events. BVES's subject matter experts evaluated the risk reduction for each scoring input to arrive at weighted mitigated risk score. The risk benefit for each combination of mitigation activity and risk event is determined by subtracting the mitigated risk score from the total risk score. BVES's subject matter experts also defined an equivalent annual cost for each mitigation activity. The risk register determines the risk spend efficiency (RSE) by dividing the risk benefit by the equivalent annual cost.[60]

v. Due to several factors, BVES is no longer proposing the acquisition and subsequent undergrounding of the Ute line. Since the initial project concept, BVES as well as the California utility industry at large, have developed greater understanding of the capabilities of covered wire systems including their lower cost relative to undergrounding and their ability to substantially reduce the risk of wildfire. Consequently, BVES has determined it would be more cost effective for BVES and its customers to work with SCE.to harden these lines.

A.2 BVES-2: Wildfire cameras do not provide good coverage of service territory

Class	*B*
Deficiency	*BVES has four existing cameras on the mountain top ridge southwest of BVES's service territory. In viewing them on alertwildfire.org they are clustered near each other and do not appear to provide good coverage from different angles. The WMP says BVES plans to work with partners to install more but no number or details are given. In remote rugged terrain with limited cell coverage such as BVES, cameras provide high situational awareness value.*
Condition	*In its first quarterly report, BVES shall detail:* *i. whether it has sufficient cameras, including the observations from alertwildfire.org, and* *ii. plans, including a timeline to improve its camera coverage moving forward.*

BVES-2 is generally addressed in Section 5.3.2.

i. HD camera locations and aspects were selected at a joint meeting with the University of California at San Diego (UCSD), CAL FIRE, Big Bear Fire Department and BVES. Cameras are currently installed at the top of Bear Mountain, Snow Summit, and "Deadman's Ridge" (Lake Williams). BVES is coordinating the installation of cameras at the other two locations (Bertha Peak and KBHR antenna).

BVES worked with its community partners, including the Big Bear Fire Department and CAL FIRE, to determine the current preferred location of the cameras. Because the BVES service

[60] See Appendix/attached Risk Management Program Manual (2017)

territory is very small, roughly 32 square miles, situational awareness over a broader view shed for arising threats into the service territory is necessary as can be seen through the www.alertwildfire.org displays. BVES was collaborative and purposeful in locating the cameras, which are sufficient and collectively viewed as ideally situated to surveille a broader distance to identify oncoming threats from surrounding forest area. During high threat conditions, BVES deploys personnel to supplement camera information with direct observations by qualified personnel.

ii. *Please refer to Section 5.3.2 Situational Awareness and Forecasting. BVES continues collaboration with community and first responder partners including University of California San Diego, Big Bear Fire Department, CAL FIRE, San Bernardino Sheriff's Department and San Bernardino Fire Department. Any recommendations from this collaboration will be carefully considered for inclusion in future WMP submittals.*

A.3 BVES-3: High spend per circuit mile

Class	*B*
Deficiency	*BVES plans to spend more than three times as much per circuit mile as the large electrical corporations. While BVES has lower economies of scale given its small size, the expense of its program may cause significant impact to ratepayers.*
Condition	*In its first quarterly report, BVES shall provide:* *further quantitative justification and explanation that from a total cost of ownership perspective, the amount of ignition risk that its initiatives will reduce warrants the extra expense, including whether alternatives could enable BVES to achieve the same level of risk reduction using fewer resources.*

BVES-3 is generally addressed in Section 5.3.3.

In BVES's previous (rejected) WMP filing, BVES erroneously used circuit miles instead of line miles in its tables, causing the estimated costs per mile to appear triple the actual predicted costs. Another mistake in the previous WMP filing included alternative mitigation projects that were considered during the preparation of the previous WMP but not selected, because other projects were found to be more risk-spend efficient. One such project was the undergrounding of the entire BVES electric sub-transmission and distribution systems. These errors are rectified in the current WMP filing.

The BVES grid design and system hardening investments will reduce the risk of potential ignition sources. Reducing ignition sources is one of the most critical elements of mitigating a wildfire. BVES is making a number of system hardening investments, each one specifically designed to reduce ignition sources, while taking into consideration the cost effectiveness.

A.4 BVES-4: LiDAR patrol targets not met

Class	*B*
Deficiency	*BVES reports that it did not meet 2019 targets for LiDAR inspections. BVES's target for 2019 was 211 circuit miles of LiDAR patrols, but BVES shows zero circuit miles actually surveyed.*
Condition	*In a first quarterly report, BVES shall:* *i) explain its LiDAR inspection plan and results including the targets that it has set for this program and how these it expects to actually achieve this performance.*

BVES-4 is generally addressed in Section 2.4 and 2.5.

i. BVES met its 2019 targets for LIDAR inspections. The entire circuit was inspected in November with results compiled in February 2020. Tables 3 and 4 in section 2 of the WMP now reflect this. The LIDAR inspection plan aims to cover BVES's entire territory over the course of a year and found 94 trouble spots (Level 1 and 2 discrepancies) during that survey. As reflected in Table 4, BVES does not have a specific target associated with trouble spot findings but anticipates a reduction in findings year over year as system hardening and vegetation management programs and other wildfire risk-mitigation projects are carried out. BVES will consider a specific target to quantifiably measure the ability to achieve performance under LIDAR inspections for the next WMP filing. BVES also views LIDAR as a Quality Control program and thus the quantity of findings is more reflective of the effectiveness of the tree trimming and not necessarily of the inspection method.

A.5 BVES-5: Compliance focus rather than proactive wildfire risk mitigation

Class	*C*
Deficiency	*BVES's vegetation management practice is based around following minimum regulations and requirements, and any additional analysis and initiatives are not discussed. Further, the plan is very general in its description of the vegetation management program and not clear on how often inspections occur. It simply states a contractor completes work under company direction to meet minimum required regulatory requirements.* *BVES needs to focus on relying less on contractor opinion, and work to set up internal procedures to ensure consistency across work and allow for evaluation of effectiveness for future improvement. Additionally, to allow for maximum effectiveness and minimize oversight, BVES should perform or adopt "at-risk" species analysis similar to other utilities, based on tree growth rate and failure likelihood.*
Condition	*In its 2021 WMP, BVES shall:* *i. explain whether focusing simply on compliance with GO 95 achieves adequate wildfire mitigation in light of the requirements of SB 901 and AB 1054, and* *ii. whether it needs to go beyond rules that predate the WMP statute in order to achieve wildfire mitigation that addresses current risks in its service territory.*

BVES is addressing Class A and B deficiencies in its 2020 WMP Final Action Statement. All class C deficiencies will be addressed in the 2021 WMP filing.

A.6 BVES-6: Community Outreach

Class	*C*
Deficiency	*BVES provides no discussion of community outreach or public education in its vegetation management section. It acknowledges the importance of such measures but provides no solution moving forward to set up a program.*
Condition	*In its 2021 WMP, BVES shall:* *i. supply the missing information on its community outreach and public education related to vegetation management.*

BVES is addressing Class A and B deficiencies in its 2020 WMP Final Action Statement. All class C deficiencies will be addressed in the 2021 WMP filing.

A.7 BVES-7: Fuels management

Class	*C*
Deficiency	*BVES provides discussion on slash treatment or fuels reduction around facilities, and just states that practices are incorporated into vegetation management practices with no details on how.*
Condition	*In its 2021 WMP, BVES shall:* *ii. provide detailed information on its fuels management and slash reduction practices.*

BVES is addressing Class A and B deficiencies in its 2020 WMP Final Action Statement. All class C deficiencies will be addressed in the 2021 WMP filing.

A.8 BVES-8: Patrols for asset and vegetation inspections combined

Class	*B*
Deficiency	*BVES conducts two patrols a year but these are not specific to vegetation management; asset and vegetation patrols are conducted together.*
Condition	*In its first quarterly report, BVES shall detail:* *i. why it combines its asset and vegetation inspections,* *ii. how it verifies and ensures effectiveness of these inspections,* *iii. whether it plans to establish two distinct inspection processes for assets and vegetation, in order to more thoroughly inspect vegetation, and*

	iv. how it complies with the Public Resources Code 4291 et seq. and associated regulations to conduct inspections on annual basis.

BVES-8 is generally addressed in Section 5.3.4.

i.
   a. BVES's checklist for on-ground patrols and inspections requires inspectors to check vegetation clearances.
   b. GO-165 Inspection Requirements for Electric Distribution and Transmission Facilities do not require IOUs to separate the inspections into separate asset and vegetation inspections but is silent on the subject.
   c. G.O. 95 Rule 18 outlines the priority levels that substandard conditions and safety hazards need to be addressed. Rule 18 does not separate vegetation conditions from equipment or other asset issues. All substandard conditions must be appropriately addressed.

ii.
   a. BVES is periodically audited by the CPUC on its Distribution Inspection program and this practice has never been indicated as an issue. BVES was last audited November 18-22, 2013. BVES is scheduled for an audit in October 2020.
   b. BVES conducts two ground patrols per year one by its staff and one by an independent third party inspector. Additionally, BVES conducts LiDAR surveys. Comparison of the findings from these inspections provides a good indicator of the effectiveness of each type of inspection.

iii. BVES currently conducts on-ground patrol inspections and detailed inspections. The utility proposes to implement an additional on-ground patrol inspection, LIDAR inspection, electrical preventative maintenance program, along with data sharing with relevant agencies by request

BVES performs the vegetation and on-ground inspections at the same time. BVES does not believe that the effectiveness of these actions is enhanced by breaking the two up into separate actions. BVES's system is relatively small - the total linear circuit miles of overhead sub-transmission (34.5 kV) and distribution (4 kV) in the BVES service area are 211 miles.

iv. In the Scope of Work for the Third Party (Second) Ground Patrol, BVES provides vegetation specifications G.O. 95 and PRC Code 4291– see Table 24 item 11. The 3rd party ground inspector is knowledgeable about the requirements of GO-95 and Code 4291.

A.9 BVES-9: Tracking of tree status

Class	*C*
Deficiency	*BVES does not discuss whether it has a tracking system for trees, other than one to ensure its contractor is completing required work.*
Condition	*In its 2021 WMP BVES shall detail:* *i. how it tracks its trees or groups of trees to ensure they are treated according to an appropriate schedule and appropriate specifications that ensure they do not pose a risk of wildfire, and* *ii. whether this tracking documents the condition of trees to ensure they are maintained in proper condition over time.*

BVES is addressing Class A and B deficiencies in its 2020 WMP Final Action Statement. All class C deficiencies will be addressed in the 2021 WMP filing.

A.10 BVES-10: PSPS

Class	*B*
Deficiency	*Because BVES's PSPS activity is governed at least in part by what SCE does, BVES should have better plans in place in the event a PSPS event occurs in its service territory. It is not adequate simply to state that BVES has not had a PSPS event. In combination with BVES's failure to have information on its access and functional needs population, BVES lacks overall preparedness.* *BVES's statement that "Customer Service staff and/or additional staff may be called out to assist with notification procedures as needed" shows a lack of understanding of the information and notification demands required during and in advance of a PSPS. Short of the effort to work closely with stakeholders, no information is provided on the strategy to minimize public safety risk. In terms of customer communications and mitigating the public safety impact of PSPS on first responders, health care facilities, operations of telecommunications infrastructure and water utilities/agencies, BVES's only statement is that it has worked and will continue to work with the named entities. Finally, Bear Valley lacks a communication strategy for providing in-language material, and material for customers with AFN. Several Commission decisions already impose these requirements, but it is unclear whether BVES is currently in compliance with any of them.*
Condition	*In its first quarterly report, BVES shall detail:* *i. its strategy to minimize public safety risk during high wildfire risk conditions (including the list and description of community assistance locations and services provided during a de-energization event and a communication strategy) sufficient to address the needs of the population in those areas, including Limited English Proficiency and Access and Functional Needs (AFN) populations* *ii. a plan for customer communications and mitigating the public safety impact of PSPS on first responders, health care facilities, operations of telecommunications infrastructure and water utilities/agencies* *iii. how it would restore power after a PSPS event.*

BVES-10 is generally addressed in section 5.6.2.

i. Customers and other impacted stakeholders need to understand the purpose of PSPS, BVES's process for initiating it, how to manage safely through a PSPS event, and the impacts if deployed. To accomplish this, the BVES shall:

- Develop and use a common nomenclature that integrates with existing state and local emergency response communication messaging and outreach and is aligned the California Alert and Warning Guidelines.

- Develop notification and communication protocols and systems that reach customers no matter where the customer is located and deliver messaging in an understandable manner

- Communicate to customers in different languages and in a way that addresses different access and functional needs using multiple modes/channels of communication.

- Identify, within the billing system, AFN customers for direct targeted messages and support.

- Coordinate a Community Resource Center with local organizations.

BVES will conduct the PSPS Preparatory phase annually well before extreme fire threat conditions are expected; or when lessons learned or other conditions warrant updating plans, training, or outreach. During this time, BVES plans to develop communication and notification plans jointly with Cal OES, county and local governments, independent living centers, and representatives of people/communities with AFN. BVES will also work with these partners, along with the CPUC, CAL FIRE and other public safety partners to plan de-energization simulation exercises throughout the utility service territories in the areas with the highest historical and forecasted risk for de- energization in advance of fire season.

Beginning in the Warning phase of the PSPS procedures and approximately 4 days prior to a PSPS event, BVES will email a “4 Day Alert” to local government, agencies, and partner organizations primary and secondary points of contact as well as alerting the emergency management community, first responders and local government first.

Two to three days prior to a potential event, BVES will begin posting notices on their website and social media, issue press releases to local media, and send notices via IVR as well as continuing to email notices to local government, agencies, and partner organizations primary and secondary points of contact. BVES will continue with these notifications along the following intervals prior to and during the PSPS event:

- 2-3 days prior notice

- 1-2 days prior notice

- 1-4 hours prior “De-energization imminent notice”

- During event “De-energization notice” and “De-energization updates” when warranted

- “Intent to Restore” notice during re-energization “Restoration Complete” notice once power is restored

ii. With regard to potential hazards that impact the safety and health of BVES employees, contracted and mutual assistance personnel, first responders, and the public, safety is BVES’s top priority. Therefore, it is vitally important to identify potential hazards so that resources may be properly allocated to assessing, mitigating and eliminating the hazards.

Additionally, interdependencies between BVES, government agencies, other utilities (water, gas, and electric), and critical infrastructure mean that outages may have significant impact on those entities providing their services; especially if their backup systems fail. Therefore, the Emergency Operations Center (EOC) Team must be fully aware of how outages are impacting the area and coordinate a prioritized restoration plan that appropriately considers the above.

One aspect of this is BVES's coordination in the Big Bear Valley Mountain Mutual Aid Association (MMAA) meetings and activities. The MMAA's vision is to prepare Big Bear Valley citizens, tourists, businesses, and governments to maximize their resistance to disaster through preparedness, mitigation, response, and recovery activities. Active participation is especially important in establishing strong personal business relationships with key players and stakeholders in the community such that during an emergency event, the BVES Team is working with stakeholders it is already familiar with.

MMAA has the ability to provide a wide range of direct support to BVES restoration activities during emergency response including traffic controls, road-clearing services, coordination with local government agencies, other utilities, and other nongovernmental organizations, and communications with the public. Additionally, one of the most significant strengths of MMAA is its ability to coordinate through its member organizations support and relief for customers experiencing extended sustained major power outages. This may include, but is not limited to, health and welfare checks, shelters, meals, cooling centers, and restroom and shower stations.

For PSPS events activated by SCE, BVES will use local supply in combination with local load management protocols. Because BVES's peak load is off cycle from high fire threat season, it has local supply to keep critical infrastructure in service. BVES may effectuate local rolling blackouts, only as needed. BVES will also leave the Radford line de-energized during high-fire threat season, as it is not needed except during winter peak season when risk of fire danger is low. Communications will follow emergency event protocols in coordination with other community partners.

Further information related to PSPS outreach and activities appears in BVES's "2020 Community Outreach Workplan and Budget of Bear Valley Electric Service (U 913E) filed with the CPUC on May 18, 2020.

iii. Generally, the restoration protocol will be as follows. When wind speeds in the affected area where PSPS was invoked, calm down to below 50 mph for a minimum period of 20 minutes, crews may assess the fire weather conditions have subsided to "safe levels." However, the crews may extend the calm period beyond 20 minutes, if they assess that further gusts of greater than 50 mph are likely based on their direct observation of local conditions or forecasts indicate a high probability of winds picking up to greater than 50 mph. Crews should communicate with the Field Operations Supervisor prior to assessing the situation as "safe levels" so that an evaluation of actual conditions in the field may be merged with the latest forecasted information. Restoration activities include:

- Validating that the extreme fire weather conditions have subsided to safe levels.
- Conducting field inspections and patrols of facilities that were de-energized.
- Re-energization of inspected (and repaired if necessary) circuits.

A.11 BVES-11: BVES did not report an ability to identify and support customers with access and functional needs (AFN)

Class	*B*

Deficiency	*BVES is required both in the context of PSPS and for disaster preparedness purposes generally to know which of its customers have access and functional needs so that they can receive assistance in preparation for and during an emergency.*
Condition	*In a first quarterly report, BVES shall describe:* *i. how it will identify and support customers with access and functional needs during PSPS, emergencies or other disasters.*

BVES-11 is generally addressed in section 5.6.2.

i. The Customer Service Superintendent oversees the medical baseline program and the customer care center assistance line. BVES is in the process of flagging AFN in the Customer Care and Billing (CCB) system so customized notifications and customized outreach are directed toward these customers, including during emergencies. AFN customers are provided information about BVES's WMP through its website, public broadcasts, bill inserts and other media. AFN customers are also linked to additional information once identified distinctly in the billing system. In addition, BVES is identifying AFN customers through a variety of outreach efforts including mailer surveys, working with advocacy groups, and leveraging local government and agency knowledge in this area.

   BVES plans to develop communication and notification plans jointly with Cal OES, county and local governments, independent living centers, and representatives of people/communities with AFN, per Section 5.6.2.2 Minimizing Public Safety Risk and Communication Strategy. BVES will communicate to customers in English, Spanish and the top U.S. Census listed languages for its service area other than English and Spanish (Chinese, French, Tagalog and Vietnamese). Additionally, BVES is procuring resources to translate additional materials (written and audio) in Mixteco and Zapoteco. BVES will continue to develop AFN community support in a way that addresses different preparations and response needs using multiple modes and channels of communication.

A.12 BVES-12: Undergrounding (Related to BVES-1)

Class	*B*
Deficiency	*BVES plans to underground most of its assets even though it has had no ignitions, fires or PSPS events and has seen a decreasing trend in near miss incidents in recent years.*
Condition	*In its first quarterly report, BVES shall describe:* *i. all reasonable alternatives it has considered in addition to undergrounding,* *ii. whether an option other than undergrounding will achieve comparable reduction in outage and ignition frequency and probability,* *iii. how the capital and maintenance cost for undergrounding and alternatives compare, and* *iv. the expected life of undergrounded vs. overhead assets.*

BVES-12 is generally addressed in section 5.3.3.

Within the revised WMP submitted as part of the Final Action Statement, BVES is not planning any undergrounding of overhead distribution assets. As part of alternative approaches, BVES compares undergrounding against covered conductors. Refer to Section 5.3.352 Table 5-5 for details. BVES formerly proposed the undergrounding of the Ute Line (34.5 kV) assets as a project which would involve

acquiring the line from Southern California Edison (SCE). Due to several factors, BVES is no longer proposing the acquisition and subsequent undergrounding of the Ute lines. BVES will pursue other options with SCE to resolve the inherent wildfire risk exposure, and system safety and reliability risk of the Ute line.

i. BVES compared undergrounding verses covered conductors.

ii. BVES used the Southern California Edison (SCE) estimated full deployment of covered conductor in high risk areas to mitigate approximately 60 percent of fires associated with electrical distribution facilities in defined risk tiers. BVES believes SCE effectiveness results should be considered a relative measure, with underground conversion providing the baseline (100 percent) for purposes of our comparison.

iii. In addition to mitigation effectiveness, it is also important to consider the cost associated with each mitigation option. For Covered Conductor, BVES relied on its costs associated with circuit rebuild program, of $850,000 per circuit mile. For underground conversion, BVES relied on CPUC estimated undergrounding cost, which is $3 million per circuit mile. These costs, combined with the relative mitigation effectiveness factors, allows comparison of each measure's mitigation-cost ratio, i.e., the relative mitigation effectiveness (using underground conversion as the baseline) achieved per dollar spent. These results are presented below:

Supporting Table 5-5: Mitigation Effectiveness-to-Cost Ratios for Covered Conductor and Underground Alternatives

SCE Mitigation Effectiveness-to-Cost Ratios for Undergrounding Alternatives			
Mitigation Option	**Relative Mitigation Effectiveness Factor[1]**	**Cost per Mile**	**Mitigation Effectiveness-to-Cost Ratio**
Re-conductor - Conventional poles and conductors	0.15	$300,000	0.5
Covered Conductors and Fire-Resistant Metal Poles	0.6	$480,000	1.4
Underground Conversion	1	$3,000,000	0.33

The above risk analysis shows that application of covered conductor is the most cost effective of the three mitigation measures.

iv. BVES does not have historical information or specific studies on the maintenance cost for undergrounding vs. covered conductor and expected life of underground vs. overhead assets.

A.13 BVES-13: Overall lack of an emergency preparedness plan

Class	*C*
Deficiency	*BVES must have an emergency plan in place, both for wildfire and PSPS events, as discussed in the section on Grid Operations and Protocols. Lack of ignition in the past*

	does not mean the utility will not have events in the future, and we are concerned it is generally unprepared to meet this challenge.
Condition	*In its 2021 WMP, BVES shall:* *i. set forth its emergency planning and preparedness for wildfire, including customer support before, during and after a wildfire, including support for low income customers, billing adjustments, deposit waivers, extended payment plan, suspension of disconnection and nonpayment fees, and repairs,* *ii. describe emergency communications before, during, and after a wildfire in English, Spanish, and other languages required by the Commission, and* *iii. address plans for coordination with first responders and other public safety organizations, plans to prepare for and restore service, including workforce mobilization and prepositioning of equipment and employees, and a showing that it has an adequate and trained workforce to promptly restore service after a major event.*

BVES is addressing Class A and B deficiencies in its 2020 WMP Final Action Statement. All class C deficiencies will be addressed in the 2021 WMP filing.

A.14 BVES-14: "As needed" community engagement insufficient

Class	*C*
Deficiency	*It is not sufficient for BVES simply to state that it will engage with its community "as needed." It must plan now in the event of wildfire or PSPS emergencies later. No established program is in place for community engagement, which is conducted on an "as-needed" basis. BVES needs to take the initiative to better work with the community, with areas of focus such as PSPS, vegetation management, and inspections.*
Condition	*In its 2021 WMP, BVES shall:* *i. establish and describe its program regarding customer outreach and engagement, including community meetings with proper input from the community, such as surveys, with a process to change procedures and the WMP based off such input.*

BVES is addressing Class A and B deficiencies in its 2020 WMP Final Action Statement. All class C deficiencies will be addressed in the 2021 WMP filing.

A.15 BVES-15: Collaboration

Class	*B*
Deficiency	*In terms of collaboration with outside agencies and entities in order to make use of best practices and lessons learned, in table 30, BVES states there is existing cooperation but gives no details.*
Condition	*In its first quarterly report, BVES shall describe how:* *i. it collaborates with outside agencies,* *ii. it uses best practices, and* *iii. it acts on lessons learned from this collaboration.*

BVES-15 is generally addressed in section 5.6.2.

Conditions i., ii., and iii.:

As part of a small, tight-knit community, collaboration is built into the daily values and way of working at BVES. BVES collaborates with Cal OES, county and local governments, independent living centers, and community representatives. In compliance with D.20-03-004, BVES submitted Advice Letter No. 389-E to address outreach efforts with local communities, public safety partners, and local agencies with regard to emergency notification and communication procedures before, during, and after a wildfire.

It is within BVES's core values to conduct root cause analyses and strive for continuous improvement. As its data sets improve, BVES will collaboratively leverage information with partners such as universities and research centers, CAL FIRE, Big Bear Fire Department, the local weather service provider and other utilities in and around California. BVES has been recently working with potential Community Based Organizations (CBOs) to forge partnerships that will help promote BVES's outreach material and vital information. BVES has engaged local CBOs by phone and/or email to gauge their willingness, and for insight regarding various language options. CBO feedback may provide further insight into language barriers in the Big

Bear Valley, where BVES operates. CBOs will have access to information regarding BVES's outages or emergency messages, as well as program offerings. BVES will keep CBOs well informed, as these organizations provide critical feedback regarding the effectiveness of BVES's outreach and language preferences. This material may be displayed directly by the CBO or distributed electronically.

BVES has reached out to the following CBOs:

- City of Big Bear Lake
- Big Bear Lake Chamber of Commerce
- Big Bear Lake Resort Association/Visit Big Bear Center
- The Local Post Office(s)
- American Associate of University- AAUW
- American Legion Post 584
- Doves of Big Bear Valley
- Soroptimist International of Big Bear Valley
- The Salvation Army Pine Summit
- Senior Citizens of Big Bear Valley
- AARP Local Chapter 2598
- Big Bear Lions Club
- YMCA Camping Services of Metropolitan Los Angeles
- Bear Valley Hummingbird Project, Inc.
- Friends of the Big Bear Valley Library
- Rotary Club of Big Bear Lake
- Big Bear Lake Elks #1787

APPENDIX B. DEFICIENCIES AND CONDITIONS APPLICABLE TO ALL ELECTRIC CORPORATIONS

B.1 Guidance-1: Lack of risk spend efficiency (RSE) information

Class	*B*
Deficiency	*2020 WMP submissions contain sparse and sporadic detail regarding the RSE of WMP initiatives. RSE calculations are critical for determining whether utilities are effectively allocating resources to initiatives that provide the greatest risk reduction benefits per dollar spent, thus ensuring responsible use of ratepayer funds. Although RSE concepts have been considered for several years through Commission GRCs, utilities still display unrefined and limited abilities to produce such information. Considering that utilities propose to spend billions of dollars on WMP initiatives, not having quantifiable information on how those initiatives reduce utility ignition risk relative to their cost severely limits the WSD's ability to evaluate the efficacy of such initiatives and each utility's portfolio of initiatives, as outlined in 2020 WMPs.* *Further, RSE is not an appropriate tool for justifying the use of PSPS. When calculating RSE for PSPS, electrical corporations generally assume 100% wildfire risk mitigation and very low implementation costs because societal costs and impact are not included. When calculated this way, PSPS will always rise to the top as a wildfire mitigation tool, but it will always fail to account for its true costs to customers. Therefore, electrical corporations shall not rely on RSE calculations as a tool to justify the use of PSPS.*
Condition	*In its first quarterly report, each electrical corporation shall provide the following:* *i. its calculated reduction in ignition risk for each initiative in its 2020 WMP;* *ii. its calculated reduction in wildfire consequence risk for each initiative in its 2020 WMP; and* *iii. the risk models used to calculate (i) and (ii) above.*

Guidance-1 is generally addressed in section 5.4 and Table 21.

Conditions i., ii., and iii.:

The CPUC has not required BVES to conduct a Risk Assessment and Mitigation Phase (RAMP). However, BVES evaluates enterprise risk using a risk-based decision-making framework and has adopted a Fire Circuit Safety Matrix to prioritize wildfire risk and evaluate wildfire risk mitigation. The combination of these methods allows for both a comprehensive analysis of enterprise wide safety risk and wildfire related assessment to generate an effective proxy wildfire ignition risk assessment. BVES Risk-Based Decision-Making Framework effectively targets circuits and assets to assure initiatives that provide the greatest mitigation benefits are properly prioritized. Within the next three years, BVES will work to develop a model to quantify ignition risk drivers and associated probabilities to assist in determining which initiative mitigations to targeted circuits and assets that will provide the greatest benefit to wildfire risk reduction.

B.2 Guidance-2: Lack of alternatives analysis for chosen initiatives

Class	*B*
Deficiency	*2020 WMP submissions contain little to no detail regarding utilities' process for comparing potential WMP initiatives. While most WMP initiatives are generally assumed to reduce utility wildfire risk, there are typically several alternatives that can address specific drivers of utility ignitions and near misses. However, 2020 WMPs generally do not include any discussion of which alternatives were considered, how the utility evaluated the efficacy of each alternative, and how the utility ultimately decided upon the suite of initiatives presented in its 2020 WMP.*
Condition	*In its first quarterly report, each electrical corporation shall provide the following:* *i. all alternatives considered for each grid hardening or vegetation management initiative in its 2020 WMP;* *ii. all tools, models, and other resources used to compare alternative initiatives;* *iii. how it quantified and determined the risk reduction benefits of each initiative; and* *iv. why it chose to implement each initiative over alternative options.*

Guidance-2 (G-2) condition responses (non-italicized) are generally addressed for each initiative in the sub-sections of section 5.3. Detailed Wildfire Mitigation Programs (Sub-sections 5.3.1 – 5.3.10). The responses prepared in this appendix are formatted to address each condition (i. through iv.) but are presented per each initiative sub-section for consistency with the Final Action Statement WMP filing narrative.

i. BVES presented the alternative strategies considered for each measure under vegetation management and grid hardening below as directed by G-2 as well as the alternatives considered for situational awareness enhancement.

Tree Attachment Removal

Alternative Approaches: Tree attachment work orders are developed to provide the appropriate remediation design consistent with GO 95 standards and Forest Service permit requirements. There are no alternatives to eliminating the inherent and substantial wildfire risk of electrical equipment attached to trees, other than removing such equipment and installing it on poles. BVES considered the alternative of increasing the rate of removal of such equipment but concluded that the rate which was proposed, and approved by the Commission in D.19-08-027, struck an appropriate balance of cost and use of available resources in light of the competing need to implement other wildfire mitigation programs.

Safety and Technical Upgrades of Palomino Substation

Alternative Approaches: The BVES GRC included two alternatives substation designs. (1) Replace the substation using the existing open bus design or (2) replace the substation using a pad-mount dead front design. Open bus design alternative allows potential ignition sources should equipment fail in service or if an object (i.e. tree limbs) contact the energized bare conductors. The alternative of a pad-mount dead front design essentially eliminates this risk. If equipment should fail, it is enclosed in a pad-mount, essentially eliminating ignition sources. It is designed so that no objects or vegetation can touch the equipment because it is enclosed in the pad-mount. Due to the reduced risk of ignition, the pad-mount dead front design was selected.

Conventional Fuse Replacement

Alternative Approaches: Three options were originally considered and evaluated. Option 3 was recommended and moved forward due to the overall cost effectiveness and the ability to mitigate ignitions.

Option 1- Leave existing conventional fuses in place. Fuses operate due to a fault on the system. Reducing faults that occur due to lightning strikes, vegetation contacts, equipment failures, and vehicle hitting poles, will reduce the number of conventional fuse operations. Unfortunately, many faults are beyond BVES's ability to reduce. Leaving conventional fuses in place was determined to constitute an unacceptable ignition risk.

Option 2- Develop a stand-alone program. An independent conventional fuse replacement program that did not consider other work being performed on the pole. This could execute the fuse replacements program faster, but at a higher cost since we may be visiting the same pole more than one time to perform work.

Option 3- Combined fuse replacements with other work. When other work, such as a pole replacement, is scheduled to be performed on a pole that has a conventional fuse, the fuse is replaced at the same time as the other work. This results in labor savings by reducing truck rolls by combining the other work with the fuse replacement program.

Covered Conductor

Alternative Approaches: Historically, conductor wires were not covered with insulation. Any objects, including vegetation, that would come into contact with an uncovered conductor could result in the ignition of a wildfire. Replacing bare conductor wires with covered wires was determined to reduce the risk of igniting a wildfire. BVES compared undergrounding versus covered conductors and concluded that it was more cost effective to replace bare wire with covered wire, as opposed to undergrounding the conductor. Please see Risk Reduction Efficiency in Condition iii**.**

Evacuation Route Hardening

Alternative Approaches: There is no alternative to hardening evacuation routes, but there are alternatives as to how the evacuation routes may be hardened. This pilot program will explore various options such as fire-resistant pole wrap, steel poles, and concert poles.

Pole Loading Assessment and Remediation Program

Alternative Approaches: There are no alternative approaches to reducing wildfire risk due to non-compliant poles other than adequately testing all of the poles and taking remedial action, where required. There are alternatives as to the rate and manner in which pole testing is conducted. In order to promote efficiency and minimize duplication of work, and subject to the remediation time frames in G.O. 95, the remediation designs may be integrated with other potential work proposed in the same area. It is more operationally efficient and cost effective to coordinate pole replacement work with other planned work. For example, it would be duplicative to replace a single pole under the pole assessment and remediation program only to have it removed a few years later when the pole line is replaced, or the line is upgraded. In addition, the program may require a sufficient number of pole replacements on a line or in a concentrated area that it is prudent to undertake a more comprehensive replacement design, as opposed to mere replacement of individual poles. The remediation work is performed by BVES or contractor resources based on available capacity, cost, and other related factors.

Construct an Energy Storage Facility within BVES's Service Territory

Alternative Approaches: BVES considered multiple battery chemistries and applications through a cost-benefit analysis study followed with a storage reliability study in recent years. Due to market saturation, industry demonstration, and forecasted reduction in storage device costs, BVES anticipates deploying lithium-ion technology. One possible alternative to the energy storage project is an expansion of the solar power project. Although an expansion would increase the amount of renewable energy available during daylight hours, the expanded solar project would not provide energy during non-daylight hours, requiring additional power resources to cover load during such periods. The energy storage concept, with its ability to provide energy during non-daylight hours, coupled with the solar power project, provided the best alternative.

Situational Awareness

Alternative Approaches: The addition of cameras and weather stations increases BVES's situational awareness and could mitigate or eliminate sources or impacts of ignitions of fires.

BVES could continue to utilize public resources for detailed condition monitoring as an alternative approach to these improvements, though granular detail may not be available in all cases and fluctuations of weather conditions may change rapidly impacting working conditions or potential emergency events. This has been an accepted and appropriate approach for BVES ahead of these integrations. However, in order to move toward collaboration and community efforts to share situational awareness information, BVES must modernize its system capabilities to better contribute to and maintain detailed awareness of its service territory at all times.

ii. Alternatives were compared and considered using standard tools available to the utility including excel workbooks for cost and initiative projections, the Fire Safety Circuit Matrix model, and the internal risk registry model that compares scenarios of all available measures.

iii. The responses below address the risk reduction benefits of the WMP initiatives.

Situational Awareness

Risk Reduction Efficiency: Projects presented under situational awareness and forecasting are paramount in having the ability to monitor BVES's 32-square mile service area. The NFDRS provides useful information for fuel, moisture, and related fire weather conditions. However, the reports are presented at the county level. With San Bernardino County existing as the largest in

the state, and continental U.S., actionable data is not always readily apparent from the reports because BVES cannot always equate lowland conditions to the mountainous terrain with unique microclimates. Grid automation will enable better information delivery for faster dissemination when fire weather conditions are captured from deployed assets and will allow for rapid fault detection and reduce need for manual operations. This results in a higher risk spend efficiency in accounting for the full life of the cameras and weather stations and added value over time as data governance and architecture practices expand over the WMP planning period. The iRestore Responder Application will provide emergency and remedial response needs at the ground-level allowing public safety partners, utility personnel, and contractors to coordinate and execute emergent corrections and quickly identify at-risk events for bolster near miss tracking in the future.

Adequate and trained workforce for service restoration

Risk Reduction: BVES currently has an adequate and trained workforce for service restoration. No risk reduction has been calculated since this action is considered a control. No RSE was calculated due to no incremental costs incurred or planned to date.

Disaster and emergency preparedness plan

Risk Reduction: BVES has an Emergency Response Plan for service restoration and a Disaster Relief Plan in place. No risk reduction has been calculated since this action is considered a control. No RSE was calculated due to no incremental cost incurred or planned to date. BVES will continue to review this program and may in future WMPs include enhancements that may incur incremental costs.

Preparedness and planning for service restoration

Risk Reduction: BVES has an Emergency Response Plan for service restoration in place. No risk reduction has been calculated since this action is considered a control. No RSE was calculated due no incremental cost being incurred or planned to date. BVES will continue to review this program and may in future WMPs include enhancements that may incur incremental costs.

Tree Attachment Removal

Risk Reduction Efficiency: Tree attachments are a legacy practice where pieces of electrical infrastructure are fastened to a tree for infrastructural support. The practice of installing distribution and service lines using tree attachments has long been suspended. Given that BVES's service area is entirely located in HFTD Tiers 2 and 3, tree attachments have been recognized as a higher risk event (see table 4-9) and are planned to be removed within three years. Elimination of tree attachments will enhance the safety and reliability of the distribution system and reduce the risk of wildfires.

Safety and Technical Upgrades of Palomino Substation

Risk Reduction Efficiency: The existing substation uses an overhead, open bus type design. Vegetation (leaves, branches, trees, etc.) that contacts the energized bus could cause an ignition potentially leading to a wildfire and/or extensive power outage. The new substation design uses a pad-mount dead-front design. There are no exposed energized conductors or equipment. The substation design will essentially eliminate all ignition sources within the substation. The new "no-possible-contact" design reduces the ignition risk to near zero, essentially the maximum reduction possible when compared to an open bus design combined with vegetation management.

Conventional Fuse Replacement

Risk Reduction Efficiency: BVES has approximately 3,200 fuses all in high-risk wildfire areas. From 2015 through 2019, BVES had 84 conventional fuses that operated. Each one of these fuse operations resulted in expulsion of hot gases and particles that could have been a source of ignition leading to a wildfire. The replacement of convention fuses with current limiting or electronic fuses will essentially eliminate this ignition source. Conventional, expulsion fuses are a high-risk component of the electric grid. By replacing fuses with the potential to spark and impact dry vegetation which presents a high risk given BVES's location in HFTD Tier 2 and Tier 3 areas, the replacement with non-sparking (aka non-expulsion) reduces the risk to near zero, a significant improvement.

Covered Conductor

Risk Reduction Efficiency: BVES used the Southern California Edison (SCE) estimated full deployment of covered conductor in high risk areas to mitigate approximately 60 percent of fires associated with electrical distribution facilities in defined risk tiers.[61] BVES believes SCE effectiveness results should be considered a relative measure, with underground conversion providing the baseline (100 percent) for purposes of our comparison.

In addition to mitigation effectiveness, it is also important to consider the estimated cost associated with each mitigation option. For Covered Conductor, the Companies relied on its costs associated with circuit rebuild program, of $850,000 per circuit mile. For underground conversion, BVES relied on CPUC estimated undergrounding cost, which is $3 million per circuit mile. These costs, combined with the relative mitigation effectiveness factors, allows comparison of each measure's mitigation-cost ratio, i.e., the relative mitigation effectiveness (using underground conversion as the baseline) achieved per dollar spent. These results are presented below:

Supporting Table 5-5: Mitigation Effectiveness-to-Cost Ratios for Covered Conductor and Underground Alternatives

SCE Mitigation Effectiveness-to-Cost Ratios for Undergrounding Alternatives			
Mitigation Option	**Relative Mitigation Effectiveness Factor[1]**	**Cost per Mile**	**Mitigation Effectiveness-to-Cost Ratio**
Re-conductor - Conventional poles and conductors	0.15	$300,000	0.5
Covered Conductors and Fire-Resistant Metal Poles	0.6	$480,000	1.4
Underground Conversion	1	$3,000,000	0.33

[1]Undergrounding serves as the baseline for measuring mitigation effectiveness.

The above risk analysis shows that application of covered conductor is the most cost effective of the three mitigation measures

[61] SCE application for approval of its Grid Safety and Resiliency Program, U 338-E, September 10, 2018

Evacuation Route Hardening

Risk Reduction Efficiency: This pilot program will not reduce the risk of ignition resulting in a wildfire. The pilot program is to develop tools and approach to add resiliency and safety during an evacuation due to a wildfire.

Pole Loading Assessment and Remediation Program

Risk Reduction Efficiency: Bear Valley is above 3000 ft sea level and is designed as heavy loading district. Overhead distribution lines are exposed to severe weather including heavy snow, ice and high winds. G.O. 95 Rule 43.1 requires BVES to design, build, and maintain their overhead facilities to withstand foreseeable fire-wind conditions in the service territory. Poles that are not compliant with G.O. 95 safety factors will be identified, and the appropriate remediation will be designed and implemented. Compliance with GO 95 is critical to mitigate wildfires. Depending on the nature and extent of the noncompliance, the remediation will require either repair (e.g., the installation or modification of guy wires) or complete replacement of the pole, including removal and reinstallation of all attachments, all within the time frames required by G.O. 95. G.O. 95 is aimed at the safety of personnel and the public and also at preserving the reliability of the power grid. Risk is significantly reduced when poles are brought into compliance with laws directed at preserving safety and reliability.

Construct an Energy Storage Facility within BVES's Service Territory

Risk Reduction Efficiency: The primary objective of this project is not related to the reduction of the risk of ignition of a wildfire. Therefore, BVES did not attempt to calculate an RSE value.

Construct an Energy Storage Facility within BVES's Service Territory

Internal Review and Quality Check: N/A

Based on the alternatives assessments and risk reduction valuations presented in the responses above (G-2 i. and iii.), BVES finds these WMP initiatives appropriate and effective in mitigating future wildfire or PSPS risk as opposed to the alternatives considered in G-2 i.

B.3 Guidance-3: Lack of risk modeling to inform decision-making

Class	*A*
Deficiency	*Electrical corporations do not provide sufficient detail in their 2020 WMPs to demonstrate how they are leveraging risk models to target the highest risk portions of the grid. While most utilities indicate current progress and work on developing models to estimate risk across their service territories, there is a lack of focus on how these models can be used in practice to prioritize initiatives to address specific ignition drivers and geographies. Specifically, utilities fail to outline in detail how they determine where to prioritize to improve asset management or determine portions of circuits that would benefit the most from hardening and vegetation management.* *By continuing to improve wildfire risk modeling and basing its wildfire mitigations on its wildfire risk modeling outputs, electrical corporations can potentially achieve a greater level of risk reduction with the same resources.*

Condition	*Each electrical corporation shall submit in its remedial correction plan (RCP) the following:* *i. how it intends to apply risk modeling and risk assessment techniques to each initiative in its WMP, with an emphasis on much more targeted use of asset management, vegetation management, grid hardening and PSPS based on wildfire risk modeling outputs;* *ii. identify all wildfire risk analyses it currently performs (including probability and consequence modeling) to determine which mitigation is targeted to circuits and assets where initiatives will provide the greatest benefit to wildfire risk reduction;* *iii. a timeline to leverage its risk modeling outputs to prioritize and target initiatives and set PSPS thresholds, including at least asset management, grid operations, vegetation management, and system hardening initiatives;* *iv. how it intends to incorporate future improvements in risk modeling into initiative prioritization and targeting processes; and* *v. how it intends to adapt its approach based on learnings going forward.*

Guidance-3 is generally addressed in section 5.4 and Table 21.

i. The BVES Risk Register Model evaluates the enterprise risk reduction relative to the cost of the mitigation using a Risk Spend Efficiency (RSE) analysis. This analysis focuses on a complete review of ongoing and potential new projects to mitigate the three primary wildfire related risk events:

1. Wildfire Public Safety
2. Wildfire – Significant Loss of Property
3. Loss of Energy Supplies (due to SCE directed PSPS on supply lines to BVES)

The enterprise risk evaluation considers a reasonable worst case and associated controls for the three primary wildfire related risk events. For each primary risk event, BVES subject matter experts determined the frequency of occurrence and impact scores for each of the weighted risk scoring inputs listed below:

- System reliability impacts
- Regulatory compliance and legal implications
- Quality of service to customers
- Personal & public safety
- Environmental impacts

Using a 7x7 log score model matrix, an impact risk score is determined for each weighted scoring input. The weighted impact scores are accumulated to arrive at a total risk score. The risk scoring inputs, and total risk score form the basis of evaluation for each identified wildfire mitigation activity or initiative. Mitigation activities can be applied to a single or multiple risk events.

BVES subject matter experts evaluated the risk reduction for each scoring input to arrive at weighted mitigated risk score. The risk benefit for each combination of mitigation activity and risk event is determined by subtracting the mitigated risk score from the total risk score. BVES subject matter experts also define an equivalent annual cost for each mitigation activity. The risk register determines the risk spend efficiency (RSE) by dividing the risk benefit by the equivalent annual cost.[62]

[62] See Appendix/attached Risk Management Program Manual (2017)

BVES also uses the Fire Safety Circuit Matrix to gauge progress and set aspirational 3- and 10-year targets for the reduction of the wildfire mitigation score and associated wildfire ignition risk reduction.

ii. In addition to the Risk Register model detailed in Section 5.4 of the WMP, BVES has also developed a balanced scorecard approach with the use of a Fire Safety Circuit Matrix. The purpose of the Fire Safety Circuit Matrix is to characterize all BVES distribution circuits in wildfire risk groups of High, Moderate, and Low. Within each wildfire risk group, circuits are prioritized. The matrix contains data regarding number of customers, number of wood poles, bare wire OH circuit miles, tree attachments, number of expulsion fuses and other related factors. These factors are compiled and weighted to arrive at the wildfire risk mitigation score. Currently, 11 circuits are rated High, eight circuits are rated Moderate and seven circuits are rated Low.

iii. The CPUC has not required BVES to conduct a Risk Assessment and Mitigation Phase (RAMP), however, through its risk-based decision-making framework, BVES currently leverages its corporate risk framework to create a list of risks and a prioritized list of mitigation measures. BVES uses a methodology to identify inherent risk, residual risk, existing controls, and future mitigation efforts after determining the likelihood and impact of wildfire risk in our service territory. BVES's Risk-Based Decision-Making Framework is consistent with peer investor-owned utilities', including SCE. For example, SCE's framework consists of six steps: (1) risk identification, (2) risk analysis, (3) risk evaluation, (4) risk mitigation identification, (5) decision-making and planning, and (6) monitoring and reporting. From a fundamental perspective, identifying threats, risk characterization, assigning appropriate measures, implementing remedies, and monitoring the results are components of the described assessment strategies contained within this plan and is similar to the approach used by other utilities.

iv. BVES plans to evaluate, revise and improve both the Risk-Based Decision-Making Framework and the Fire Safety Circuit Matrix in 2020 for use in the 2021 WMP update. BVES will consider feedback from the 2020 WMP and review feedback on other California utility WMPs. These feedback sources will be used to enhance the risk modeling and initiative prioritization.

Within the next three years, BVES will work to develop a model to quantify ignition risk drivers and associated probabilities to assist in determining which initiative mitigations to targeted circuits and assets that will provide the greatest benefit to wildfire risk reduction.

v. See response to iv.

B.4 Guidance-4: Lack of discussion on PSPS impacts

Class	*B*
Deficiency	*Across 2020 WMP submissions, utilities indicate goals of reducing the scope, frequency and duration of PSPS events but also indicate intentions of continuing to implement PSPS as a wildfire mitigation measure in the immediate future. Considering the rapid expansion of PSPS use as a wildfire mitigation measure, and the numerous hardships, inconveniences and hazards created by its vast implementation, it is concerning that 2020 WMPs provide no discussion of how the chosen portfolio of initiatives will allow the utility to achieve its goals for reducing PSPS impacts. Specifically, no 2020 WMPs discuss the relationship between various grid hardening, vegetation management, and*

	asset management initiatives and the corresponding impacts on thresholds for initiating PSPS events.
Condition	*In its first quarterly report, each electrical corporation shall detail whether and how each initiative in its WMP:* *i. affects its threshold values for initiating PSPS events;* *ii. is expected to reduce the frequency (i.e. number of events) of PSPS events;* *iii. is expected to reduce the scope (i.e. number of customers impacted) of PSPS events;* *iv. is expected to reduce the duration of PSPS events; and* *v. supports its directional vision for necessity of PSPS, as outlined in Section 4.4 of its WMP.*

Guidance-4 is generally addressed in Section 4.4 and Section 5.3.3.

i. BVES considers PSPS as a measure of last resort, driven by a combination of extreme fire threat weather, moisture in fuels, wind, and situational awareness information. BVES is committed to reducing the scope, frequency, and duration of PSPS events and will only implement PSPS when the risk of imminent fire danger is greater than the impact of de-energization. In addition to its own plan for proactive de-energization, BVES is also impacted by PSPS events triggered by SCE. BVES has conducted public outreach and published its vision for necessity of PSPS on its website.[63] Covering bare wires, the pole loading program, and replacing conventional fuses are at the core of high-impact initiatives to mitigate against proactive de-energization and are the only initiatives that affect threshold values of initiating PSPS events. As BVES describes in Supplemental Table 4-8 in its WMP, the projected risk outlook relative to system hardening efforts carried out on prioritized circuits indicates a low risk forecast as these initiatives are executed over ten years. This reduces the likelihood and need to initiate PSPS events.

   BVES is developing mitigation measures, including operating the Bear Valley Power Plant in combination with customer load management when the import lines are out of service. BVES has sufficient local generation to supply critical services and infrastructure, which only effectuate rolling blackouts in a worst-case scenario. Because BVES has not had to initiate PSPS events, it is not possible to reduce the frequency, scope, and duration of something that has not occurred. Through several WMP hardening projects, BVES intends to take measures to harden its system. Completing the programs to eliminate bare wire, in combination with the pole loading program and the elimination of conventional fuses BVES significantly improves its ability to maintain zero PSPS events.

ii. Because BVES has not had to initiate PSPS events, it is not quantifiable to reduce the frequency through initiative expectation.

iii. Because BVES has not had to initiate PSPS events, it is not quantifiable to reduce the scope through initiative expectation.

iv. Because BVES has not had to initiate PSPS events, it is not quantifiable to reduce the duration through initiative expectation.

v. BVES does not view the lack of PSPS events as a case for complacency. BVES will continue its de-energization mitigation programs and projects, including operating the Bear Valley Power Plant, deploying the community load management plan or, in a worst-case scenario, rolling blackouts when the SCE import lines are out of service (planned and unplanned).

[63] BVES, “2020 PSPS Plan” https://www.bvesinc.com/media/managed/ /BVES_PSPS_PPT_2020_Final.pdf.

BVES's service territory has sufficient local generation to supply critical services and infrastructure. Future plans include installing an 8 MW / 32 MWh storage project. Load is further balanced and met by a planned utility-owned 7.9 MW solar facility directly supplying the distribution system. In combination with alerting interruptible customers to curtail loads, BVES does not anticipate significant impact related to SCE's decision to de-energize the main supply source feeding BVES's service area.

BVES's 10-year vision is to eliminate the need for PSPS events altogether, which is achievable when no bare wires remain on high risk circuits, the pole loading program is complete, and conventional fuses have been eliminated.

It is BVES's vision to complete all planned system hardening investments within 10 years, while a significant portion of the investments will be completed in the next 2 to 3-year time frame. BVES recognizes this is an aggressive schedule, but the safety of the general public is a top priority. These programs should eliminate the need for BVES to initiate a PSPS in most plausible scenarios.

B.5 Guidance-5: Aggregation of initiatives into programs

Class	*B*
Deficiency	*In their 2020 WMP submissions, electrical corporations often combine various initiatives into broader programs and report cost, risk and other related data at the program level. This aggregation of initiatives and bundled reporting creates several issues. First, because cost data is typically reported across programs and not individual initiatives, it is not possible for the WSD to evaluate the efficacy of each initiative. Second, when initiatives are bundled and reported together as programs, it prevents the WSD from being able to assess which initiatives are effectively reducing utility wildfire risk. Consequently, this creates the challenge that ineffective elements of broad programs cannot be determined and future considerations of initiatives within programs can only be done collectively.*
Condition	*In its first quarterly report, each electrical corporation shall:* *i. break out its programs outlined in section 5.3 into individual initiatives;* *ii. report its spend on each individual initiative;* *iii. describe the effectiveness of each initiative at reducing ignition probability or wildfire consequence;* *iv. list all data and metrics used to evaluate effectiveness described in (iii), including the threshold values used to differentiate between effective and ineffective initiatives; and* *v. provide the information required for each initiative in section 5.3 of the Guidelines.*

Guidance-5 is generally addressed in Section 5.3 and 5.4. The responses below provide a summary of a more expansive discussion in the relevant sections of the WMP.

i. BVES's WMP includes four categories of programs: vegetation management, inspections, electrical preventative maintenance, and pole loading and assessment. These initiatives are considered ongoing and heavily driven by operations and maintenance costs. Measures that are incremental to these programs are already listed as separate initiatives within the WMP.

ii. The detailed information describing each initiative and their current and projected costs are contained in Tables 22-30 in Section 5.3 of the WMP.

iii. The Fire Circuit Safety Matrix (Figure 5-8 in the WMP, described in Section 5.4) tracks the status Wildfire Hardening Programs and the status of O&M Program implementation (Not Started, In Progress, Complete or Implemented, Not Applicable). BVES intends to use the Fire Safety Circuit Matrix as a "living document" and as mitigations are implemented and at least annually, Wildfire Risk Group, Priority and Mitigation Weight should be re-evaluated. Additionally, the Fire Circuit Safety Matrix can be used to gauge progress and set 3 and 10-year targets for the reduction of the wildfire mitigation score and associated wildfire ignition risk reduction. It should be noted that the wildfire risk mitigation score relies heavily on industry recognized system hardening best practices such as replacement of OH bare wire with covered conductor, wood pole reinforcements, elimination of tree attachments and replacement of expulsion fuses. Supplemental Table 4-8, Projected Risk Outlook, was derived from the Fire Circuit Safety Matrix and provides estimated Wildfire Risk Mitigation Scores by distribution circuit.

iv. In Section 2 of the WMP, Table 3 - List and Description of Additional Metrics: 2015 – 2019, and Table 4 - List and Description of Program Targets: 2015 – 2019 will be used on an on-going basis to track the progress and effectiveness of wildfire mitigation initiatives. Initiative progress will be updated on an annual basis in the Fire Circuit Safety Matrix. Within the next three years, BVES will develop a model to quantify ignition risk drivers and associated probabilities to assist in determining which initiative mitigations to targeted circuits and assets that will provide the greatest benefit to wildfire risk reduction. This modeling may assist in the determination of initiative effectiveness.

v. Section 5.3 of the WMP provides very detailed information of each of the initiatives and the broader programs that each initiative will fall under.

B.6 Guidance-6: Failure to disaggregate WMP initiatives from standard operations

Class	*B*
Deficiency	*While WMPs are designed to outline and detail filer's plans and initiatives for mitigating wildfire risk, many existing programs also provide wildfire risk reduction benefits. For example, General Order 165 requires annual patrol inspections and detailed inspections every five years for electrical infrastructure. These programs and initiatives are often referenced in 2020 WMPs as "supporting," "routine," "enabling," "standard," or "foundational" work. For these types of programs, in most cases, electrical corporations do not report cost or risk reduction data, as the work is considered part of their electric operations and it is indicated that this information is not tracked independently.* *Several electrical corporations state that their programs for inspecting and maintaining crossarms, poles, transformers, transmission towers and similar infrastructure, which also reduce wildfire risk, are embedded within standard maintenance programs litigated in GRCs. Consequently, it is difficult to determine whether and how these programs incrementally impact wildfire risk reduction or if related WMP initiatives are redundant and unnecessary. While utilities may not have historically considered the costs and effectiveness of such programs and initiatives, given that numerous WMP initiatives have apparent overlap or potential redundancy, it is imperative that utilities provide such data to validate the need for and effectiveness of additional programs.* *It is not clear how electrical corporations are tracking their WMP activities in memorandum accounts if they do not budget for them by type of initiative. The Commission will scrutinize electrical corporations' memorandum accounts for WMP carefully, and if all costs are simply lumped together or included in general operations*

	and maintenance accounts, electrical corporations risk failing to provide entitlement to cost recovery.
Condition	*In its first quarterly report, each electrical corporation shall:* *i. clearly identify each initiative in Section 5.3 of its WMP as "Standard Operations" or "Augmented Wildfire Operations;"* *ii. report WMP required data for all Standard Operations and Augmented Wildfire Operations;* *iii. confirm that it is budgeting and accounting for WMP activity of each initiative; and* *iv. include a "ledger" of all subaccounts that show a breakdown by initiative.*

Guidance-6 is addressed in Section 5.3. The responses below provide a summary of a more expansive discussion in the relevant sections of the WMP.

i. Supporting Table 5-1 presents initiative classification based on standard or augmented wildfire operations. BVES's approach aligns with its recent GRC and identifying activities that are capital implementation and ongoing operations and maintenance work. For initiatives already approved through the GRC or individual Advice Letters, BVES classifies this as "Standard Operations" as cost recovery for incremental wildfire operations are poised to be captured under the Wildfire Memorandum account upon approval of initiatives in this WMP and those approved in the first WMP iteration.

ii. BVES has included all required WMP data for all standard and augmented wildfire operations within Section 5.3. BVES discusses the initiative plan, approach, cost impact and recovery mechanism, risk efficiency, and alternatives considered.

iii. All initiatives are tracked and recorded as presented in this Final Action Statement 2020 WMP filing. Tables 22 – 30 account for detailed cost expectations and associated recovery mechanism already or to be applied.

iv. Please see the capital expenditure actuals and forecast below.

BVES Actual and Projected WMP Capital Expenditures

For the 5-Years 2018 - 2022

	2018	***2019***	***2020***	***2021***	***2022***	***Total***	***Existing / New***	***If New, Memo Acct***	***Cost Recovery Mechanism***
1. Pineknot Substation Upgrades	$ -	$3,524,748	$ -	$ -	$ -	$3,524,748	Existing	NA	Advice Letter
2. Palomino Substation Upgrade	$ -	$ -	$1,587,675	$ -	$ -	$1,587,675	Existing	NA	GRC
3. Energy Storage Project	$ -	$ -	$ -	$ -	$ -	$ -	New	No	Separate Application
4. Bear Valley power plant upgrades	$ -	$ -	$925,485	$925,485	$ -	$1,850,970	Existing	NA	GRC
5. Tree Attachment Removal Project (CapEx)	$567,340	$701,347	$732,018	$732,018	$732,018	$3,464,741	Existing	NA	GRC

6. Pole Loading Assessment & Remediation Program (CapEx)	$1,471,019	$5,096,681	$2,444,130	$2,444,130	$2,444,130	$13,900,090	Existing	NA	GRC
7. Covered Conductor Replacement Pilot Program	$ -	$350,191	$ -	$ -	$ -	$350,191	New	Yes	Application
8. Covered Conductor Replacement Projects	$ -	$ -	$1,832,933	$5,345,970	$5,345,970	$12,524,873	New	Yes	Application
9. Expulsion Fuse Replacement Program	$ -	$1,303,306	$2,600,000	$ -	$ -	$3,903,306	New	Yes	Application
10. Radford Line Covered Conductor Replacement Project	$ -	$ -	$156,236	$5,443,764	$ -	$5,600,000	New	Yes	Application
11. Evacuation Route Hardening (Pilot Project)	$ -	$ -	$200,000	$ -	$ -	$200,000	New	Yes	Application
12. Situational Awareness Enhancement	$ -	$ -	$ -	$ -	$ -	$ -	New	Yes	Application
11. Grid Automation	$ -	$612,829	$953,159	$939,156	$915,833	$3,420,977	Existing	NA	GRC
12. Automatic Recloser Upgrades	$ -	$290,459	$ -	$ -	$ -	$290,459	Existing	NA	GRC
13. Evacuation Route Hardening Project	$ -	$ -	$ -	$1,710,000	$1,710,000	$3,420,000	New	Yes	Application
14. Weather Stations	$ -	$ -	$103,136	$ -	$ -	$103,136	New	Yes	Application
15. HD Alert Cameras	$ -	$ -	$250,000	$250,000	$ -	$500,000	New	Yes	Application
WMP CAPITAL EXPENDITURES TOTAL ($)	***2,038,359***	***11,879,561***	***11,784,772***	***17,790,523***	***11,147,951***	***54,641,166***			

B.7 Guidance-7: Lack of detail on effectiveness of "enhanced" inspection programs

Class	*B*
Deficiency	*Utilities engage in numerous 'enhanced' inspection programs, but it is unclear if such 'enhanced' programs are incrementally effective over routine patrol and detailed inspections, particularly if patrol and detail inspections are scheduled based on risk rather than GO 95 minimums.*
Condition	*In its first quarterly report, each electrical corporation shall detail:* *i. the incremental quantifiable risk identified by such 'enhanced' inspection programs;* *ii. whether it addresses the findings uncovered by 'enhanced' programs differently than findings discovered through existing inspections; and* *iii. a detailed cost-benefit analysis of combining elements of such 'enhanced' inspections into existing inspection programs.*

Guidance-7 is generally supported by Section 5.3.4.

i. For BVES, "enhanced inspection" is the use of LIDAR (Light Detection and Ranging) inspections and analysis, which use a system of lasers and software to develop surveys of the overhead sub-transmission and distribution systems, to accurately determine vegetation clearances to conductors. BVES plans to conduct two LIDAR sweeps per year to evaluate the effectiveness of clearance efforts and identify any potential wildfire hazards. BVES began using LIDAR through a pilot initiative using either helicopter or fixed wing flights, as well as via a truck-mounted mobile system. Given the proximity of the majority of BVES's electrical system to the road network, truck-mounted mobile LIDAR will be utilized more often, which is more cost-effective. This relatively quick and accurate inspection will allow BVES to verify, document and resolve vegetation issues before vegetation makes contact with bare conductors.

ii. BVES proposes to conduct one additional GO-165 independent patrol inspection, of the entire overhead system, so that two visual patrols of the entire overhead system are conducted annually. When performed, if the second ground patrol pilot detects potential ignition source such as broken limbs near conductors, limbs on the line, wire off insulators, broken cross-arms, then the pilot program would be considered a success at mitigating potential ignition sources. If successful, a second annual ground patrol would be continued. If substandard conditions are not found after running the pilot for 2-years, then the pilot would be concluded and discontinued.

iii. BVES conducts these inspections in compliance with GO-165 and GO-95 (Rule 18). If any defects outlined by that rule are identified, BVES prioritizes the defect based on risk and resolves the issues in compliance with GO-95 Rule 18 timeframes.[64] All BVES inspection practices that are in exceedance of the GO requirements are considered incremental initiatives under the preventative maintenance programs for vegetation and electrical equipment.

[64] BVES uses the examples of defects and issues that are safety hazards, risks of at least moderate potential impact to safety or reliability, and/or risks of low potential impact to safety or reliability that are provided in GO-95 Appendices I and J. These appendices also provide examples of repair/resolution priorities and timeframes.

The Preventative Maintenance (PM) programs are intended to provide a high level of reliability while trying to assure the equipment will not fail in service. The PM program cannot be combined with inspection programs since the PM program requires "equipment specialist" that physically work on the equipment. The inspection programs are a visual inspection with no physical work.

The LIDAR Inspection is performed by contractors using specialized software and hardware. It is not practical at this time to combine this program with other types of inspections due to the backlog of GIS work that needs to be expedited. This will be re-examined in the future.

BVES believes this additional patrol is warranted due to the local climate; likelihood of icing conditions; tree limbs and branches being subject to weakening due to repeated high winds, snow, and ice weight (which may cause fatigue failure); high elevation; other local conditions; difficultly accessing vegetation for trimming near bare conductors; species growth rates and characteristics; and the fact that the service area is designated "very dry" or "dry" approximately 80 percent of the time in the NFDRS. This environment coupled with the fact that the fire season is now all year round creates a high-risk condition that can be mitigated by increasing patrols.

The incremental costs of LIDAR (approximately $240,000/year) and the additional ground patrol (approximately $90,000/year) are relatively low compared to the potential damages that results wildfire and the high cost of capital improvements to the system such as undergrounding the electrical grid (estimated over $633 million) to eliminate the need for these inspections.

B.8 Guidance-8: Prevalence of equivocating language – failure of commitment

Class	*C*
Deficiency	*While there have been many improvements and advancements reflected in 2020 WMPs, a key concern remains regarding discussion of WMP objectives and the prevalent use of "equivocating language" to avoid making measurable, quantifiable, and verifiable commitments. While electrical corporations make promises to quantifiably reduce PSPS impacts and the frequency of near misses and ignitions, other promises are far less specific. Terms such as, "track," "assess," "evaluate," and "evolve" are repeated hundreds of times throughout the 2020 WMPs. Without sufficient details, none of these terms provide the WSD or the public with a measurable, quantifiable, and verifiable goal against which electrical corporations could be held.*
Condition	*In its 2021 WMP update, each electrical corporation shall:* *i. include objectives for each of its initiatives that are measurable, quantifiable, and verifiable by the WSD;* *ii. provide targets and timelines for all strategies, plans, and approaches to wildfire mitigation that are measurable, quantifiable and verifiable by the WSD; and* *iii. dispense with empty rhetoric and not use terms that are ambiguous, misleading, or otherwise have the result of diluting commitments. Continued use of equivocating language may result in denial of future WMPs.*

BVES is addressing Class A and B deficiencies in its 2020 WMP Final Action Statement. All class C deficiencies will be addressed in the 2021 WMP filing.

B.9 Guidance-9: Insufficient discussion of pilot programs

Class	*B*
Deficiency	*Electrical corporations do not describe how they will evaluate and expand the use of successfully piloted technology or which piloted technology has proven ineffective. To ensure pilots that are successful result in expansion, if warranted and justified with quantitative data, electrical corporations must evaluate each pilot or demonstration and describe how it will expand use of successful pilots.*
Condition	*In its quarterly report, each electrical corporation shall detail:* *i. all pilot programs or demonstrations identified in its WMP;* *ii. status of the pilot, including where pilots have been initiated and whether the pilot is progressing toward broader adoption;* *iii. results of the pilot, including quantitative performance metrics and quantitative risk reduction benefits;* *iv. how the electrical corporation remedies ignitions or faults revealed during the pilot on a schedule that promptly mitigates the risk of such ignition or fault, and incorporates such mitigation into its operational practices; and* *v. a proposal for how to expand use of the technology if it reduces ignition risk materially.*

Guidance-9 is generally supported by Section 5.3.3.

Evacuation Route Hardening (Pilot Project)

i. The Evacuation Route Hardening (Pilot Project) will determine availability, cost effectiveness and ability to install technology such as fire-resistant pole wrap, steel poles, concrete poles, and fiberglass.

ii. BVES proposed in its 2020 WMP submission a pilot program to test various solutions such as fire-resistant overhead facilities that would protect existing wood poles with fire resistant material along with other types of strengthening materials. To date BVES has installed fire-resistant wrap on wood poles and fire-resistant fiberglass poles. BVES is planning on testing steel poles as well for this project. BVES has recent experience undergrounding so it will have the basis to make informed comparisons on which evacuation hardening solutions will work best in its service area.

iii. The pilot program would determine availability, cost effectiveness and ability to install technology such as fire-resistant pole wrap, steel poles, concrete poles, and fiberglass. BVES already has recent experience on undergrounding overhead facilities. While this technology will not reduce ignition sources, it is to demonstrate the ability to keep evaluation route safe from BVES electrical assets failing during a wildfire; thereby, reducing the consequences of wildfires.

This pilot program does not reduce the risk of ignition resulting in a wildfire but rather is aimed at reducing the consequences of wildfires. The pilot program is to develop tools and approach to add during an evacuation due to a wildfire.

iv. See above response to iii.

v. Once viable solutions have been tested and selected, BVES proposes to develop and implement a program to harden its facilities by the end of calendar year 2026. The goal of this program will be to harden overhead facilities along evacuation routes to prevent such facilities from falling into evacuation routes during a wildfire.

Covered Conductor Replacement Pilot Program (Completed)

i. As part of the covered conductor replacement pilot program, BVES replaced approximately 1 circuit mile of bare wire in the North Shore area utilizing covered tree wire (Priority Wire 394.5 AAAC). The pilot project evaluated three principal areas: (1) material sourcing, (2) engineering specifications and characteristics, and (3) installation in the field. The covered wire performed well and met all of BVES's expectations. BVES performed a second pilot in the Moonridge area using covered tree wire from Southwire using 336.4 ACSR. The second pilot was completed in June 30, 2020 with the replacement of approximately 1 circuit mile. This successful second pilot provided BVES an additional vendor for covered tree wire. As of July 31, 2020, BVES completed this pilot program. The covered conductor replacement program is considered a success and BVES will proceed to develop and implement a broader deployment of replacing bare conductors with covered conductors.

ii. *See above response to i.*

iii. BVES used Southern California Edison (SCE) estimated full deployment of covered conductor in high risk areas to mitigate approximately 60 percent of fires associated with electrical distribution facilities in defined risk tiers. BVES believes SCE's effectiveness factors should be considered a relative measure, with underground conversion providing the baseline (100 percent) for purposes of our comparison.

iv. BVES plans to replace distribution (4 kV) bare wire with covered wire over a 10-year period of execution from 2021 to 2030 covering approximately 8.6 miles per year.

BVES plans to replace all overhead sub-transmission (34.5 kV) bare wire with covered wire over a 6-year period of execution from 2020 to 2025 covering approximately 5 miles per year.

Covered Conductor Wrap Pilot Program (Completed)

i. BVES conducted a pilot program to determine the effectiveness of using a "wire wrap" to cover existing bare wire in other high threat areas. The wire wraps snap onto existing wire, so BVES does not have to replace the entire wire. The pilot project indicated that the wire wrap product does not meet BVES's specifications, primarily due to ampacity limitations on existing wire and information not being readily available for research and testing. Because of this issue, it was determined that the product was not ready to be deployed in the field. BVES will continue to monitor developments with wire wrap and will reconsider once the ampacity issue is satisfactorily resolved.

ii. *See above response to i.*

iii. *See above response to i.*

iv. It was determined that the product was not ready to be deployed in the field. BVES will continue to monitor developments with wire wrap and will reconsider once the ampacity issue is satisfactorily resolved.

Second Ground Patrol (Pilot)

i. BVES proposes to conduct one additional GO-165 independent ground patrol inspection, of the entire overhead system, so that two visual patrols of the entire overhead system are conducted annually. BVES believes this additional patrol is warranted due to the local climate; likelihood of icing conditions; tree limbs and branches being subject to weakening due to repeated high winds, snow, and ice weight (which may cause fatigue failure); high elevation; other local conditions; difficultly accessing vegetation for trimming near bare conductors; species growth rates and characteristics; and the fact that the service area is designated "very dry" or "dry" approximately 80 percent of the time in the NFDRS. This environment coupled with the fact that the fire season is practically all year round creates a high-risk condition that can be mitigated by increasing patrols.

ii. See above response to i.

iii. When performed, if the second ground patrol pilot detects potential ignition source such as broken limbs near conductors, limbs on the line, wire off insulators, broken cross-arms, then the pilot would be considered a success at mitigating potential ignition sources. If successful, the second annual ground patrol will be continued. If substandard conditions are not found after running the pilot for 2-years, then the pilot would be concluded and discontinued.

iv. Substandard conditions detected on the second ground patrol would be addressed in the same manner as the first patrol which will be in compliance with GO-165.

v. See above response to iii.

LIDAR Inspection (Pilot)

i. The use of LIDAR (Light Detection and Ranging) inspections and analysis, which use a system of lasers and software to develop surveys of the overhead sub-transmission and distribution systems, to accurately determine vegetation clearances to conductors. BVES plans to conduct two LIDAR sweeps per year to evaluate the effectiveness of clearance efforts and identify any potential wildfire hazards. BVES began using LiDAR through a pilot initiative using both helicopter and fixed wing flights, as well as via a truck-mounted mobile system. Given the proximity of the majority of BVES's electrical system to the road network, truck-mounted mobile LIDAR will be utilized more often, which is more cost-effective. This relatively quick and accurate inspection will allow BVES to verify, document and resolve vegetation issues before vegetation makes contact with bare conductors.

ii. See above response to i.

iii. When performed, if the LIDAR pilot is able detects potential wildfire ignition hazard sources such as broken limbs near conductors, limbs on the line and improper clearance then the pilot would be considered a success at mitigating potential ignition sources. If successful, BVES proposes two annual LIDAR inspections be continued. If substandard conditions are not found after running the pilot for 2-years, then the pilot would be concluded and discontinued.

iv. Substandard conditions detected on the second ground patrol would be addressed in the same manner as the first patrol which will be in compliance with GO 165.

v. See above response to iii.

B.10 Guidance-10: Data issues – general

Class	*B*
Deficiency	*Although the availability of data, including GIS data, provides unprecedented insight into utility infrastructure and operations, inconsistencies and gaps in the data present a number of challenges and hurdles. As it relates to GIS data, electrical corporation submissions often had inconsistent file formats and naming conventions, contained little to no metadata, were incomplete or missing many data attributes and utilized varying schema. These deficiencies rendered cross-utility comparisons impossible without substantive, resource- and time-consuming manipulation of the data. Additional data challenges included varying interpretations of WMP Guideline data requirements, leading to inconsistency of data submitted.*
Condition	*Electrical corporations shall ensure that all future data submissions to the WSD adhere to the forthcoming data taxonomy and schema currently being developed by the WSD. Additionally, each electrical corporation shall file a quarterly report detailing:* *i. locations where grid hardening, vegetation management, and asset inspections were completed over the prior reporting period, clearly identifying each initiative and supported with GIS data,* *ii. the type of hardening, vegetation management and asset inspection work done, and the number of circuit miles covered, supported with GIS data* *iii. the analysis that led it to target that specific area and hardening, vegetation management or asset inspection initiative, and* *iv. hardening, vegetation management, and asset inspection work scheduled for the following reporting period, with the detail in (i) – (iii).*

Guidance-10 is generally supported by Section 5.3.7.

BVES provided additional files in support of the WMP requirements and is updating its existing files to align with the WSD's GIS data reporting requirements, as shown in Sections 2, 3, and 6 of the WMP. Given the significant scope of the items required, a number of gaps still exist. BVES is working with a consultant to identify gaps and methods for closing these gaps. The utility will plan to submit updates on its GIS and general data collection efforts in subsequent filings. Specifically, BVES's status on the conditions outlined in Guidance-10 are as follows:

i. Due to the amount of data generated from BVES's grid hardening, vegetation management, and asset inspections over the prior reporting period, BVES is still in the process of updating its GIS data. BVES currently plans to engage an external consultant to identify the best and most expedient method for updating these files. Additionally, BVES is looking to better utilize current tools such as SharePoint or new tools to better organize its data from various platforms including GIS, work orders, inspection reports, and monthly and quarterly reporting.

ii. The type of hardening, vegetation management, and asset inspection work performed, and the number of circuit miles covered, will be updated and included as part of the gap analysis along with the locational data from condition i above.

iii. As stated under Guidance-1, BVES plans to evaluate, revise, and improve both the Risk-Based Decision-Making Framework and the Fire Safety Circuit Matrix in 2020 for use in the 2021 WMP update. BVES will consider feedback from the 2020 WMP and review feedback on other California utility WMPs. These feedback sources will be used to enhance risk modeling and initiative prioritization. The revisions will also be reflected in GIS, where applicable.

iv. As stated in condition i and ii above, BVES is in the process of updating its GIS data and associated data collection and planning processes. BVES currently has its Radford Line grid hardening initiative in GIS and plans to include work scheduled for the following reporting period in subsequent filings

B.11 Guidance-11: Lack of detail on plans to address personnel shortages

Class	*B*
Deficiency	*Electrical corporations do not explain in detail the range of activities that they are undertaking to recruit and train personnel to grow the overall pool of talent in areas of personnel shortage.*
Condition	*In its first quarterly report, each electrical corporation shall detail:* *i. a listing and description of its programs for recruitment and training of personnel, including for vegetation management;* *ii. a description of its strategy for direct recruiting and indirect recruiting via contractors and subcontractors; and* *iii. its metrics to track the effectiveness of its recruiting programs, including metrics to track the percentage of recruits that are newly trained, percentage from out of state, and the percentage that were working for another California utility immediately prior to being hired.*

Guidance-11 is generally addressed in Section 5.1.C and 5.5

BVES uses a combination of permanent and outsourced resources. Over the last year, BVES updated responsibilities of existing positions and identified the need for additional positions for ongoing WMP support.

i. BVES outsources all vegetation management and the contractor BVES uses has no projected shortfalls in staffing. Under this arrangement, all of BVES's vegetation management personnel are highly qualified and undergo extensive training.

   BVES has re-instituted its lineman apprenticeship program that had been dormant.

ii. BVES recently established a relocation policy that allows new hires to relocate from out of state to increase the talent sourcing pool. Because of BVES's remote location, employees must live in the service territory. BVES screens candidates initially through remote interviews using online collaboration tools. Candidates that are favorably screened are brought to Big Bear Lake for in-person mutual assessment and service territory orientation.

   BVES uses a local temp agency to source local talent for certain positions, for example project coordinators and skilled accountants for work order documentation and processing.

iii. As a general rule, BVES hires experienced personnel but has improved its capabilities and willingness to train new staff that demonstrate strong potential for success to the specifics of utility skillsets. BVES keeps a monthly headcount and is developing the requested metrics as our recruiting and apprenticeship programs mature, including from out of state and other California utilities.

B.12 Guidance-12: Lack of detail on long-term planning.

Class	*B*
Deficiency	*Electrical corporations do not provide sufficient detail regarding long-term wildfire mitigation plans and how the initiatives in their WMPs align with and support those long-term plans.*
Condition	*In their first quarterly report, each electrical corporation shall detail:* *i. its expected state of wildfire mitigation in 10 years, including 1) a description of wildfire mitigation capabilities in 10 years, 2) a description of its grid architecture, lines, and equipment;* *ii. a year-by-year timeline for reaching these goals;* *iii. a list of activities that will be required to achieve this end goal; and* *iv. a description of how the electrical corporation's three-year WMP is a step on the way to this 10-year goal.*

Guidance-12 is generally addressed in Section 4.1

i. The expected state of wildfire mitigation in BVES's service area in ten years should align to BVES's trajectory of minimal controllable risk threats. External forces beyond the control of BVES may always persist, but the objectives and vision of the WMP are designed to establish quantifiable measurements of baseline risk to better assess the need for mitigations and improve upon that baseline.

BVES provides power to Lake Williams, Erwin Lake, Sugarloaf, Big Bear City, Big Bear Lake, Moonridge, Fawnskin and Boulder Bay. BVES serves approximately 1,500 commercial customers and 23,000 residential customers in a predominantly rural service area. The BVES distribution system is comprised of 13 distribution Substations, 23 distribution circuits, approximately 8,700 poles, 2.7 miles of underground and 86 miles of overhead 34.5 kV distribution line, 86 miles of underground and 490 miles of overhead 4 kV distribution line. The customer growth of the service area is not expected to change dramatically within the next ten years. The nature of the infrastructure (i.e. substations and distribution lines) should also remain similar but will be significantly upgraded to through system hardening and technological adaptation to significantly decrease the risk of utility caused ignition of wildfires. Additionally, over the next ten years, other initiatives will improve BVES's situational awareness, emergency preparedness and response, and stakeholder and community engagement capabilities. Details regarding changes to infrastructure and mitigation capabilities are contained in ii below.

ii. For longer term objectives, BVES highlights the following initiatives poised to reduce wildfire risk and the need to initiate a PSPS event. Although a year by year timeline is not presented below, Section 5 Supporting Table 5-1 contains details regarding Prevention Strategy Programs Descriptions and Updates.

Selected Highlights Include:

a. In the next 3 years:

- Developing an action plan and resolving GIS data collection and sharing by 2021
- Two-year project to replace conventional fuses with current-limiting fuses or electronic programmable (vacuum switch) TripSaver technology

- Removal of all tree attachments
- Completion of the Pole Loading Assessment and Remediation Program on high risk circuits (estimated by 2022)
- Completion of the Radford Line Covered Conductor Replacement Project (ECD 10/21)
- Completion of the Grid Automation Project to install fiber network and automate the grid to improve system responses to prevent wildfires and enhance safety (ECD 12/22)
- Monitoring of BVES-specific weather stations in strategic locations to evaluate forecasted weather and monitor potential extreme fire conditions (ECD 12/20)
- As defined by the Fire Safety Circuit Matrix, reduction in distribution circuits designated as high wildfire threat from 11 to 5

b. In the next 10 years:

- 100% completion of Evacuation Route Hardening
- Significant progress replacing bare wire with covered conductor on high and moderate risk circuits – high risk circuits will be completed
- As defined by the Fire Safety Circuit Matrix, all distribution circuits designated as low risk

iii. Many individual activities will be required for the implementation of the initiatives which will lead to a more wildfire hardened distribution grid, improved processes for situational awareness and emergency response and better operational capabilities and competencies.

Selected highlights include:

- More advanced risk modeling through quantification of ignition risk drivers and associated probabilities.
- BVES plans to investigate PSPS resiliency projects in the event of the uncontrollable risk of SCE de-energization. Options may include solar/battery storage hybrids and microgrids.
- Enhanced emergency preparedness and response through employee fire response training and PSPS simulations.
- Improved system reliability, resiliency and visibility through deployment of SCADA and distribution automation devices.
- Pilot programs have been and will be evaluated as executed. In order to continually evolve practices, BVES intends to consider one pilot project or program during comprehensive updates.
- Heightened understanding of local weather patterns, drought conditions and fuels through use of weather stations, statewide collaboration and data sharing.
- Expanded employee capabilities and certifications through training on advanced grid operations, fire and emergency response, and external communications.

iv. BVES's three-year WMP is a significant step in developing a framework and plan to achieve significant risk reductions for utility caused wildfires. In its WMP, BVES has outlined improvements in risk assessment, GIS mapping, grid design and system hardening, asset management and inspections, grid operations and system automation, emergency planning, and stakeholder and community engagement. These systematic improvements in both capabilities and competencies provide a foundational roadmap. As programs mature, BVES will harmonize the three-year WMP with its five-year capital investment program and its ten-year long-range plan. BVES views this plan as adaptable and changes can be

accommodated as more is learned through implementation of initiatives, advances in technology, and collaboration with community and industry stakeholders. Ultimately, it is BVES's goal to continue to harden its system and maintain zero PSPS and ignition events.