NAVIGANT
A Guidehouse Company

Bear Valley Electric Service

Wildfire Mitigation Plan

2020

Prepared for:

BEAR VALLEY ELECTRIC SERVICE
Dedicating Our Energy To You

Submitted by:
Navigant, A Guidehouse Company
35 Iron Point Circle
Suite 225
Folsom, CA 95630

858.354.8333
guidehouse.com

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DISCLAIMER

The state of California and the California Public Utilities Commission (Commission or CPUC) mandated in Order Instituting Rulemaking 18-10-007 that the electric utilities develop Wildfire Mitigation Plans (WMPs) pursuant to Senate Bill 901. The CPUC provided a specific outline for the 2019 WMPs with enhancements and additional requirements pursuant to Assembly Bill 1054 and the findings from the CPUC's determination of 2019 WMP approvals. Each electric utility adopted this template and filed their first WMP iterations to the CPUC on February 6, 2019. The utilities' WMPs aim to reduce risk of utility-posed ignitions or threats as well as mitigate the need for public safety power shut off events in the future. This is achieved through investments and enhanced operational practices that consider risk spend efficiency and trackable metrics, ad measured outcomes.

The state of California and the California Public Utilities Commission (Commission or CPUC) mandated through Order Instituting Rulemaking that the electric utilities develop Wildfire Mitigation Plans (WMPs or Plans) pursuant to Senate Bill 901. In Rulemaking 18-10-007, The Commission provided a specific outline for the 2020 WMPs with enhancements and additional requirements pursuant to Assembly Bill 1054 and the findings from the CPUC's determination of 2019 WMP approvals. The guidelines also provided a series of attachments that identify critical elements of wildfire data tracking to allow for detailed evaluation of the WMP's comprehensiveness and for public/Commission use.

Each electric utility filed their first WMP iterations to the CPUC on February 6, 2019. The utilities' WMPs aim to reduce risk of utility-posed ignitions or threats as well as mitigate the need for public safety power shut off events in the future. This is achieved through investments and enhanced operational practices that consider risk spend efficiency, trackable metrics, and measured outcomes. Bear Valley Electric Service, an affiliate of Golden State Water Company (BVES) retained Navigant Consulting, Inc., (n/k/a/ Guidehouse Consulting) (Guidehouse) to support the revision process of its 200 WMP filing to the Wildfire Safety Division of the CPUC on February 7, 2020. Guidehouse's approach in updating BVES' WMP included:

- **Data Requests & Response**: Guidehouse requested data, reports, and project updates to be incorporated into BVES' 2020 WMP as well as assisted in responding to Decision 19-05-036, which covered a series of attachment data requests intended to frontload review and information dissemination of the WMP's underlying data and analysis.

- **Interviewed BVES Personnel**: A series of interviews were held with BVES personnel to determine specific actions and strategies to be included in the next WMP update as well as progress reports to existing mitigation strategies already being implemented.

- **WMP Update**: Guidehouse revised the existing WMP based on the direction and information provided by BVES and the most current information available to Guidehouse at the time of this WMP's update.

- **Review of the WMP**: BVES reviewed and approved the WMP as it is presented below ahead of filing to the Commission.

This report was prepared by Navigant Consulting, Inc., n/k/a Guidehouse Inc. (Navigant),[1] for Bear Valley Electric Service, an affiliate Golden State Water Company. The work presented in this report represents Navigant's professional judgment based on the information available at the time this report was prepared. Navigant is not responsible for the reader's use of, or reliance upon, the report, nor any decisions based on the report. NAVIGANT MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESSED OR IMPLIED. Readers of the report are advised that they assume all liabilities incurred by them, or third parties, as a result of their reliance on the report, or the data, information, findings and opinions contained in the report.

[1] On October 11, 2019, Guidehouse LLP completed its previously announced acquisition of Navigant Consulting Inc. In the months ahead, we will be working to integrate the Guidehouse and Navigant businesses. In furtherance of that effort, we recently renamed Navigant Consulting Inc. as Guidehouse Inc.

1. PERSONS RESPONSIBLE FOR EXECUTING THE WMP

1.1 Wildfire Mitigation Plan Overview

Given recent, catastrophic wildfires in California, Senate Bill (SB) 901 was signed into law in September 2018, amending Public Utilities Code (PUC) 8386. This bill required investor-owned utilities (IOUs) to prepare and file Wildfire Mitigation Plans (WMPs or Plans), the details 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 moving forward.[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 a decision to approve them 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 WMP's contents, 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. Electric corporations are to submit updated WMP by July 1 of each year beginning in 2020 to the California Wildfire Safety Advisory Board (WSAB) annually with a comprehensive update every three years. Utilities will receive review and advisory opinion from the WSAB. 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. Under the CPUC, the Safety Enforcement Division as well as the new Wildfire Safety Division will be the responsible entities for reviewing and approving the 2020 WMPs as the process will eventually transition to the state-level under the WASB. Effective July 1, 2021, the Office of Energy Infrastructure Safety (OEIS) will be established within the Natural Resources Agency overseeing the WASB. The CPUC and OEIS will execute a memorandum of understanding to achieve consistent approaches in reviewing WMPs.

Bear Valley Electric Service (BVES), a division of Golden State Water Company (GSWC), has applied a thoughtful approach in developing a holistic strategy to mitigate utility-posed wildfire risks pursuant to PUC Section 8386.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 filing, 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 December 16, 2019.[5] IOUs are

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

instructed to submit responses for several of the *Attachments* to the Wildfire Safety Division (WSD) by February 7, 2020 to aid in detailed evaluation of the WMP by frontloading the supporting elements of the WMP and associated underlying data.[6] *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 that target progress and outcome-based metrics. Responses to Attachment 1 and Attachment A public version of disclosed data will also be provided upon submission. Pursuant to the *WMP Guidelines* from D. 19-05-036, 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 performance plan is comprised of: Roles and Responsibilities, Metrics Reporting, Application of Metrics, Planning Processes, and Procedures.

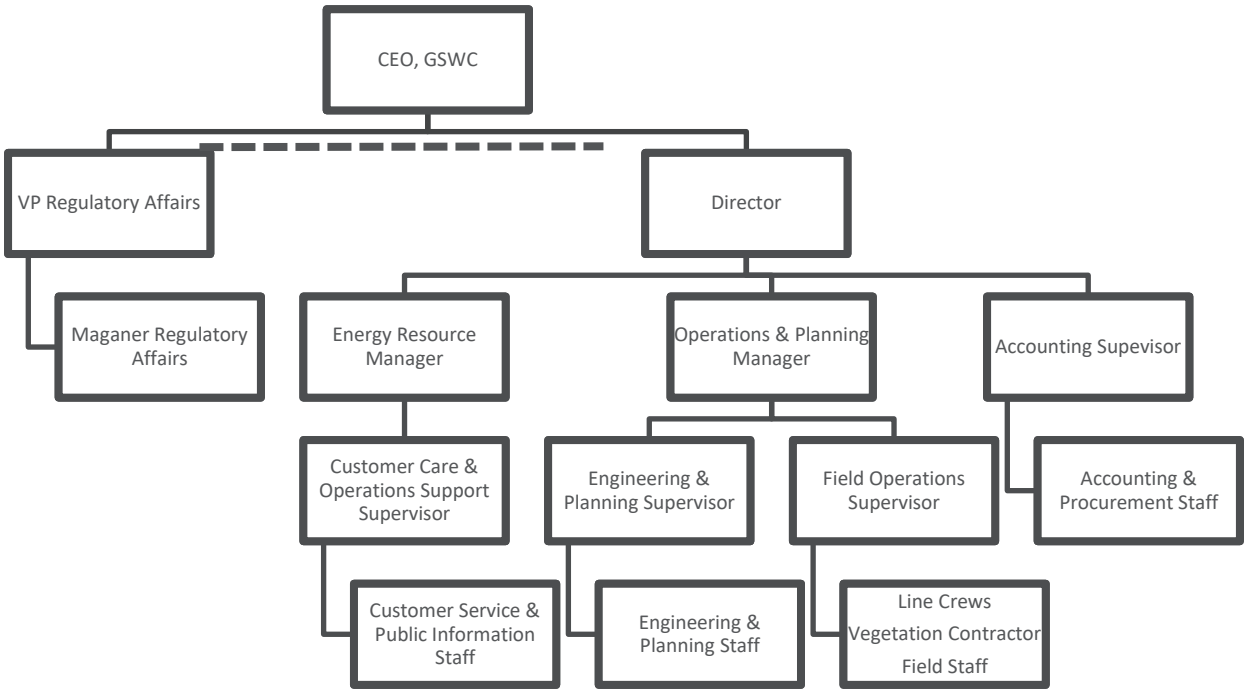
1.2 Roles and Responsibilities for Plan Execution

The overall roles and responsibilities for the performance metrics align closely to those outlined in the broader plan. The Director will oversee implementation, ensuring staff follow procedures and protocols. The Operations and Planning Manager will manage the execution of the performance monitoring. This includes 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 Operations and Planning Manager. For example, the Customer Care and Operations Support Supervisor will assume responsibility for tracking customer-related metrics.

Figure 1-1 on the following page outlines the BVES WMP organization. Further descriptions of the roles and responsibilities are provided in Sections 1.2.1 for Executive Level and 1.2.2 for Program Owners.

[6] *Attachment 3: Utility Survey* will have submitted responses through a web-based portal by February 10, 2020.

Figure 1-1. BVES Wildfire Mitigation Plan Organization



Source: BVES

1.2.1 Executive Level Responsibilities

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

- **Chief Executive Officer (CEO), GSWC** is responsible for the overall management of BVES.
- **Vice President, Regulatory Affairs** is responsible for ensuring regulatory compliance on all matters concerning BVES including the plan.
- **Director, BVES** is directly responsible for ensuring all of the plan elements are executed as intended. The Director shall report directly to the CEO on all matters regarding the plan and be fully accountable for its proper execution. He shall provide the CEO periodic updates on plan execution; identify any problems, delays in schedule, and resource shortfalls; and propose solutions to issues and problems. He shall also keep the Vice President, Regulatory Affairs informed of all compliance and regulatory affairs issues regarding the plan. He shall communicate the plan to BVES staff and hold them fully accountable for executing their portions of the plan. He shall ensure the applicable portions of the plan is communicated to local government and agencies, key stakeholders, customers and the general public. He will all ensure lessons learned and metrics from the current WMP are incorporated into future WMPs as appropriate.

- **Manager, Regulatory Affairs** is directly responsible to the Vice President, Regulatory Affairs for ensuring regulatory compliance on all matters concerning the plan. He shall work closely with BVES Director and Managers to ensure regulatory compliance issues are promptly resolved and will be directly responsible for any communications between BVES and the Commission on any matter regarding the plan including required reports.

1.2.2 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 plan include the Operations & Planning Manager, Energy Resource Manager, Field Operations Supervisor, Engineering & Planning Supervisor, Customer Care & Operations Support Supervisor, and Accounting Supervisor. All implementation staff are highly qualified and will ensure prompt communications and restoration of service. These members will be critical to maintaining customer and system safety. Table 1-1 on the following page outlines each staff member's role in implementation of the plan and their relevant qualifications.

Table 1-1. Plan Implementation Roles and Responsibilities

Staff Member	Role
Operations & Planning Manager	• Responsible for overall execution of wildfire prevention strategy and programs and emergency operations • Ensures timely and accurate communications with other BVES staff performing Plan functions • Collaborates with counterparts at local governments and agencies during proactive de-energization procedures and emergency events • Ensures Field Operations Supervisor is adequately resourced to execute field operation activities per the plan • Ensures Engineering & Planning Supervisor is adequately resourced to execute engineering and planning activities per the plan • 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 Director on the status of the WMP initiatives • Identifies plan problems, delays in schedule, and resource shortfalls to the Director • 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 • Responsible for first draft of annual WMP update
Energy Resources Manager	• Responsible for overall Customer and Stakeholder engagement and programs • Ensures Customer Care & Operations Support Superintendent 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 • Provides periodic updates to the Director on the status of WMP initiatives • Fully 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 Operations and Planning Manager

Field Operations Supervisor	• Responsible for directing operations in the field • Monitors weather advisories and manages operational system line-ups based on weather advisories • Ensures timely and accurate communications with other BVES staff performing plan 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 Operations & Planning Manager on the status of plan initiatives • Directs all field operations (BVES crews, contracted crews, and mutual aid crews) during wildfire recovering efforts • Identifies WMP problems, delays in schedule, and resource shortfalls to the Operations & Planning Manager • Proposes solutions to issues and problems • Collects relevant data and documentation • Evaluates plan annually and submits recommendations to Operations and Planning Manager
Engineering & Planning Supervisor	• Responsible for wildfire mitigation planning and engineering design • Issues and manages Work Orders to support plan initiatives • Reviews and approves as applicable engineering design work performed by contractors in support of plan initiatives • Supports Field Operations and broader Emergency Response Team (ER) as directed • Manages proactive system-related elements of plan, including implementing design standards, policies and procedures to mitigate fires • Directs all engineering and planning activities during wildfire recovery • Provides periodic updates to the Operations & Planning Manager on the status of plan initiatives • Identifies to the Operations & Planning Manager plan problems, delays in schedule, and resource shortfalls • Proposes solutions to issues and problems • Collects relevant data and documentation • Evaluates plan annually and submits recommendations to Operations and Planning Manager

Customer Care & Operations Support Supervisor	• Responsible for implementing communications plan and customer service programs • Notifies stakeholders, including local governments, agencies, and customers • Creates pre-planned statements to support proactive de-energization • 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' fire mitigation and emergency plans • Directs all customer support and communications during wildfire recovery per the WMP • Evaluates plan annually and submits recommendations to Operations and Planning Manager • Provides periodic updates to the Energy Resource Manager on the status of plan initiatives • Identifies to the Energy Resource Manager plan problems, delays in schedule, and resource shortfalls • Proposes solutions to issues and problems • Collects relevant data and documentation • Evaluates plan annually and submits recommendations to Energy Resource Manager
Accounting Supervisor	• Responsible for ensuring budget(s) 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 Plan comply with utility policies • Orders material and equipment to support the WMP and alerts applicable Supervisor when received • Issues contracts to support WMP initiatives as requested by Managers • Documents expenses in support of the WMP in accordance with Company procedures • Provides Director and Managers reports of the status of execution of expense and capital project budgets in support of the WMP • Identifies to the Director and Managers any resource shortfalls

2. METRICS AND UNDERLYING DATA

As described above, metrics will play a critical role in the overall WMP success. 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 wildland risk reduction and determine potential gaps that may arise over time as conditions change. The metrics presented in Table 2-1 reflect the approved tracking criteria from BVES' first 2019 WMP. As a result of D. 19-05-036, the WSD and 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 current 2019 metrics progress as well as presents the new metrics BVES will be tracking to better align and standardize results among the other IOUs.

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. Therefore, BVES has considered there are several months unaccounted for in meeting the annual targets presented in Table 2-1.

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 Bare Wire Covered (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 Clearance Permissions from Local Agencies	Assess mitigation Plan Constraints and timelines
Customer Service	Number of Customer Service Calls about Tree Trimming	Assess if communications plan has reduced customer concerns and risk events
	SAIDI due to PSPS	Assess outage impact on customers 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 high 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 will prepare formal reports, aggregating the monthly metrics, for review by the Director and other executives on an annual schedule. 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 Director will provide feedback and additional guidance as necessary.

2.1 Lessons Learned: How 2019 Progress Influenced the 2020 WMP

Several challenges and successes resulted from the first year of implementing BVES' 2019 WMP. The utility understands that this process will continue to evolve as the Commission and IOUs aim to refine utility best practices to contribute to a statewide approach in reducing wildland fire risk. Major themes of overall lessons learned include resource/personnel planning for new/enhanced initiatives and recordkeeping practices, external constraints related to materials procurement and siting constraints, weather impacts shortening work order windows, and the continued need to engage public safety partners and community stakeholders to improve community response efforts during Public Safety Power Shutoff (PSPS) events.

BVES' service territory is characterized by mountainous high-altitude terrain. The entirety of its service area is 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. Certain remote and heavily forested regions of the utility's service territory contain critical infrastructure and are difficult to access – some mostly only accessible by foot – which creates challenges to upgrading infrastructure and maintaining visibility on the lines. Infrastructure changes to the Radford Area, for example, require the use of helicopters and specially trained linemen to work in the challenging environment. BVES has identified this area for proactive de-energization in the summer due to the high fire risk. The utility's unique local conditions require it to go beyond the regulated vegetation clearance standards, the details of which are included in Section 5 of BVES' WMP.

In evaluating the targets set out in this filing, BVES requests that the Commission consider the unique seasonal constraints that the utility faces when performing the necessary grid upgrades and allowing for more leeway in determining 2020 targets. While these service limitations will continue to restrict BVES' flexibility, the need for system and process upgrades to reduce risk of wildfires remains clear. As such, in 2020, BVES is planning to expeditiously address 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 of R. 18-12-005, the docketed proceeding operating in parallel with the WMP OIR, and other PSPS guidance provided by the Commission. Within the next 2-3 years, BVES will evaluate any gaps in personnel sufficiency to execute all elements of the WMP and prioritize the resolution of the gaps. Plans

for 2020 also include revamping the utility's data collection practices to better align with the ongoing material now required by the WSD and other parties.

BVES has also reviewed its successful project targets for the 2019 year. 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. Data records associated with this software can be easily reviewed and compiled for subsequent evaluation, giving more direct visibility into all of the electrical assets and hazardous surrounding vegetation.

2.2 Application of Previous Metrics to Previous Plan Performance

This is the second annual Wildfire Mitigation Plan submitted by BVES to the Commission for approval. BVES examined past data and used insights and lessons learned from the data to inform the development of the new WMP.

While BVES started on several efforts immediately where applicable in 2019, formal tracking for metrics to illustrate the risk reduction impact have been collected from June 2019 to December 2019, with the intention of continuing to track through May 2020. This effectively would capture the 12-month span. Metrics from 2019 have been tracked on a monthly basis, with a central record-keeping file that is presented to departments to enable ease of tracking and mid-year program evaluations.

Table 2-2. 2019 WMP Metric Records

Metric Category	Metric	2019 Cycle Progress to Date / Lessons Learned
Overall WMP	Number of utility-caused fires	0 with 1 potential "Near Miss" event in 2019 / BVES evaluated the potential near miss and determined it was not a fire threat. BVES has not experienced a wildfire during the 2019 year and therefore has no direct lessons learned to apply to future practices.
Infrastructure	Number of bare line contact with vegetation	0 risks events identified in 2019.
	Number of live wire down events	0 risks events identified in 2019.
	Number of conventional blown fuse events	1 blown fuse event 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 this activity has experienced several logistics challenges, it has steadily progressed and remains on track.
	Number of Tree Attachments Removed	273 out 1,207 tree attachment were removed to date in this 5-year project (2018 - 2022) / This activity has presented to have additional challenges in access and resource availability. Throughout 2019, BVES predominately removed tree attachments over the summer months.

	Length of Bare Wire Covered (Circuit Miles)	BVES is ahead of its planned goal of replacing 3 circuit miles (three conductors over the span of one physical mile) by May 2020 / BVES also plans to press forward targeting to exceed its original goal by May. 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 is still keeping these voiced concerns in mind for future covered conductor projects.
	Number of conventional fuses replaced by current limiting fuses *or fused trip savers (vacuum style)*	BVES replaced 612 out of a target of 1,602 conventional fuses with current limiting fuses and fused trip savers.
Operations	Average Time for Clearance Permissions from Local Agencies	An averaged time was not determined over 2019, however, BVES understands that this process with permitting and permissions/siting can take up to 12 months prior to a project's construction phase. This metric will be better tracked for projected timelines to enable efficient forecasting of hurdles that may arise that are external to the utility's controls.
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 – December 2019.
Weather Conditions	Number of NFDRS "Very Dry" and "Dry" Days	150 days of these categories combined occurred in (June – December) 2019.
PSPS	Number of PSPS Events	0 / BVES did not have an initiated PSPS event from June 2019 to date. BVES. However, SCE de-energized and/or placed SCE supply lines under PSPS consideration that could have resulted in a complete or partial loss of supply to BVES' customers.
	Maximum recorded sustained winds and wind gusts	For sustained winds: 33.0 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 gust as recorded by NSW and 77.8 mph as recorded by BVES's weather stations.
	Frequency of high sustained high winds and wind gusts	BVES' weather stations captured 2 separate days in which the sustained wind exceeded 50 mph for brief periods while the NWS recorded 1 day of this indicator. BVES' weather stations captured 2 separate days in which the wind gusts exceeded 50 mph for brief periods while the NWS recorded 1 day of this indicator.

2.3 Wildfire Safety Division Adopted Standardized Metrics

As part of the response effort to frontload data supporting the underlying content of the WMP, BVES has incorporated the WSD's adopted metrics to begin tracking in 2020 in lieu of continuing to track 2019 WMP metrics. These metrics are intended to provide consistency across all respondents of the OIR, provide a holistic picture of the utility's contribution to and impact on objectives set by the WSD and CPUC, and inform utility decision-making for additional upgrades or enhancements. Table 2-3 presents the identified progress metrics to track implementation starting in 2020.

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
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

Table 2-4 below lists the identified outcome metrics to track wildfire risk reduction starting in 2020.

Table 2-4. 2020 WMP Outcome Metrics

Metric type	#	Outcome metric name	Unit(s)	Sources	Collection frequency	Example options for audit
Group 1A: Generally sourced from utility, leading indicators						

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)	Number per year	Utility reporting	Quarterly	Utility repair logs, smart meters, consumer surveys
	1.b.	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 (normalized)	Number per RFW circuit mile day per year	Utility reporting	Quarterly	Utility repair logs, smart meters, consumer surveys
	1.c.	Number of wires down (total)	Number of wires down per year	Utility reporting	Quarterly	Utility repair logs, smart meters, consumer surveys
	1.d.	Number of wires down (normalized)	Number per RFW circuit mile day per year	Utility reporting	Quarterly	Utility repair logs, Smart meters, consumer surveys
2. Utility inspection findings	2.a.	Number of Level 1 findings that could increase the probability of ignition discovered per circuit mile	Average number of Level 1 findings that could increase the probability of ignition discovered by all inspections per circuit mile per year	Utility reporting	Quarterly	Deep-dive audits of select portions of utility grid; utility inspection logs
	2.b.	Number of Level 2 findings that could increase the probability of ignition discovered per circuit mile	Average number of Level 2 findings that could increase the probability of ignition discovered by all inspections per circuit mile per year	Utility reporting	Quarterly	Deep-dive audits of select portions of utility grid; utility inspection logs
	2.c.	Number of Level 3 findings that could increase the probability of ignition discovered per circuit mile	Average number of Level 3 findings that could increase the probability of ignition discovered by all inspections per circuit mile per year	Utility reporting	Quarterly	Deep-dive audits of select portions of utility grid; utility inspection logs

3. Risk spend efficiency of WMP programs	3.a.	Average risk spend efficiency of all WMP programs being undertaken by utility	Incremental cost per grid-wide 1% reduction in utility ignition in HFTD areas	Utility reporting	Quarterly	GRC, wildfire memorandum accounts, third party recalculation
	3.b.	Average risk spend efficiency of wildfire-only WMP programs being undertaken by utility	Incremental cost per grid-wide 1% reduction in utility ignition in HFTD areas	Utility reporting	Quarterly	GRC, third party recalculation
4. Planned procurement	4.a.	Contracts for future purchases of renewable energy	% of total estimated electricity procurement per year	Utility reporting	Quarterly	Contract review
5. Customer hours of PSPS-based on stress test conditions	5.a.	Percent of customers experiencing PSPS given 95th percentile fire weather conditions along entire grid using utility PSPS decision protocols	Percent of all customers	Utility reporting and modeling, using agreed historical weather conditions	Annual	Third party expert evaluation using utility PSPS decision protocol
	5.b.	Percent of customers experiencing PSPS given 99th percentile fire weather conditions along entire grid using utility PSPS decision protocols	Percent of all customers	Utility reporting and modeling, using agreed historical weather conditions	Annual	Third party expert evaluation using utility PSPS decision protocol
Group 1B: Generally sourced from utility, lagging indicators						
6. Customer hours of PSPS and other outages	6.a.	Customer hours of planned outages including PSPS (total)	Total customer hours of planned outages per year	Utility reporting	Quarterly	Consumer survey, additional data from smart meters
	6.b.	Customer hours of planned outages including PSPS (normalized)	Total customer hours of planned outages per RFW circuit mile day per year	Utility reporting	Quarterly	Consumer survey, additional data from smart meters
	6.c.	Customer hours of unplanned outages, not including PSPS (total)	Total customer hours of unplanned outages per year	Utility reporting	Quarterly	Consumer survey, additional data from smart meters

	6.d.	Customer hours of unplanned outages, not including PSPS (normalized)	Total customer hours of unplanned outages per RFW circuit mile day per year	Utility reporting	Quarterly	Consumer survey, additional data from smart meters
	6.e.	Increase in System Average Interruption Duration Index (SAIDI)	Change in minutes compared to the previous year	Utility reporting	Quarterly collection	Third party auditor, consumer survey, smart meter data
7. Electricity cost to ratepayers	7.a.	Increase in electric costs to ratepayer due to wildfires (total)	Dollar value rates increase attributable to wildfires per year	Utility reporting	Collected at GRC cadence	TURN, utility reports, consumer surveys
	7.b.	Increase in electric costs to ratepayer due to wildfires (normalized)	Dollar value rates increase attributable to wildfires per RFW circuit mile per year	Utility reporting	Collected at GRC cadence	TURN, utility reports, consumer surveys
	7.c.	Increase in electric costs to ratepayer due to wildfire mitigation activities (total)	Dollar value rates increase attributable to WMPs per year	Utility reporting	Collected at GRC cadence	TURN, utility reports, consumer surveys
8. Actual renewable energy procurement	8.a.	Electricity procured from renewable sources	Percentage of total electricity procured per year	Utility reporting	Annual	Review of contracts with generation companies
Group 2A: Generally sourced from a variety of other stakeholders, leading indicators						
9. Impact of utility ignitions based on ignition simulation	9.a.	Potential impact of ignitions (total)	Number of people residing in evacuation zones of wildfires simulated for each ignition per year, based on in-house or contractors' fire spread models	CAL FIRE and utility reporting	Annual	Satellite data, Fire Safety Council interviews, utility ignition reporting and fire spread modelling

9.b.	Potential impact of ignitions (normalized)	Number of people residing in evacuation zones of wildfires simulated for each ignition per RFW circuit mile day per year	CAL FIRE and utility reporting	Annual	Satellite data, Fire Safety Council interviews, utility ignition reporting and fire spread modelling
9.c.	Potential impact of ignitions in HFTD (subtotal)	Number of people residing in evacuation zones of wildfires simulated for each ignition in HFTD per year	CAL FIRE and utility reporting	Annual	Satellite data, Fire Safety Council interviews, utility ignition reporting and fire spread modelling
9.c.i.	Potential impact of ignitions in HFTD Zone 1	Number of people residing in evacuation zones of wildfires simulated for each ignition in HFTD Zone 1 per year	CAL FIRE and utility reporting	Annual	Satellite data, Fire Safety Council interviews, utility ignition reporting and fire spread modelling
9.c.ii.	Potential impact of ignitions in HFTD Tier 2	Number of people residing in evacuation zones of wildfires simulated for each ignition in HFTD Tier 2 per year	CAL FIRE and utility reporting	Annual	Satellite data, Fire Safety Council interviews, utility ignition reporting and fire spread modelling
9.c.iii.	Potential impact of ignitions in HFTD Tier 3	Number of people residing in evacuation zones of wildfires simulated for each ignition in HFTD Tier 3 per year	CAL FIRE and utility reporting	Annual	Satellite data, Fire Safety Council interviews, utility ignition reporting and fire spread modelling
9.d.	Potential impact of ignitions in HFTD (subtotal, normalized)	Number of people residing in evacuation zones of wildfires simulated for each ignition in HFTD per RFW circuit mile day per year	CAL FIRE and utility reporting	Annual	Satellite data, Fire Safety Council interviews, utility ignition reporting and fire spread modelling
9.d.i	Potential impact of ignitions in HFTD Zone 1 (normalized)	Number of people residing in evacuation zones of wildfires simulated for each ignition in HFTD Zone 1 per RFW circuit mile day	CAL FIRE and utility reporting	Annual	Satellite data, Fire Safety Council interviews, utility ignition reporting and fire spread modelling

	9.d.ii.	Potential impact of ignitions in HFTD Tier 2 (normalized)	Number of people residing in evacuation zones of wildfires simulated for each ignition in HFTD Tier 2 per RFW circuit mile day per year	CAL FIRE and utility reporting	Annual	Satellite data, Fire Safety Council interviews, utility ignition reporting and fire spread modelling
	9.d.iii.	Potential impact of ignitions in HFTD Tier 3 (normalized)	Number of people residing in evacuation zones of wildfires simulated for each ignition in HFTD Tier 3 per RFW circuit mile day per year	CAL FIRE and utility reporting	Annual	Satellite data, Fire Safety Council interviews, utility ignition reporting and fire spread modelling
	9.e.	Potential impact of ignitions in non-HFTD (subtotal)	Number of people residing in evacuation zones of wildfires simulated for each ignition in non-HFTD per year	CAL FIRE and utility reporting	Annual	Satellite data, Fire Safety Council interviews, utility ignition reporting and fire spread modelling
	9.f.	Potential impact of ignitions in non-HFTD (normalized)	Number of people residing in evacuation zones of wildfires simulated for each ignition in non-HFTD per RFW circuit mile day per year	CAL FIRE and utility reporting	Annual	Satellite data, Fire Safety Council interviews, utility ignition reporting and fire spread modelling
Group 2B: Generally sourced from a variety of other stakeholders, lagging indicators						
10. Utility-ignited wildfire fatalities	10.a.	Fatalities due to utility- ignited wildfire (total)	Number of fatalities per year	Classification by fire authority having jurisdiction, utility reporting	Post-incident collection	Satellite data, Cal OES, CAL FIRE
	10.b.	Fatalities due to utility- ignited wildfire (normalized)	Number of fatalities per RFW circuit mile day per year	Classification by fire authority having jurisdiction, utility reporting	Post-incident collection	Satellite data, Cal OES, CAL FIRE
11. Fatalities from utility wildfire mitigation activities	11	Fatalities due to utility wildfire mitigation activities (total)	Number of fatalities per year	Utility OSHA reporting	Post-incident collection	OSHA, utility reporting

12. OSHA-reportable injuries from utility wildfire mitigation activities	12.a.	OSHA-reportable injuries due to utility wildfire mitigation activities (total)	Number of OSHA-reportable injuries per year	Utility OSHA reporting	Post-incident collection	OSHA, utility reporting
	12.b.	OSHA-reportable injuries due to utility wildfire mitigation activities (normalized)	Number of OSHA-reportable injuries per year per 1000 line miles of grid	Utility OSHA reporting	Post-incident collection	OSHA, utility reporting
13. Value of assets destroyed by utility-ignited wildfire, listed by asset type	13.a.	Value of assets destroyed by utility-ignited wildfire (total)	Dollars of damage or destruction per year	CAL FIRE reporting; financial experts	Post-incident collection	Satellite data, insurance claims, state funding claims
	13.b.	Value of assets destroyed by utility-ignited wildfire (normalized)	Dollars of damage or destruction per RFW circuit mile day per year	CAL FIRE reporting; financial experts	Post-incident collection	Satellite data, insurance claims, state funding claims
14. Structures damaged or destroyed by utility-ignited wildfire	14.a.	Number of structures destroyed by utility-ignited wildfire (total)	Number of structures destroyed per year	CAL FIRE reporting	Post-incident collection	Satellite data, insurance claims, state funding claims
	14.b.	Number of structures destroyed by utility-ignited wildfire (normalized)	Number of structures destroyed per RFW circuit mile day per year	CAL FIRE reporting	Post-incident collection	Satellite data, insurance claims, state funding claims
15. Public impacted by utility-ignited wildfire evacuation	15.a.	Number of people residing in evacuation zone of utility-ignited wildfire (total)	Number of people in evacuation zones of utility ignited wildfire	CAL FIRE and Cal OES reporting	Post-incident collection	State evacuation notices, population density map
	15.b.	Number of people residing in evacuation zone of utility-ignited wildfire (normalized)	Number of people per RFW circuit mile day per year	CAL FIRE and Cal OES reporting	Post-incident collection	State evacuation notices, population density map
	15.c.	Impact of evacuations for utility-ignited wildfire (total)	Person-hours per year	CAL FIRE and Cal OES reporting	Post-incident collection	State evacuation notices, population density map

	15.d.	Impact of evacuations for utility-ignited wildfire (normalized)	Person-hours per RFW circuit mile day per year	CAL FIRE and Cal OES reporting	Post-incident collection	State evacuation notices, population density map
16. Acreage burned by utility- ignited wildfire	16.a.	Acreage burned by utility-ignited wildfire (total)	Acres burned per year	CAL FIRE	Post-incident collection	Satellite data, post-incident investigation
	16.b.	Acreage burned by utility-ignited wildfire (normalized)	Acres burned per RFW circuit mile day per year	CAL FIRE	Post-incident collection	Satellite data, post-incident investigation
17. Number of utility wildfire ignitions	17.a.	Number of ignitions (total) according to existing ignition data reporting requirement	Number per year	CAL FIRE and utility reporting	Post-incident collection	Satellite data, Fire Safety Council interviews, utility ignition reporting
	17.b.	Number of ignitions (normalized)	Number per RFW circuit mile day per year	CAL FIRE and utility reporting	Post-incident collection	Satellite data, Fire Safety Council interviews, utility ignition reporting
	17.c.	Number of ignitions in HFTD (subtotal)	Number in HFTD per year	CAL FIRE and utility reporting	Post-incident collection	Satellite data, Fire Safety Council interviews, utility ignition reporting
	17.c.i.	Number of ignitions in HFTD Zone 1	Number in HFTD Zone 1 per year	CAL FIRE and utility reporting	Post-incident collection	Satellite data, Fire Safety Council interviews, utility ignition reporting
	17.c.ii.	Number of ignitions in HFTD Tier 2	Number in HFTD Tier 2 per year	CAL FIRE and utility reporting	Post-incident collection	Satellite data, Fire Safety Council interviews, utility ignition reporting
	17.c.iii.	Number of ignitions in HFTD Tier 3	Number in HFTD Tier 3 per year	CAL FIRE and utility reporting	Post-incident collection	Satellite data, Fire Safety Council interviews, utility ignition reporting

	17.d.	Number of ignitions in HFTD (subtotal, normalized)	Number in HFTD per RFW circuit mile day per year	CAL FIRE and utility reporting	Post-incident collection	Satellite data, Fire Safety Council interviews, utility ignition reporting
	17.d.i.	Number of ignitions in HFTD Zone 1 (normalized)	Number in HFTD Zone 1 per RFW circuit mile day per year	CAL FIRE and utility reporting	Post-incident collection	Satellite data, Fire Safety Council interviews, utility ignition reporting
	17.d.ii.	Number of ignitions in HFTD Tier 2 (normalized)	Number in HFTD Tier 2 per RFW circuit mile day per year	CAL FIRE and utility reporting	Post-incident collection	Satellite data, Fire Safety Council interviews, utility ignition reporting
	17.d.iii.	Number of ignitions in HFTD Tier 3 (normalized)	Number in HFTD Tier 3 per RFW circuit mile day per year	CAL FIRE and utility reporting	Post-incident collection	Satellite data, Fire Safety Council interviews, utility ignition reporting
	17.e.	Number of ignitions in non-HFTD (subtotal)	Number in non-HFTD per year	CAL FIRE and utility reporting	Post-incident collection	Satellite data, Fire Safety Council interviews, utility ignition reporting
	17.f.	Number of ignitions in non-HFTD (normalized)	Number in non-HFTD per RFW circuit mile day per year	CAL FIRE and utility reporting	Post-incident collection	Satellite data, Fire Safety Council interviews, utility ignition reporting
18. Estimated GHG emissions from utility-ignited wildfire	18.a.	GHG emissions from utility-ignited wildfires (total)	Estimated tons of carbon dioxide equivalent emitted per year	Cal ARB	Annual	CNRA calculations, USGS, independent analysis
	18.b.	GHG emissions from utility-ignited wildfires (normalized)	Estimated tons of carbon dioxide equivalent emitted per RFW circuit mile day per year	Cal ARB	Annual	CNRA calculations, USGS, independent analysis
19. Transportation impacted by PSPS	19.a.	Critical transportation infrastructure impacted due to PSPS	Driver and rider-hours lost (in ridership per hour multiplied by incremental increase in commute time by hours closed) per year	Cal OES	Post-incident collection	California Transit Association, contemporary Google maps estimated travel time estimates

	19.b.	Major roads impacted due to PSPS (normalized)	Driver and rider-hours lost (in ridership per hour multiplied by incremental increase in commute time by hours closed) per RFW circuit mile day per year	Cal OES	Post-incident collection	California Transit Association, contemporary Google maps estimated travel time estimates
20. Critical infrastructure impacted	20.a.	Critical infrastructure impacted by PSPS	Number of critical infrastructure locations impacted per hour multiplied by hours offline per year	Utility, Cal OES	Post-incident collection	Utility data, Cal OES, survey of critical infrastructure personnel
	20.b.	Critical infrastructure impacted by PSPS (normalized)	Number of critical infrastructure locations impacted per hour multiplied by hours offline per RFW circuit mile day per year	Utility, Cal OES	Post-incident collection	Utility data, Cal OES, survey of critical infrastructure personnel

2.4 Description of Accountability Processes and Procedures

2.4.1 Monitoring and Auditing the Plan

The Operations & Planning Manager and Energy Resource Manager will update the Director on the status of the WMP initiatives at regularly scheduled Management Meetings. Additionally, the WMP and its program targets will be included as a discussion item on the agenda at regularly scheduled Manager and Supervisor Meetings.

As mentioned above, the Operations & Planning Manager will collect and submit a report of the WMP metrics each month to the Director as well as BVES Managers and Supervisors. Based on the results, the Operations & Planning Manager will make recommendations to the Director on action to be implemented, if warranted. Additionally, work orders, contracts, purchase orders and other expense mechanisms will be subject to the Company's internal and external audit procedures.

BVES shall engage one of the CPUC approved listed independent evaluators to review and assess BVES' compliance with its Plan upon the list issuing, expected on or around March of 2021. 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 not yet been formalized at the time of this filing. It is expected that the evaluator will:

- Consult with, and operate under direction of, the Wildfire Safety Division and Safety and Enforcement Division.
- 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.

2.4.2 Identifying and Correcting Deficiencies in the Plan

BVES staff and qualified external stakeholders are encouraged to identify plan deficiencies or potential deficiencies to the Operations & Planning Manager as soon as possible when observed. The Operations & Planning 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
- Assigned corrective action including the date when it must be completed by
- Assigned staff responsible for completing the corrective action
- Date corrective action completed

The Operations & Planning Manager will go over the 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 (QC) program (not in the WMP deficiency log).

2.4.3 Monitoring and Auditing the Effectiveness of Equipment and Line Inspections

The Operations & Planning Manager will assign qualified internal staff or engage a third party to review and audit the equipment and line inspection programs called out in the WMP after the completion of the first six months of the plan. Ideally, the audit is to be conducted between the 6-month and 8-month point of the 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,
- Review deficiencies noted in the programs,
- Identify systemic issues or problems,
- Note the timeliness of corrective actions,
- Pick a random sample of some completed corrective actions and verify the effectiveness of the corrective actions, and
- Issue a written report of findings.

The Operations & Planning Manager will review the audit findings and assign corrective action as applicable. A copy of the audit report will be provided to the Director.

3. BASELINE IGNITION PROBABILITY AND WILDFIRE RISK EXPOSURE

As mentioned above, BVES understands that it operates within a high-risk wildfire environment. All decisions and plans made in this document use risk-based decision-making protocols. This provides an overview of this process as it relates to wildfire mitigation.

3.1 Description of Risk Methodology

On December 4, 2014, the Commission issued Decision 14-12-025 and directed BVES to transition to a risk-based decision-making framework in their General Rate Case (GRC) application filings beginning in December 2017. BVES adopted a risk-based decision-making framework ahead of the deadline and presented its framework to the CPUC in Volume 7, Direct Testimony Risk-Based Decision-Making Framework, of its 2018 GRC filing in May 2017. This framework is based upon the 10 steps of the ISO 31000 risk management process and includes six steps; the first three focus on understanding and evaluating risks, and the last three on understanding and evaluating risk mitigation strategies. Since its development, BVES has developed additional mitigation measures for wildfire risks. Figure 3-1 provides an overview of the steps.

Figure 3-1. BVES Risk-Based Decision-Making Framework

Source: BVES

BVES' Risk-Based Decision-Making Framework is consistent with peer investor-owned utilities', including Southern California Edison (SCE).[7] For example, SCE's framework consists of six steps: (1) risk identification, (2) risk evaluation, (3) risk mitigation identification, (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 strategy above and those of other, similar utilities.

3.2 Risk Assessment Mitigation Prioritization

The CPUC has not required BVES to conduct a Risk Assessment and Mitigation Phase (RAMP) in prior GRC filings, however through its risk-based decision-making framework, BVES has created a list of risks and a prioritized list of mitigation measures. The following subsections outline these lists.

[7] Southern California Edison, Prepared Testimony in Support of Southern California Edison Company's Application for Approval of its Grid Safety and Resiliency Program Before the Public Utilities Commission of the State of California, September 10, 2018, . https://www.edison.com/content/dam/eix/documents/investors/wildfires-document-library/201809-gsrp-filing.pdf

3.2.1 Risk Understanding

According to the US Forest Service (USFS), there are three essential elements in the "fire triangle": heat, fuel, and oxygen.[8] The first, heat, provides the initial ignition of fire and helps it spread. The second, fuel, is any form of combustible material; combustibility is mainly defined by moisture content. Finally, the third, oxygen, is a chemical that supports the burning; most fires require roughly 16 percent oxygen content and air contains roughly 21 percent. The conditions necessary for these elements to come together have created an increasing number of wildfires in recent years.[9] For example, the increasing complexity of implementing fire suppression and fuel treatment programs has resulted in accumulations of debris, such as leaves, branches, excessive overgrowth, and dead vegetation. Additionally, climate change patterns have exacerbated and continue to exacerbate wildfire-conducive conditions.

Given the elements of the fire triangle, BVES' electrical infrastructure poses several wildfire risks, including heat or an ignition source that can be caused by the electric grid and proximity to combustion materials, such as trees and dry vegetation. Once these materials come into contact, such as through wind gusts or other weather phenomena, the risk of wildfire is extremely high.

In addition to gaining a deeper understanding of its wildfire risks, BVES analyzed its reliability data to prioritize its risks. The analysis focused on recent outage data (2009-2018) and examined two events: vegetation contacting bare wire and wire down events, since these events may result in wildfires. Table 3-1 shows the results of the analysis. It is recognized that vegetation may have contacted a line without causing an outage and, therefore would not be reflected in the data in Table 3-1.

Table 3-1. BVES Analysis of Wildfire Risk Events (2009-2018)

Event	Count	Percent of Total
Vegetation-Bare Line Contact		
Caused by Vegetation Proximity	39	38%
Caused by Weather or 3rd Party	49	48%
Wire Down Events		
Caused by Weather	11	10%
Caused by 3rd Party	4	4%

Source: BVES

As illustrated by the table above, vegetation and bare line contact events pose the most frequent risk for wildfires in the BVES system. These events are mainly caused by weather and third parties. This makes sense given the dense tree coverage of the mountainous terrain and the susceptibility of the area to winter snow storms. It should be noted that during winter snow storms, the moisture level in surrounding vegetation is typically high, reducing the risk of wildfire. The second most frequent cause of these events is proximity to vegetation, which also makes sense given the tree density. The system has approximately 970 existing tree attachments, in compliance with previous system design standards and vegetation management protocols, which may also cause vegetation and bare line events. 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. Of these

[8] US Forest Service Smokey Bear, "Elements of Fire", 2018, https://smokeybear.com/en/about-wildland-fire/fire-science/elements-of-fire.
[9] US Forest Service Smokey Bear, "Fire Science", 2018, https://smokeybear.com/en/about-wildland-fire/fire-science.

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, and are, perhaps, a more severe risk than vegetation and bare line contact. Of these wire down events, weather was again the greatest contributor.

Another risk event that BVES considered is a "blown conventional fuse." Conventional fuses expel hot particles and gases when operated, which can start fires. BVES reviewed data from 2009 to 2018 and found that 203 conventional blown fuse events occurred for a variety of reasons throughout the service area.

Based on this understanding, BVES identified applicable risks from its risk-based decision-making framework filing and added to the list, based on gaps identified through its Wildfire Mitigation Plan development. The risks identified as part of the BVES risk-based decision-making framework filing are scored according to frequency and impact. 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. The list below organizes all the strategies included in the Plan shown below in Table 3-2.

Table 3-2. List of Wildfire Risks and Risk Score (Priority)

Risk Event	*Total Risk Score*
Design & Construction	
Line Attached to Fallen Tree	88,191
Sparking Caused by Equipment/Infrastructure Settings	NA
Inspection & Maintenance	
Pole Failures	49,702
Downed Wire	114,944
Aging Infrastructure	4,966
Vegetation in Proximity to Infrastructure	NA
Quickly Changing Conditions	NA
Operational Practices	
Unclear Protocols & Procedures During High-Risk Conditions	NA
Situational & Conditional Awareness	
Inability to Visualize Equipment in Hard-to-Patrol Areas	NA
Imprecise Weather Forecasting	NA
Response & Recovery	
Fatality caused by wildfire / emergency	1,275,706
Sustained outages affecting health	124,339

Source: BVES

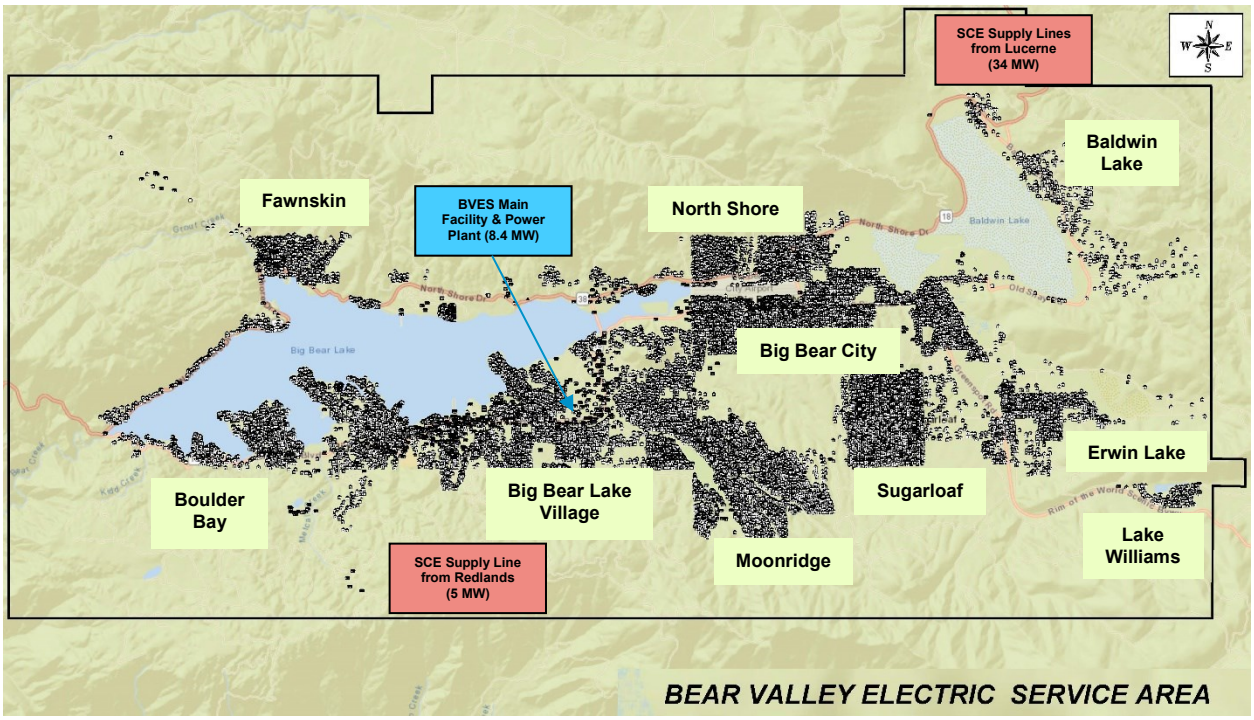
Note: Risks with "NA" represent risks identified after BVES' formal risk-based decision-making process. Although these risks have not been formally scored, BVES has used qualitative information and evaluated cost-effectiveness and implementation-feasibility to prioritize these measures.

3.2.1.1 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' service territory is in the mountain resort community of Big Bear Lake, California, with approximately 24,427 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 3-2 below shows the service territory and key customer and system areas.

Figure 3-2. 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.

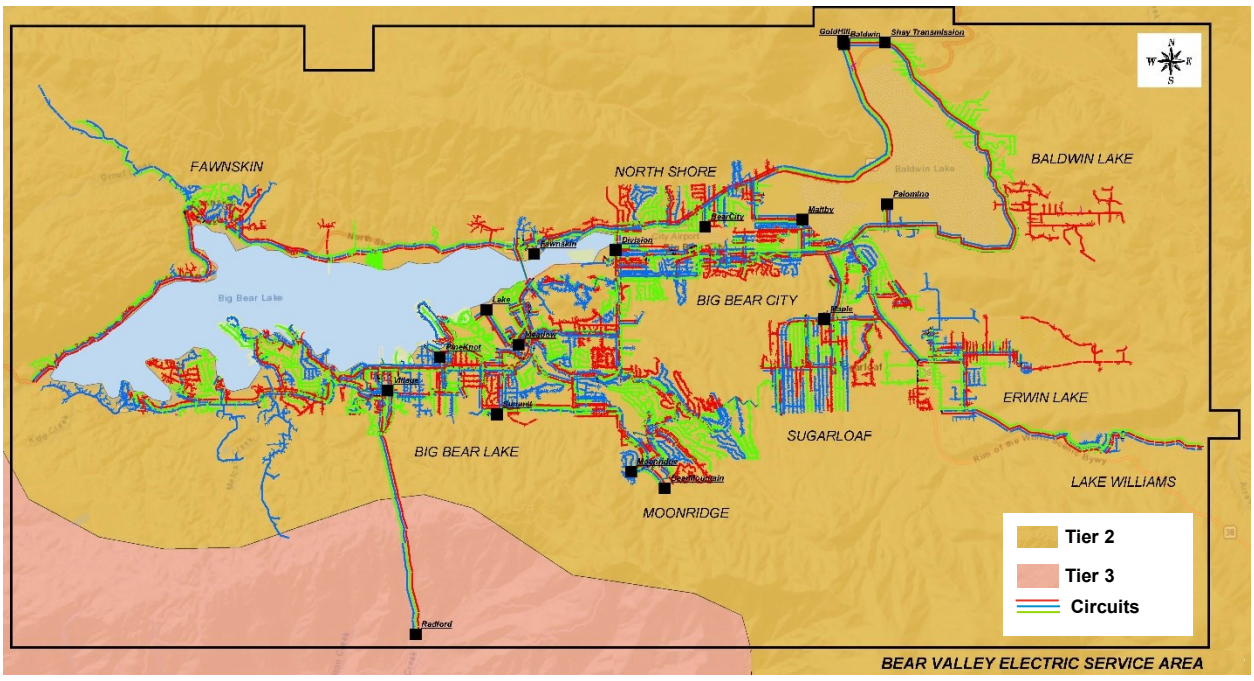
- **Electrical System Design & Assets:** BVES owns and operates 87.8 miles of overhead (OH) 34.5 kilovolt (kV) sub-transmission miles, 2.7 miles of 34.5 kilovolt underground (U/G) sub-transmission miles, 488.6 miles of overhead distribution circuit lines, 89.1 miles of underground distribution circuit 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' 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 will be a key element of implementing a successful WMP.
- **Geographic Location:** BVES' 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, the California Department of Forestry and Fire Protection (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 3-3 shows the CPUC designated fire hazard zone tiers within BVES' service territory.

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



Source: CPUC, Fire-Threat Map

BVES monitors these assessment systems regularly and has created procedures and protocols accordingly. Table 3-3 below outlines the various rating systems and BVES' rating in that system.

Table 3-3. Wildfire Risk Assessments in BVES Service Territory

Agency and Rating Name	Scope of Rating	BVES Rating
CPUC, Fire-Threat Map Adopted January 19, 2018[10]	Areas or zones where enhanced fire safety regulations in Decision 17-12-024 will apply[11]	High Fire-Threat District; Mostly Tier 2 (elevated risk) with some Tier 3 (extreme risk) areas.
USDA Forest Service, National Fire Danger Rating System (NFDRS)[12]	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[13]	City and County-level assessments of fire "hazard" zones	Very High Fire Hazard Severity Zone

Source: BVES

In addition to assessing its territory at a high level, BVES conducted a detailed analysis based on the NFDRS evaluation. This analysis uses 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% of the time over the 2015-2019 period, which significantly contributes to the high fire risk. Table 3-4 below shows the full analysis.

[10] CPUC, CPUC Fire Safety Rulemaking Background, 2018, http://www.cpuc.ca.gov/firethreatmaps/.
[11] CPUC, CPUC Adopts New Fire-Safety Regulations, December 14, 2017, http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M201/K352/201352402.PDF.
[12] USDA Forest Service, National Fire Danger Rating System, https://www.fs.usda.gov/detail/inyo/home/?cid=stelprdb5173311.; BVES Analysis
[13] 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.

Table 3-4. 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%

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
Source: BVES NFDRS Analysis

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 locales.

- **Radford Area**: The area is remote, mountainous, heavily forested and mostly only accessible 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, the adverse terrain, abundant available fuel, and the 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 its tree density, available fuel, high number of tree attachments, and difficult terrain, which make operations & 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), the dense tree coverage, the 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), the dense tree coverage, the adverse terrain, and abundant available fuel.

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

Evaluation of Higher Fire-Threat Areas

As it evaluated fire risks, BVES noted particularly high fire-threat areas for additional monitoring and assessment. These areas include those that are more prone to fires than others 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 further mitigate wildfires.

Circuit	Voltage (kV)	Fire Threat Tier	Customers	# of Poles	Total Circuit Miles	OH Circuit Miles	Percent OH	UG Circuit Miles	Percent UG
Radford	34.5	3	0	89	2.84	2.82	99.30%	0.02	0.70%
Shay	34.5	2	9,627	610	17.56	17.17	97.78%	0.39	2.22%
Baldwin	34.5	2	11,305	256	9.44	8.94	94.70%	0.50	5.30%
Boulder	4.16	2	2,046	917	19.48	17.68	90.76%	1.80	9.24%
North Shore (Fawnskin)	4.16	2	1,523	745	23.92	15.83	66.18%	8.09	33.82%
Erwin Lake	4.16	2	2,533	1,042	29.24	21.83	74.66%	7.41	25.34%
Pioneer (Palomino)	4.16	2	537	599	19.34	16.39	84.75%	2.95	15.25%
Clubview	4.16	2	1,984	504	10.45	10.18	97.42%	0.27	2.58%
Goldmine	4.16	2	1,698	550	18.46	13.20	71.51%	5.26	28.49%
Paradise	4.16	2	1,895	549	11.85	9.85	83.12%	2.00	16.88%
Sunset	4.16	2	1,918	505	11.17	10.67	95.52%	0.50	4.48%
Sunrise (Maple)	4.16	2	1,506	347	11.65	7.79	66.87%	3.86	33.13%
Holcomb (Bear City)	4.16	2	1,587	614	14.10	13.25	93.97%	0.85	6.03%
Georgia	4.16	2	1,023	345	9.86	5.91	59.94%	3.95	40.06%
Eagle	4.16	2	959	322	8.91	7.38	82.83%	1.53	17.17%
Harnish (Village)	4.16	2	254	82	2.55	1.34	52.55%	1.21	47.45%
Garstin	4.16	2	1,055	276	8.91	5.91	66.33%	3.00	33.67%
Lagonita	4.16	2	1,103	451	8.89	7.46	83.91%	1.43	16.09%
Interlaken	4.16	2	880	280	10.00	6.45	64.50%	3.55	35.50%
Castle Glen (Division)	4.16	2	1,188	343	10.61	6.93	65.32%	3.68	34.68%
Country Club	4.16	2	605	177	4.12	3.18	77.18%	0.94	22.82%
Fox Farm	4.16	2	35	4	0.84	0.00	0.00%	0.84	100.00 %
Pump House (Lake)	4.16	2	4	22	0.66	0.64	96.97%	0.02	3.03%
Lift (Summit TOU)	4.16	2	1	1	0.10	0.10	100.00 %	0.00	0.00%
Skyline (Summit Res)	4.16	2	0	0	0.00	0.00	NA	0.00	NA
Geronimo (Bear Mtn.)	4.16	2	1	0	0.03	0.00	0.00%	0.03	100.00 %

below outlines the parameters of the analysis.

Table 3-5. Evaluation of Higher Fire-Threat Areas

Circuit	Voltage (kV)	Fire Threat Tier	Customers	# of Poles	Total Circuit Miles	OH Circuit Miles	Percent OH	UG Circuit Miles	Percent UG
Radford	34.5	3	0	89	2.84	2.82	99.30%	0.02	0.70%
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Baldwin	34.5	2	11,305	256	9.44	8.94	94.70%	0.50	5.30%
Boulder	4.16	2	2,046	917	19.48	17.68	90.76%	1.80	9.24%
North Shore (Fawnskin)	4.16	2	1,523	745	23.92	15.83	66.18%	8.09	33.82%
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Clubview	4.16	2	1,984	504	10.45	10.18	97.42%	0.27	2.58%
Goldmine	4.16	2	1,698	550	18.46	13.20	71.51%	5.26	28.49%
Paradise	4.16	2	1,895	549	11.85	9.85	83.12%	2.00	16.88%
Sunset	4.16	2	1,918	505	11.17	10.67	95.52%	0.50	4.48%
Sunrise (Maple)	4.16	2	1,506	347	11.65	7.79	66.87%	3.86	33.13%
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Georgia	4.16	2	1,023	345	9.86	5.91	59.94%	3.95	40.06%
Eagle	4.16	2	959	322	8.91	7.38	82.83%	1.53	17.17%
Harnish (Village)	4.16	2	254	82	2.55	1.34	52.55%	1.21	47.45%
Garstin	4.16	2	1,055	276	8.91	5.91	66.33%	3.00	33.67%
Lagonita	4.16	2	1,103	451	8.89	7.46	83.91%	1.43	16.09%
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Country Club	4.16	2	605	177	4.12	3.18	77.18%	0.94	22.82%
Fox Farm	4.16	2	35	4	0.84	0.00	0.00%	0.84	100.00 %
Pump House (Lake)	4.16	2	4	22	0.66	0.64	96.97%	0.02	3.03%
Lift (Summit TOU)	4.16	2	1	1	0.10	0.10	100.00 %	0.00	0.00%
Skyline (Summit Res)	4.16	2	0	0	0.00	0.00	NA	0.00	NA
Geronimo (Bear Mtn.)	4.16	2	1	0	0.03	0.00	0.00%	0.03	100.00 %

Source: BVES

According to the analysis, BVES identified the higher fire-threat areas outlined above 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. 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.

3.2.2 Risk Mitigation Strategy (Prioritization)

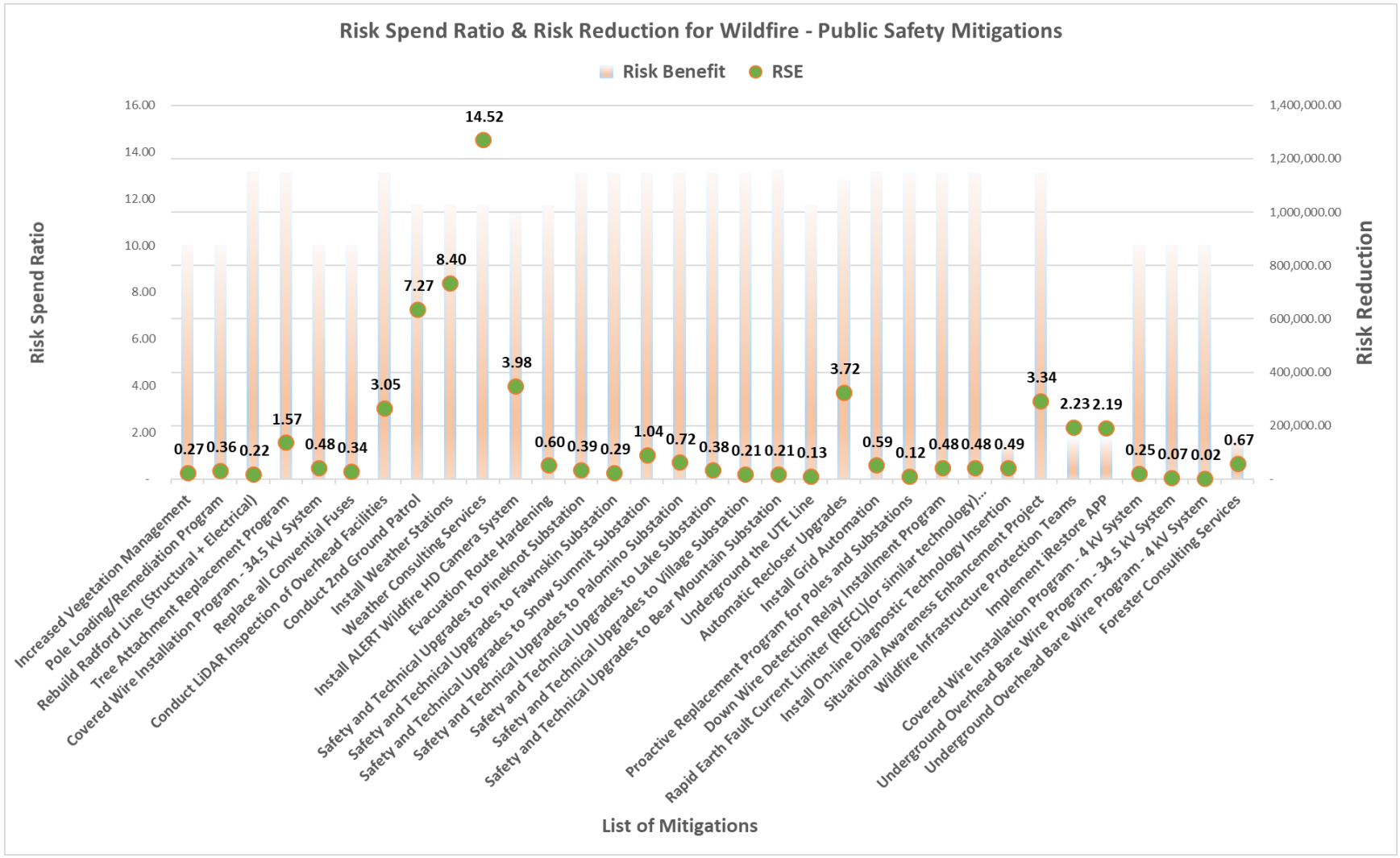
Using its risk understanding, BVES developed a risk mitigation strategy, prioritizing the most cost-and operationally-effective strategies for its risk-based decision-making framework filing. This prioritization

included evaluating the risk reduction relative to the cost of the mitigation using a Risk Spend Efficiency (RSE) analysis. This analysis focused on a complete review of ongoing and potential new projects to mitigate the two primary wildfire related risk events, which are:

- Utility caused wildfire results in multiple public fatalities or firefighter fatalities.
- During extreme fire threat weather and conditions, such as a major Santa Ana wind event, SCE Doble, Cushenberry, and/or Bear Valley Lines are de-energized by SCE for PSPS for a period of 48 hours (or more).

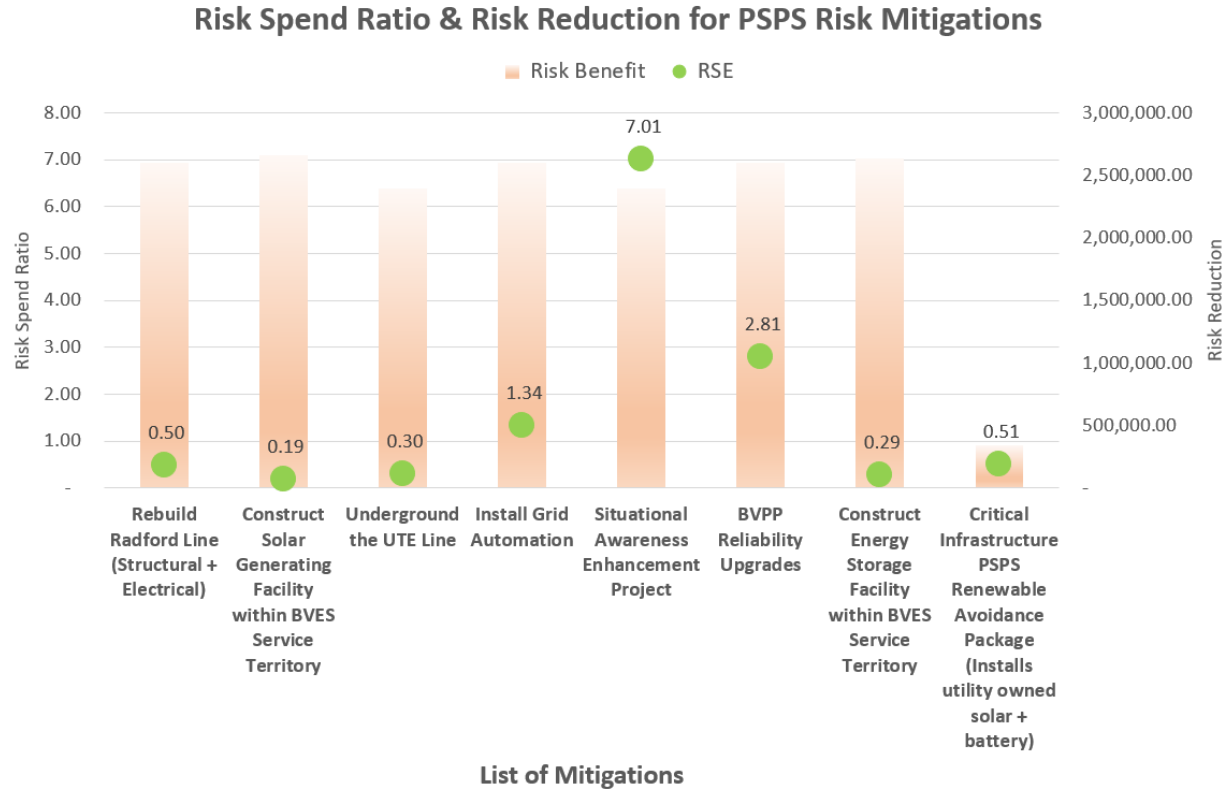
The review produced a list of mitigation projects and programs and quantified the risk benefit (reduction) and the RSE. This process allows BVES to better evaluate projects in terms of risk reduction and select the best alternatives where an alternative exists. For example, BVES evaluated undergrounding its sub-transmission system (34.5 kV) versus installing covered wire on the sub-transmission system. This analysis resulted in the two figures below.

Figure 3-4. Risk Reduction and Efficiencies of Mitigation Initiatives



Source: BVES, 2020

Figure 3-5. Risk Spend Ratio / Risk Reduction for PSPS Mitigations



In addition to evaluating the risk reduction and RSEs, one also must take into account the timing and proper sequencing of the projects. 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.

3.3 Description of How the Plan Accounts for Identified Risks

Since BVES identified risk mitigation strategies based on its list of potential risk events, the Plan aligns closely with its risk-based decision-making framework. Table 3-6 below details how the Plan accounts for identified risks. It should be noted that mitigation measures may span several different categories and help mitigate multiple risks.

Table 3-6. 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 items identified, 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. BVES will continue to monitor all items not currently planned for inclusion and explore new technologies as they arise.

4. INPUTS TO THE WMP AND VISION FOR WILDFIRE RISK EXPOSURE

4.1 Objectives by Timeline

In compliance with AB 1054's statutory amendment to PUC Section 8386 and the CPUC's related OIR, the following 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.

Specifically, the WMP aims to fulfill the requirements detailed in PUC Section 8386, which has been modified by AB 1054 and AB 111. The requirements are outlined in the OIR to Implement Electric Utility Wildfire Mitigation Plans Pursuant to Senate Bill 901 (2018). The high-level requirements include an outline of wildfire risks within the service territory; overview of strategies, protocols, plans and programs to mitigate wildfires; metrics to monitor the Plan's performance; and protocols for communicating with customers throughout any wildfire mitigation or emergency events.

This Plan is effective upon CPUC approval for a period of 12 months. Based on the current schedule of OIR R. 18-10-007, it is anticipated that the Plan will be effective 90 days after submission (May 2020), pending approvals and the timeline presented in *Attachment 1: WMP Guidelines*. However, BVES will commence executing the Plan effective immediately where reasonable and prudent upon filing.

Since the Plan will evolve over time, BVES has defined objectives for the following timeframes: before the upcoming fire season, as defined by the CPUC and CAL FIRE, before the next Plan filing with the CPUC, and within the next five years. The objectives are as follows:

- Before the upcoming fire season:
    - Identify "quick wins" or near-term, cost-effective mitigation measures that can be implemented quickly
    - Explore new technologies and strategies to be established in the long-term and create plans for implementation
    - Identify costs associated with both "quick-wins" and longer-term mitigation measures
    - Create metrics to begin monitoring Plan effectiveness
- Before the next Plan filing with the WSD:
    - Monitor implementation of approved near-term mitigation measures
    - Evaluate effectiveness of mitigation measures already implemented, using metrics identified in this Plan
    - Revisit long-term technologies and strategies to determine feasibility of implementation
    - Continue exploring new technologies and strategies to mitigate wildfire risks
- Within the next ten years
    - Monitor implementation of approved long-term mitigation measures
    - Continue evaluating the effectiveness of mitigation measures already implemented, adjusting measures and metrics as needed
    - Continue exploring new technologies and strategies to mitigate wildfire risks

The WMP is intended to be iterative, promote continuous improvement year over year, and implement industry best practices in a prudent and reasonable manner. Additionally, some of the projects and programs are part of a multi-year long-range improvement plan. These will be indicated in the Plan where applicable, so the overall vision and strategy are clear for both the short-term and long-term.

4.2 Strategy & Program Overview

This section provides an overview of the preventative strategies and programs established in the Plan. The information provided includes the overarching Plan components, programs implemented or proposed, and the timing of proposed implementations. It should be noted that 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 (34.4 kV)[14], it considers the lines distribution assets, given the voltage.

BVES' wildfire preventative strategy and programs encompass five main components and align with best practices. Together the five components create a comprehensive wildfire preparedness and response plan with an overarching focus on stringent construction standards, fire prevention through system design, proactive operations and maintenance programs, and well-socialized operating procedures and staff training. Figure 4-1 outlines the five main components.

Figure 4-1. Preventative Strategy & Program Overview

Source: BVES

- **Design & Construction**: These strategies consist of system, equipment, and structure design and technical upgrades. The practices in this category aim to improve system hardening to prevent contact between infrastructure and fuel sources, such as vegetation. For example, BVES plans to upgrade the Radford Line with a covered wire, mitigating the risk of bare line contact with vegetation or other fuel sources.
- **Inspection & Maintenance:** These strategies consist of assessment and diagnostic activities as well as associated corrective actions. The practices in this category aim to ensure all infrastructure is in working condition and vegetation adheres to defined minimum distance specifications.

[14] 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

- **Operational Practices:** These strategies consist of proactive, day-to-day actions taken to mitigate wildfire risks. The practices in this category aim to ensure BVES is prepared in high-risk situations, such as dry, windy environmental conditions. For example, should the weather forecast predict NFDRS high-risk warning conditions, the Wildfire Information Protection Team (WIPT) will begin to prepare the system for a potential de-energization event, if needed.
- **Situational & Conditional Awareness:** These strategies consist of methods to improve system visualization and awareness of environmental conditions. The practices in this category aim to provide tools to improve the other components of the Plan. For example, camera installation will improve system and vegetation inspection and maintenance practices.
- **Response & Recovery:** These strategies consist of procedures to react to de-energization, wildfire, or other related emergency conditions. The practices aim to formalize protocols for these situations, so BVES can provide an adequate response and recovery.

BVES has also outlined emergency preparedness plans, including customer support and communications protocols, as well as performance metrics to monitor its Plan over time.

4.3 Detailed Strategy & Program Timing Overview

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 in Section 4.1. Table 4-1 below outlines the sub-practices and their implementation status since the last WMP filing.

Table 4-1. Prevention Strategy Program Descriptions & Updates

	Mitigation Measure	Description	Status
Design & Construction			
1	Pineknot Substation Upgrades	Technical and safety upgrades to prevent equipment exposure to the elements and human contact	Complete
2	Ute Undergrounding	Asset transfer from SCE; line undergrounding to mitigate proximity to forested areas	Conducting preliminary planning & discussions.
3	Fuse Upgrades	Conventional fuse replacements with current limiting fuses and electronic programmable (vacuum switch) tripsaver technology to limit potential sparking when faults occur	In progress. 38% complete.
4	Tree Attachment Removal Project	Removal of tree attachments to avoid proximity of fuel and ignition sources	In progress. 22.6% complete.
5	Pole Loading Assessment & Remediation Program	Increase rate of pole assessments to identify pole issues, which can result in wildfires, sooner	In progress. 28.8% complete.
6	Covered Conductor Replacement Pilot Program	Pilot to determine the effectiveness of using covered tree wire conductor to test feasibility of a larger rollout	50% Complete. ECD April 2020.

7	Covered Conductor Wrap Pilot Program	Pilot of a wire wrap for high-risk wires to test feasibility of a larger rollout	As of this point, not considered acceptable for use.
8	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 ECD October, 2020.
Inspection & Maintenance			
9	First Annual On-Ground Inspection (GO 165)	One annual system patrol to inspect the condition of assets to avoid faults, which can result in fires	Completed.
10	Second Annual On-Ground Inspection	One more system patrol in addition to the annual GO 165 patrol to ensure all assets are in good condition to avoid faults, which can result in fires	In progress. ECD February 2020.
12	Electrical Preventative Maintenance Program	System examination using additional diagnostics on assets to further inspect the condition of assets	Complete.
13	LIDAR Inspection	Light Detection and Ranging (LIDAR) inspections of the overhead facilities in difficult-to-patrol areas to visualize vegetation growth proximity to the system for targeted maintenance	In progress. ECD February 2020.
14	GIS Data Collection & Sharing	Geographic Information System (GIS) database on system infrastructure for asset management and planning with key stakeholders	In progress.
15	Vegetation Management Plan	Vegetation maintenance program to avoid system proximity, which may cause wildfires	In progress.
Operational Practices			
16	Operational Considerations / Special Work Procedures	Protocols and procedures for staff during high-risk fire conditions	Completed.
17	Automatic Recloser Upgrades	Recloser replacement to reduce electrical sparking, while also helping mitigate power outages and equipment damage	In progress. ECD March 2020.
18	Emergency Reporting	Protocols and procedures for staff when third-parties (e.g. customers) report potential fires, including "arcing, sparks, smoldering, smoke, or fire"	Completed.
19	Wildfire Infrastructure Protection Teams	Roles and responsibilities for staff to respond to protect system infrastructure in case of emergencies	Completed.
Situational & Conditional Awareness			
20	SCADA Installations	Included in the Grid Automation project	In progress. ECD March 2020.

21	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 case of a wildfire or related emergency	Completed.
22	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.
23	BVES-Owned Weather Stations	Monitoring of BVES-specific weather stations in strategic locations to evaluate forecasted weather and monitor potential extreme fire conditions	55% complete. ECD April 2020.
24	Weather Forecasting	Analysis of weather feeds to predict 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	In progress
25	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
26	Grid Automation	Grid automation to improve system responses to prevent wildfires and enhance safety	In progress. 45% complete.
Response & Recovery			
27	PSPS Protocols	Protocols and procedures to respond to and recover from de-energization events, which proactively prevent wildfires	Completed.
28	Post Incident Recovery, Restoration & Remediation	Protocols and procedures to respond to and recover from any wildfire or related emergency events	Completed.

Completed or Implemented as Ongoing Program | On Track | Not Started

Source: BVES, 2019

4.4 Cost Information

BVES has incorporated some costs of planned measures into the 2018 GRCs. However, due to recent regulatory updates, BVES has updated its WMP and some proposed measures have not been previously captured. Table 4-2 below outlines the proposed costs and cost recovery of the measures included in this plan.

Table 4-2. Mitigation Measures Cost Information

	Mitigation Measure	Cost Covered Previously	Cost Recovery
Design & Construction			
1	Pineknot Substation Upgrades	Y	GRC[A]
2	Palomino Substation Safety and Technical Upgrades	Y	GRC[A]
3	Ute Undergrounding	N	Separate Application to Commission $3.5 million
4	Construct an Energy Storage Facility within BVES' Service Territory	N	Separate Application to Commission Cost TBD
5	Critical Infrastructure PSPS Renewable Avoidance Package	N	Cost Recovery TBD Cost TBD
6	Fuse Upgrades	N	Memorandum Account[B] $5.2 million total ($2.6 million/year)
7	Tree Attachment Removal Project	Y	GRC[A]
8	Evacuation Route Hardening (Pilot Program)	N	Memorandum Account[B] $200,000
9	Pole Loading Assessment & Remediation Program	Y	GRC[A]
10	Radford Line Covered Conductor Replacement Project	N	Memorandum Account[B] $5.6 million
11	Covered Wire Installation Program – 35.5 kV System	N	Memorandum Account[B] $10,931,962 (6-year project) $1,832,933/year
12	Covered Wire Installation Program – 4 kV System	N	Memorandum Account[B] $35,130,371 (10-year project starting 2021) $3,513,037/year
13	Alternative Technologies (Down Wire Detection Relay Installment Program, Rapid Earth Fault Current Limiter (REFCL), Install On-line Diagnostic Technology Insertion, etc.)	N	Cost Recovery TBD Cost TBD
Inspection & Maintenance			
14	First Annual On-Ground Inspection	Y	GRC[A]

15	Second Annual On-Ground Inspection	N	Memorandum Account[B] $90,000/year
16	Electrical Preventative Maintenance Program	Y	GRC[A]
17	LIDAR Inspection	N	Memorandum Account[B] $240,000/year
18	GIS Data Collection & Sharing	Y	GRC[A]
19	Vegetation Management Plan	Y	GRC[A] and FHPMA[C]
20	Forester Consulting Services	N	Memorandum Account[B] $145,000/year
Operational Practices			
16	Operational Considerations / Special Work Procedures	Y	GRC[A]
17	Automatic Recloser Upgrades	Y	GRC[A]
18	Emergency Reporting	Y	GRC[A]
19	Wildfire Infrastructure Protection Teams	Y	GRC[A]
Situational & Conditional Awareness			
20	SCADA Installations	Y	GRC[A]
21	GIS-Based Applications (e.g. Outage Management System)	Y	GRC[A]
22	Web-Based Weather Resources	Y	GRC[A]
23	BVES-Owned Weather Stations (Integrate all 20 stations with SCADA)	N	Memorandum Account[B] $27,000
24	Weather Forecasting (Consulting services)	N	Memorandum Account[B] $45,000
25	Remote Monitoring (Cameras)	N	Memorandum Account[B] $500,000 (2-year project) $250,000/year
26	Grid Automation	Y	GRC[A]
Response & Recovery			

27	PSPS Protocols	Partial	GRC[A] and Memorandum Account[B] $42,000
28	Post Incident Recovery, Restoration & Remediation	Y	GRC[A] plus CEMA if applicable

[A] Expense is addressed in the BVES' General Rate Case A.17-05-004 submitted on May 1, 2017, approved by D. 19-08-027 August 15, 2019.
[B] Expense not covered in BVES' General Rate Case Decision 19-08-027 of August 15, 2019; therefore, to be covered by memorandum account for WMP.
[C] BVES' Fire Hazard Prevention Memorandum Account (FHPMA).
Source: BVES

5. WILDFIRE MITIGATION STRATEGY AND PROGRAMS

Leveraging the risk-based decision-making framework, BVES has enhanced its existing wildfire mitigation practices. The updated programs and practices are categorized into 5 key areas, including: (1) design and construction, (2) inspection and maintenance, (3) operational practices, (4) situational/conditional awareness, and (5) response and recovery. These areas align with those identified in the risk-based decision-making framework. Each subsection is further divided into planning, execution, and cost components, providing details about how the practices mitigate fires, the financial impact of each practice, the time required to establish each practice, and any applicable regulatory requirements. All mitigation practices in this section will be reviewed annually to evaluate progress and determine if modification to the Plan is appropriate.

5.1 Design and Construction

The first category, Design and Construction, encompasses practices that relate to system infrastructure or design, such as design and technical upgrades to substations, poles, wires, and other utility structures. Notably, BVES has traditionally designed its system to provide safe, reliable power to customers in alignment with best practices from other utilities. However, some of these practices, such as the use of bare wire, have been reexamined in the context of wildfire risks. This section details the updated practices.

5.1.1 System Design

5.1.1.1 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 an underground and 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 would replace all substation equipment with enclosed pad mount transformers, voltage regulators, re-closers, and bus work, further enhancing wildfire mitigation and reliability.

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

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

5.1.1.2 Safety and Technical Upgrades of Palomino Substation

Plan: BVES will convert the existing Palomino Substation from an overhead-type to an underground and 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 would replace all substation equipment with enclosed pad mount transformers, voltage regulators, re-closers, and bus work, further enhancing wildfire mitigation and reliability.

Execution: The project is slated for completion in 2020 (1-year project).

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

5.1.1.3 Undergrounding the Ute Lines

Plan: The undergrounding of the Ute Lines is a proposed project which would involve Southern California Edison (SCE) transferring its Ute Lines (34.5 kV) assets to BVES. This asset 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. These lines provide approximately 72% of supply capacity and under normal conditions 100% of BVES' supply loads. If the transfer is approved, BVES would convert the assets from an overhead system located in the forestry area to underground facilities alongside a county road.

BVES proposes taking control of these lines due to complications with 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 taking control of these lines and converting them to underground facilities along the side of the existing road, BVES will remove overhead facilities from forested areas. This removal will result in enhanced system safety, wildfire risk mitigation, and reliability.

Execution: Per Commission Decision 19-05-040 of May 30, 2019, BVES will file an application with the Commission to transfer the Ute Lines to BVES from SCE. Once approved, BVES expects the project to take 2 years to complete (timeline includes planning, permitting, civil construction, and electrical installation). BVES anticipates filing an application with the Commission by October 2020.

Expense: The cost of undergrounding the Ute Lines is not addressed in BVES' General Rate Case Commission Decision 19-08-027 of August 15, 2019. The initial estimated for the cost of this underground project is $3.5 million. Cost will be refined through a competitive bidding process and included in the BVES application to the Commission.

5.1.1.4 Construct an Energy Storage Facility within BVES' Service Territory

Plan: BVES proposes to construct an energy storage project of approximately 5 MW/15 MWh (3-hour) Lithium-Ion NMC BESS utility-grade battery connected to the Bear Valley Solar Energy Project within the utility's service territory. This project would complement the Bear Valley Solar Energy Project (BVSEP), 8-megawatt (MW) alternating current single-axis tracker solar generation facility, to be constructed in the BVES service area. The BVSEP is proceeding under BVES Application 19-03-008. The purpose of the storage project would be to minimize the impact of the loss of all Southern California Edison (SCE) energy imports to the BVES service area due to SCE directed PSPS of the SCE supply lines. SCE lines are subject to PSPS under certain fire threat conditions and while these lines may be required to be de-energized by SCE, the BVES service area may not require PSPS. This project would allow BVES to internally supply its customers by utilizing its peaking power plant (8.4 MW), the BVSEP and the battery.

Execution: BVES is in the planning stages for this project and expects to file an application with the Commission for the project should it be determined that the project is in the best interest of BVES's customers.

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.

5.1.1.5 Critical Infrastructure PSPS Renewable Avoidance Package

Plan: BVES proposes to install utility owned (or partially owned) solar and battery sets at critical infrastructure within its service territory to maintain electric service in case of a PSPS, wildfire, or other outage event. The project would be 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. SCE lines are subject to PSPS

under certain fire threat conditions and while these lines may be required to be de-energized by SCE, the BVES service area may not require PSPS.

Execution: During the period this plan, BVES would identify specific critical infrastructure and capacity requirements to develop a prioritized list of solar and storage projects. The utility would then develop specific projects, costs and any cost sharing for candidate facilities. These projects would be included in the next WMP update and BVES would take appropriate regulatory process action to implement the projects.

Expense: BVES has not determined the full cost of the project. Once costs are determined, BVES will include these in the appropriate regulatory process for this program.

5.1.2 Equipment Design / Application Focus Areas

5.1.2.1 Fusing

Plan: Fuses refer to devices that protect the distribution system from faulted or damaged lines and equipment. BVES, in addition to other CA and nationwide utilities, has historically used conventional fuses to protect lines; however, many utilities are beginning to replace their conventional fuses with current limiting fuses (non-expulsion, ELF) on branch line fusing opportunities system wide.[15] BVES proposes to follow this trend as well as install electronic programmable fused trip savers (vacuum style) system-wide such as the S&C TripSaver II. Conventional fuses expel hot particles and gases when operated, which can start fires. 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 planned to continue this rollout over time, beginning in June 2019, until all conventional fuses have been 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. Table 5-1 shows the approximate number of fuses that will be replaced by year.

Table 5-1. 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 January 31, 2020, BVES has replaced a total of 612 conventional fuses with 29 electronic fuses and 583 current limiting fuses.

Expense: The cost of implementing this fusing plan was not addressed in BVES' General Rate Case Commission Decision 19-08-027 of August 15, 2019. BVES estimated the total cost of this fusing project to be $5.2 million (or $2.6 million for the period of this plan). Therefore, BVES requests by approval of this Wildfire Mitigation Plan, that the Commission authorize BVES to establish a memorandum account to

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

track and recover the expenses related to this project not included in Base Rate Revenue Requirement (BRRR).

5.1.3 Structure Design

5.1.3.1 Tree Attachment Removal

Plan: Tree attachments are pieces of electrical infrastructure fastened to trees for infrastructural support. Due to its original system design, BVES had over 1,200 existing tree attachments on 16 distribution circuits. Given that tree attachments introduce significant risk of heat and fuel source contact, BVES has been removing them.

Execution: As noted above, BVES has begun removing its tree attachments and plans to continue removals at a rate of approximately 240 attachments each year. As of January 31, 2020, BVES has removed 273 tree attachments and installed 149 new poles. The utility estimates that all attachments will be removed by 2022.

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

5.1.3.2 Evacuation Route Hardening

Plan: BVES's service area has predetermined routes to evacuate the public in the event of a wildfire due to any cause. Maintenance and fortification of BVES facilities along these routes is critical to ensure they do not fail and limit mobility along the evacuation routes.

Execution: BVES proposes a pilot program to test various solutions such as fire-resistant overhead facilities and protecting existing wood poles with fire resistant and strengthening materials in its 2020-2021 WMP submission. 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.

Expense: The utility estimates a total expense of approximately $200,000 in capital expenses (CAPEX) 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 requests by approval of this Wildfire Mitigation Plan, that the Commission authorize BVES to establish a memorandum account to track and recover the expenses related to this project not included in BRRR.

5.1.4 Pole Loading Assessment and Remediation Program

Plan: BVES currently has a program to assess and remediate noncompliant distribution poles that pose a fire risk in compliance with GO 95. The utility is executing a plan to significantly accelerate this program by increasing its annual pole evaluation to 2,000 poles per year. Since the entire BVES service area is in the High Fire-Threat District (Tier 2 and 3), any pole failure is considered a high fire risk. By assessing poles and remedying failures at a faster rate, BVES can significantly reduce its fire risk.

Execution: BVES is evaluating approximately 8,000 wood poles in the BVES service area over a five-year period (2018 to 2022) as described in BVES' 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 January 31, 2020, has evaluated 2512 poles; 1039 failed the inspection criteria; 425 poles were replaced and 101 remediated. Maintenance action for the remaining failed poles is being planned. As noted above, this is an ongoing project.

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 anticipated.

5.1.5 Covered Conductor

Plan: Covered conductors are any conductors (wires) protected or "covered" by layers of insulation. Vendors have designed these wires, so they can withstand contact with vegetation and/or other debris. Bare wires have been used because they provide 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. However, BVES has recently reevaluated its structure design in the context of wildfire risk and decided to replace bare conductors with covered conductors first on high-risk wires to mitigate risks as much as possible.

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

- **Covered Conductor Replacement Pilot Program:** The utility replaced approximately 3 circuit miles of bare wire 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 Priority Wire 394.5 AAAC performed well and met all of BVES's expectations. The utility has also received covered tree wire from another vendor, Southwire 336.4 ACSR, and intends to replace approximately 3 circuits this wire before May 1, 2020. If successful, this will provide BVES an additional vendor for covered tree wire.

- **Covered Conductor Wrap Pilot Program**: The utility 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 will 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 for several reasons but primarily due to ampacity limitations on existing wire not being available and sufficiently research and tested. 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.

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 risk of wildfires out of all of BVES' overhead facilities. The line is located in a densely vegetated area that is difficult to patrol, so BVES believes that replacing the line completely will provide the greatest protection.

As noted in BVES Advice Letter No. 374-E of November 20, 2019, when BVES bid out the design and construction project, the costs were significantly higher than the utility had originally planned ($2,500,000). BVES determined that it would be prudent and reasonable to take the following action:

- Implement operational measures to mitigate the risk of wildfire from the Radford Line.
- Bid out the design of the Radford Line Covered Conductor Replacement Project.
- Once, the design was firmed up, bid out the construction project.

Separating the design and construction project was intended to remove construction uncertainties so that construction bidders could remove some project risk contingencies and offer a more favorable price.

Execution: The utility intends to pursue replacing bare conductor with covered tree wire based on the results of the covered conductor pilot programs. These projects are discussed further on in this section. In its previous WMP, BVES noted that there was risk that the Radford Line Covered Conductor Replacement Project may have to be deferred until 2021. The design of the project was completed in December 2019 and the construction work was bid out in a competitive Request for Proposal (RFP). BVES expects to award the project in June 2020 and complete construction by October 2020.

Expense: No further expense is expected on the covered conductor pilot projects as these are completed. The Radford Line Covered Conductor Replacement Project is expected to cost a total of $5,600,000. This cost is not addressed in BVES's General Rate Case Commission Decision 19-08-027 of August 15, 2019. Therefore, BVES requests by approval of this Wildfire Mitigation Plan, that the Commission authorize BVES to establish a memorandum account to track and recover the expenses related to this project not included in BRRR.

Covered Wire Installation Program – 35.5 kV System: BVES plans to cover all sub-transmission lines (34.5 kV) in the HFTD Tiers 2 and 3. This action will result in the entire 34.5 kV system in the HFTD being underground or covered; thereby, reducing 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: The utility estimates a total expense of $10,931,962 in CAPEX 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, BVES requests by approval of this Wildfire Mitigation Plan, that the Commission authorize BVES to establish a memorandum account to track and recover the expenses related to this project not included in BRRR.

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; thereby, significantly reducing 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: The utility estimates a total expense of $35,130,371 in CAPEX 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, BVES requests by approval of this Wildfire Mitigation Plan, that the Commission authorize BVES to establish a memorandum account to track and recover the expenses related to this project not included in BRRR.

5.1.6 Alternative Technologies

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

- **Down Wire Detection Relay Installment Program:** Installs 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. 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."
- **Install On-line Diagnostic Technology Insertion:** Installs technology that monitors for power line developing faults and vegetation contact.

The utility's Grid Automation project approved in BVES's General Rate Case Commission Decision 19-08-027 of August 15, 2019 will install a service area network and communication links over the next three years, which will among other things offer the capability to support deployment of the above technologies as they become ready for field installation.

5.2 Inspection & Maintenance

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

5.2.1 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, LIDAR inspection, and GIS data collection and sharing. The list below outlines the plans for each of these inspections.

- **On-Ground Inspection**: In compliance with GO 165, BVES has established an Inspection Program that requires overhead facilities to undergo an on-ground patrol inspection each year. BVES conducts an additional, independent patrol 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. In addition to patrolling, BVES conducts a detailed on-ground inspection at least every five years. The list below defines the difference between these two types of inspections.
    - A "patrol inspection" is a simple 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 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 each piece of equipment. These inspections are designed to identify any existing defects, including minor ones. 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, etc.

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.[16]

- **Electrical Preventative Maintenance Program**: This program assesses major equipment assets located in BVES substations and in the field at various 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 emergent repairs and/or replacement of equipment.

- **LIDAR Inspection**: BVES conducted 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. While most often acquired via helicopter or fixed wing flights, LIDAR can also be captured 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 most likely be utilized. This relatively quick and accurate inspection will allow BVES to resolve vegetation issues before making contact with bare conductors. BVES's plan is to conduct two LIDAR sweeps per year to evaluate effectiveness of clearance efforts and identify any potential wildfire hazards.

- **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 regularly 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 CAL FIRE, and plans to provide its data in accordance with CPUC proceeding I17-06-027, 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, Operations & Planning Manager, and Director.

Execution: BVES currently conducts on-ground patrols and detailed maintenance inspections and GIS data collection. The utility proposes to implement an additional on-ground patrol, LIDAR aerial inspection, electrical preventative maintenance program, and data sharing with relevant agencies by request, upon approval by the CPUC.

[16] 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.

Expense: The cost of several of the system inspection and maintenance programs is partially included in BVES' 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 requests for the following practices not currently included in the most recent GRC (Decision 19-08-027 of August 15, 2019) that by approval of this Wildfire Mitigation Plan, that the Commission authorize BVES to establish a memorandum account to track and recover the expenses related to the above proposed inspection programs not included in BRRR:

- The second annual patrol to be performed by a third party, which is estimated to cost $90,000 per year.
- LIDAR Inspection, which is estimated to cost $120,000 per sweep. Therefore, the LIDAR inspection program costs would be $220,000 per year.

5.2.2 Vegetation Inspection and Management Plan

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 frequent 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.[17] 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 clearance specifications identified.
- **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.
- **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 and exceed those outlined in Public Utilities Code, GO 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 to go beyond the regulated vegetation clearance standards. These specifications include:

[17] 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.

- A minimum radial clearance of 72 inches between bare conductors and vegetation. (BVES' bare conductors operate between 2,400 or more volts, but less than 72,000 volts, which means it must have a minimum radial clearance of 48 inches.)
- No vertical coverage above BVES sub-transmission lines (34,500 V).
- 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' contractor currently conducts vegetation maintenance on the system. To ensure quality, BVES conducts frequent 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. 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 additionally plans to hire a full-time contract utility forest in its service territory as part of the BVES team. The contract forester's job duties would 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' General Rate Case A.17-05-004 and through BVES' 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 beginning in 2020. The cost of implementing the Forester program was not addressed in BVES' General Rate Case Commission Decision 19-08-027 of August 15, 2019. Therefore, BVES requests by approval of this Wildfire Mitigation Plan, that the Commission authorize BVES to establish a memorandum account to track and recover the expenses related to the above proposed program not included in BRRR.

5.3 Operational Practices

The third wildfire prevention category, Operational Practices, encompasses standard company procedures that relate 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.

5.3.1 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, depending on the weather and system demand. 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 set to not reclose.
    - Auto-Recloser field trip settings adjusted for summer load.
    - Radford 34kV 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.[18] The predictive service provides a forecast on fuel dryness and high-risk days as indicated in Table 5-2 below.

Table 5-2. 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.

[18] 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 Table 5-3 below.

Table 5-3. Example NFDRS Weekly Forecast

System	Sun	Mon	Tues	Wed	Thurs	Fri	Sat
SC09-Western Mountains							
SC10-Eastern Mountains							
SC11-Southern Mountains							

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' 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 Table 5-4 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.

Table 5-4. 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	No[1]	No[1]	Yes	Yes	Yes
TripSavers	Automatic	Automatic	Non-Automatic	Non-Automatic	Non-Automatic
Proactive De-energization (PDE)	No	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" 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" 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' current GRC. No additional expense is anticipated.

5.3.1.1 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 correction 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' plans in regard to these technologies.

- **Supervisory Control and Data Acquisition (SCADA) Installations**: BVES plans to install SCADA system-wide, which will allow for remote monitoring, operation, and control of its system. Currently, BVES has SCADA installed on a small part of its system but will expand its rollout. Once implemented, SCADA can help control the automatic reclosers, fast-curve settings, and IntelliRupters remotely.

- **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: BVES is developing plans to install SCADA system-wide and plans to begin the rollout in 2020 and finish by 2022. As for the automatic reclosers, BVES installed one in 2019 and plans to complete the installations by 2020.

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

5.3.1.2 Emergency Reports from Third-Parties

Plan: The Operations & Planning Manager has issued operational guidelines in the event BVES receives a report of potential fire such as "arcing, sparks, smoldering, smoke, and/or fire" or other emergency reports involving the overhead distribution system. Examples of reports include customer or 3rd party reported arcing, sparking, smoke, or fire sightings.

Execution: These procedures will be at the discretion of the Operations & Planning 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' normal operations and therefore, are covered through the GRC. No additional funding is needed at this time.

5.3.2 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' Emergency Response Team (ERT). Both teams consist of the Operations & Planning 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 Operations and Planning 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 Operations and Planning 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' normal operations and therefore, are covered through the GRC. No additional funding is required.

5.4 Situational & Conditional Awareness

The fourth category, Situational and Conditional awareness, consists of practices that enhance system and environmental visibility and monitoring.

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 limited staff resources. During normal operations, BVES staff is optimized to work during normal working hours and it has limited resources dedicated to afterhours. Therefore, BVES outlined several critical operations, listed below.

- **Information Requirements & Methods**: Critical information to BVES' wildfire mitigation decision making is weather (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 another highly useful information resource to BVES' situational awareness enhancements.

- **Roles & Responsibilities**: Key Field Operations staff must have real time access to this information. These staff include the Operations & Planning Manager, Field Operations Supervisor, Engineering Planning Supervisor, and Service Crew/Dutyman. Additionally, the Customer Care and Operations Support Superintendent must also 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 other mobile devices out in the field.

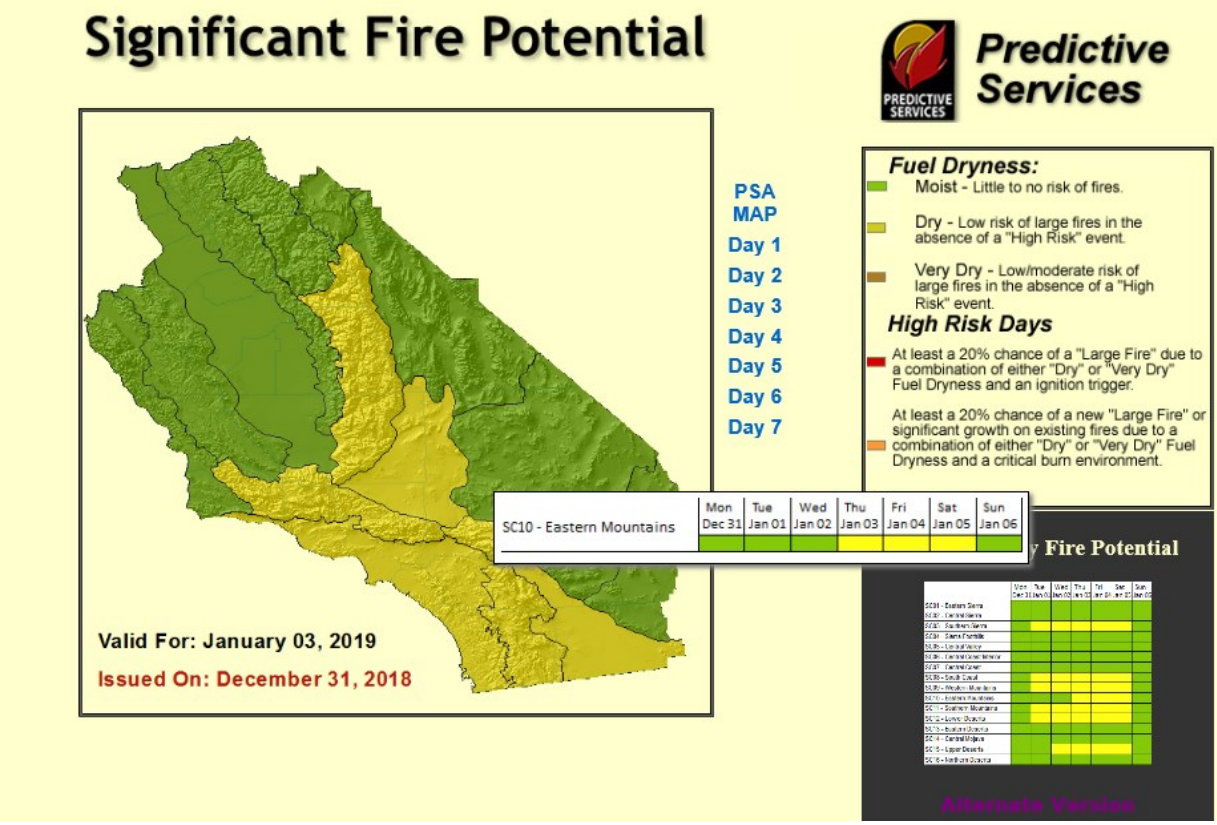
- **Implementation of Technologies to Communicate and Manage Information**: Technologies that will aid in communicating situational awareness information include SCADA, internet, intranet, social media, and other networked solutions.

To further enhance its situational monitoring, BVES has 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 is also considering remote monitoring via cameras.

- **Supervisory Control and Data Acquisition (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.
- **GIS Based Applications:** BVES has implemented an ESRI-based GIS system and runs several applications to improve situational awareness. Recently, BVES installed an Outage Management System (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. Figure 5-1 provides an example of real-time NFDRS rating system information monitored. 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.

Figure 5-1. NFDRS California South Observed Fire Danger Class Example



Currently, BVES monitors weather conditions using local weather services and ten recently 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 Plan.

- **BVES-Owned Weather Stations**: Since weather stations have been identified as wildfire risk-mitigation strategies, BVES installed 11 Orion Weather Stations and plans on installing an additional 9 stations by June 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 cell communications to help BVES obtain service territory-specific data and information at one-minute interval recordings. In addition to adding 10 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. The integration with SCADA will likely occur in 2021.
- **Weather Forecasting**: BVES does not have a dedicated meteorolgist on staff. Therefore, BVES relies on its Field Operations staff to interpret web-based weather feeds along with the raw data from its weather stations. Given BVES' small size, the utility does not consider it practical to hire fulltime meteorology staff. Instead BVES chose to contract out to a consulting meteorologist for weekly part-time forecasting services tailored to BVES' service area and to have the ability to obtain analysis of weather data during, before, and after certain extreme weather events. This

arrangement has proven to be very effective and has become an essential part of BVES's operational planning routine.

- **Remote Monitoring (via Camera):** BVES plans to install ALERT Wildfire HD Camera System to monitor its system in remote areas that are difficult to patrol on foot, such as the Radford Area. Four HD Cameras were already installed at the Snow Summit and Bear Mountain peaks. Additional, HD Camera locations have been identified by BVES and its partners in this effort, which are UCSD, Big Bear Fire Department, CalFire, San Bernardino Sheriff's Department and San Bernardino Fire Department. The HD Cameras will be installed over a two year period.
- **Grid Automation:** In the coming years, BVES plans to continue to implement grid automation into its system. Grid automation would enhance operational efficiency, safety, and wildfire prevention tactics by allowing remote monitoring and fault detection in real-time.
- **Situation Awareness Enhancement:** BVES plans to install a complete Distribution Management Control Center with the following equipment and applications that provide full infromation 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 2020. A detailed design plan will be developed in 2021 with the actual facility being constructed in 2022 to coincide with the SCADA and Grid Automation efforts being completed as the Distribution Management Control Center facility comes on line.
- **Implement iRestore APP:** BVES plans to implement the iRestore APP, which will provide First Responders (Big Bear Fire Department and San Bernardino Sheriff's Department – Big Bear Lake Detachment) and BVES's internal Damage Assessment Teams with 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 continuing through 2022.

Expenses: BVES has already implemented several of these situational awareness techniques, so costs have already been approved through previous rate cases. Other projects, such as Grid Automation are covered as part of BVES' normal operations and therefore, are covered through the GRC. No additional funding is required. The cost integrating the weather stations (total of 20 weather stations) into SCADA is estimated at $27,000 (capital) and weather consulting services is estimated at $45,000/year (O&M). Additionally, the utility estimates the iRestore will cost $67,860. The utility also estimates the HD Cameras total expense of $500,000 (capital) over the project's 2-year execution period, or $250,000 per year. These costs are not currently included in BVES's General Rate Case Commission Decision 19-08-027 of August 15, 2019. Therefore, BVES requests by approval of this Wildfire Mitigation Plan, that the Commission authorize BVES to establish a memorandum account to track and recover the expenses related to the above proposed projects not included in BRRR.

5.5 Response & Recovery

The fifth category, Response & Recovery, consists of reactive practices for high-risk conditions, including de-energization events and restoration activities.

5.5.1 Public Safety Power Shut-Off (PSPS) or 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. As explained in Section 3, 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.

It should be noted, however, that BVES is not able to 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.[19] Therefore, BVES proactively de-energizes facilities during any high fire-threat and high wind conditions in close consult and coordination with government(s) and agencies.

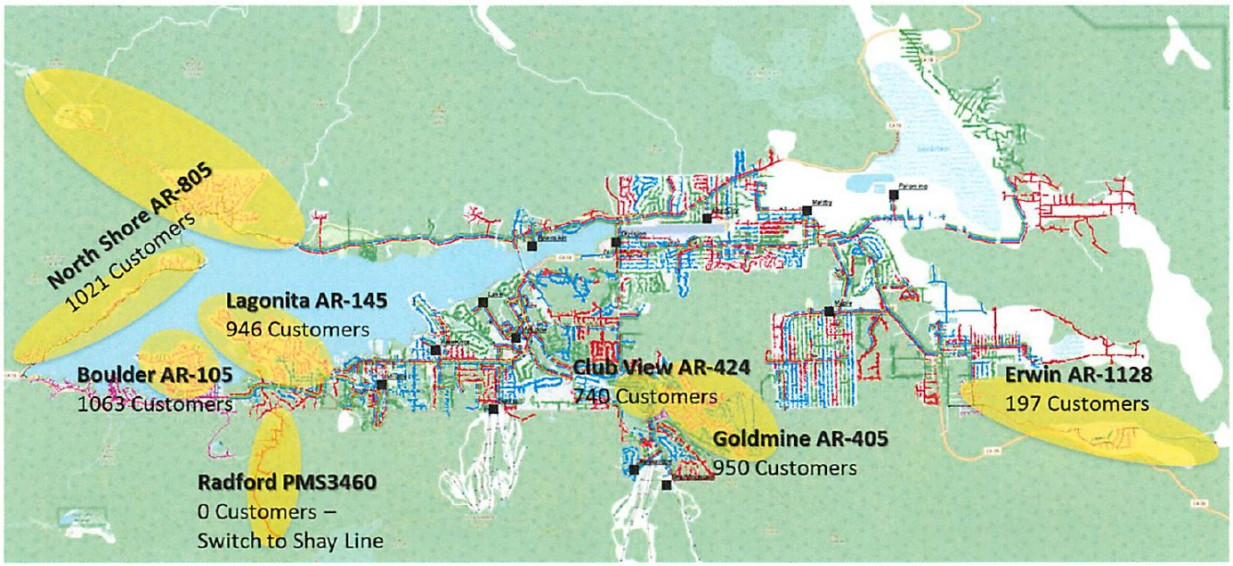
As described in Section 4, BVES faces substantial wildfire risk due to its climatic, weather, and topographical conditions, and therefore monitors the NFDRS and wind speeds regularly. These two variables contribute to extreme fire danger conditions. If the NFDRS is "red" or "orange," signals for high 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 Southern California Edison (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 very 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 5-2 and further outlined in Table 5-5 below. These line sections may be de-energized by "opening" the Auto-Reclosers (AR); each circuit affects a varying number of customers, as outlined in the table below.

[19] Note that health impacts the moisture content of plants. More dry or "less healthy" vegetation is more prone to cause fires.

Figure 5-2. "At-Risk" Line Sections



Source: BVES

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

Circuit (AR To Be Opened)	Number of Customers
Radford 34kV	0[20]
North Shore 4kV (Open AR)	1,021
Erwin 4 kV (Open AR 1128)	197
Boulder 4kV (Open AR 105)	1,063
Lagonita 4kV (Open AR 145)	946
Club View 4kV (Open AR 424)	740
Goldmine 4kV (Open AR 405)	950

Source: BVES

Execution: BVES' 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, notifications to stakeholders. Table 5-6 below outlines these procedures.

[20] When this line is de-energized, the load is shifted to the Shay 34kV line.

Table 5-6. PSPS Procedures

Fire Conditions	Planned Actions	Planned Notifications
Forecasted Extreme Fire Weather Conditions	• Monitor existing wind speed in "at risk" locations • Determine if conditions warrant specific actions • Communicate with Customer Service to ensure accurate communications with stakeholders	• Notify local government and agencies • Post notification of potential power outages on website and social media • Issue press release to local media
Imminent Extreme Fire Weather Conditions (Wind Speeds measured at 50 mph for > 3 seconds)	• Dispatch crews to monitor field conditions for dangerous conditions throughout service area and "at risk" locations • De-energize any power line that may pose a hazard	• Continue to coordinate with local government and agencies • Update notifications on website and social media to warn of potential for power shutoff • Issue updated press release to local media
Validated Extreme Fire Weather Conditions (Wind Speeds measured at 55 mph or greater for > 3 seconds)	• Monitor local wind gusts and de-energize circuits in "at risk" areas as gusts reach 55mph for 3 or more seconds • Patrol service area and "at risk" areas to monitor actual conditions • De-energize additional power lines as needed	• Continue to coordinate with local government and agencies • Update notifications on website and social media • Send notification via Interactive Voice Response (IVR) • Issue updated press release to local media • Notify CPUC and Warning Center at the Office of Emergency Services per protocols

Weather Subsides to Safe Levels	• Validate that extreme fire weather conditions have subsided to safe levels[21] • Conduct field inspections and patrols of de-energized facilities • Restore power once field inspections and patrols are completed	• Continue to coordinate with local government and agencies • Update notifications on website, social media and IVR • Issue updated press release to local media

Source: BVES

For the purpose of the procedures, the Operations and Planning 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 Operations and Planning 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 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, where cost-effective. 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 ensure their facilities remain operational and/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: The cost of Public Safety Power Shut-off (PSPS) Protocols is partially included in the base rate revenue requirement in BVES' General Rate Case A.17-05-004 approved in 2019. 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. Therefore, BVES requests by approval of this Wildfire Mitigation Plan, that the Commission authorize BVES to establish a memorandum account to track and recover the expenses related to the above proposed programs not included in BRRR.

5.5.2 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' Emergency Operations Center (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.

[21]Safe levels are defined as wind speeds in the affected area calming below 50 mph for a minimum period of 20 minutes. Crews may extend the calm period beyond 20 minutes, if they assess that further wind gusts greater than 50 mph are likely.

The restoration strategies and guidance assume that the BVES system is in its normal winter line-up as follows:

- Bear Valley Power Plant (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, that they 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 Operations & Planning 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, Radio Stations, etc.);
- 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), financial institutions, etc.;
- **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 (Southern California Edison (SCE) supply lines, Bear Valley Power Plant (BVPP), etc.)
- Sub-transmission circuits (34.5 kV)
- Substations
- Distribution circuits (4 kV)
- Feeders
- Distribution transformers
- Service Lines

Table 5-7 below provides guidance on the restoration priorities for sub-transmission circuits, substations, and distribution circuits. This guidance must be tempered by many factors including the actual cause of

the outage(s), available resources, time to conduct repairs, access to repair sites, etc. Therefore, the Operations & Planning Manager must have wide discretion when developing the specific restoration priorities and may choose to deviate from the general guidance.

Table 5-7. 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.

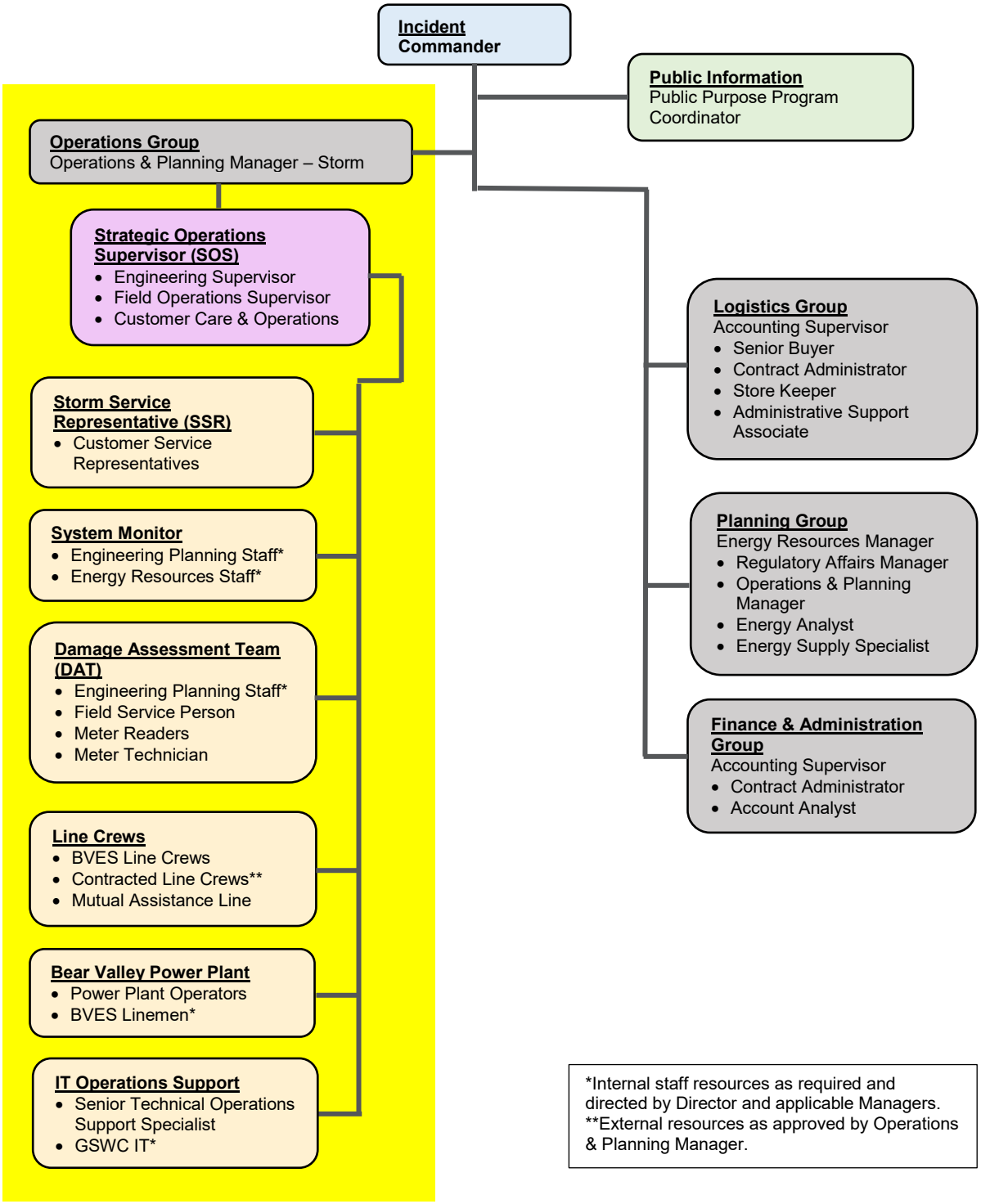
Source: BVES

Expense: These expenses are included as part of BVES' normal operations and therefore, are covered by its GRC. If applicable, BVES would also recover expenses through a Catastrophic Event Memorandum Account (CEMA) pursuant to Public Utilities Code Section 454.9. No further expense is needed at this time.

5.6 Emergency Planning and Preparedness

BVES responds to emergencies in accordance with its Emergency Preparedness and Response Plan, which is compliant with General Order 166 (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



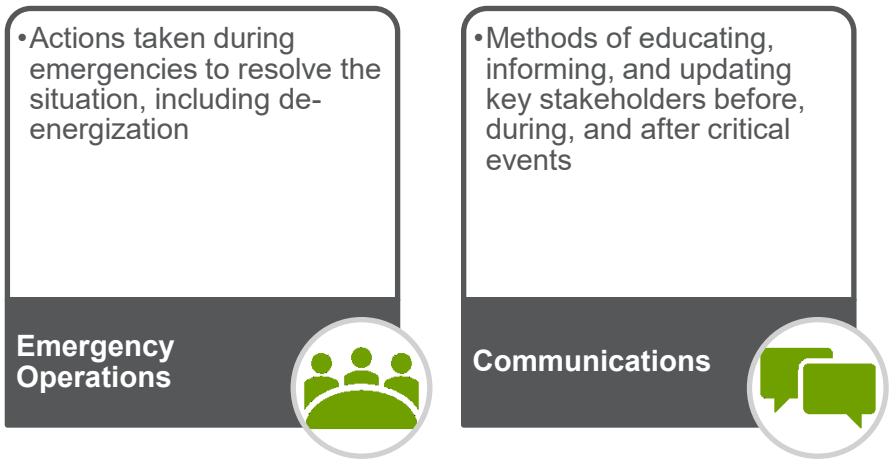
Source: BVES

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

5.7 Plan Overview

BVES believes it is vitally important to have proactive planning and close coordination with local governments, 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. Figure 5-4 below describes these two complementary components.

Figure 5-4. Emergency Preparedness and Response Components



Due to BVES' 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. Table 5-8 provides the stakeholder list. BVES will review the list annually and update it, as needed.

Table 5-8. BVES Emergency Preparedness and Response Stakeholder List

Stakeholder Group	Description
Customers	• Any person or organization who receives electricity from BVES

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

5.8 Emergency Operations

The first part of emergency preparedness is the operational protocols. This portion of the plan focuses on the specific steps BVES will take to deescalate emergency situations. These steps will include:

- Conducting and coordinating emergency response drills and exercises with emergency responders, regulatory agencies, and stakeholders.
- Operating according to the PSPS guidelines, including de-energization and re-energization strategies.
- Following procedures for operating distribution lines in affected areas.

BVES will continue to refine these operations in future iterations of the plan.

5.9 Emergency Communications

As stated above, the second part of the emergency preparedness and response protocols focuses on educating, informing, and updating key stakeholders. Reporting varies based on outage type, as outlined in the list below.

- **Major Outage:** 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 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 Commission 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.

Major Outages are to be 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.

5.9.1 Communications Plans by Stakeholder

The Customer Care & Operations Support Superintendent shall make (or cause to be made) all outage reports to local government, key stakeholders and customers per the BVES communications plan based on information provided by the Operations Group. The communications protocols vary slightly by stakeholder. For this reason, BVES has divided its communication plan into key stakeholder groups. Communications will involve two types of communications: (1) proactive preparation before emergencies occur and (2) reactive notifications during and after emergency events. The list below describes the exact 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 and emergency management activities. All communications will be in English, Spanish, and the top three languages in CA according to the US Census Bureau (Tagalog, Vietnamese, & Chinese).[22] Indigenous communities surrounding the service area are also being investigated to account for the unique languages representing English as a Second Language (ESL) speakers.
    - **Before Emergencies:** Proactive outreach will include regular messages related to fire prevention, such as vegetation management, distribution inspection de-energization policies, and operational initiatives. This engagement will occur through public workshops, BVES newsletters, social media, website posts, and other forms of media.
    - **During / After Emergencies:** Reactive notifications will include pre-planned statements in the case of de-energization activities and emergencies, including information about timing and location of such events. These notifications will occur through news outlets, including print, digital, and radio forums, website updates, social media updates, local

[22] Blatt, Ben, "Tagalog in California, Cherokee in Arkansas," Slate, May 13, 2014, https://slate.com/culture/2014/05/language-map-whats-the-most-popular-language-in-your-state.html.

government and agency media (e.g. City of Big Bear Lake's email blasts), and interactive voice response (IVR). Additional forms of communication may be leveraged as new technologies and software become available.

In addition to providing communications, BVES will also provide 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:** This engagement aims to inform and prepare relevant agencies, before, during, and after fire prevention or emergency activities. BVES envisions this engagement being a two-way communication channel to help facilitate communications with customers and manage the potential impacts of events.
    - **Before Emergencies**: The proactive briefings will center on how the plan impacts the distribution system as a whole. These briefings will occur through emails, trainings, and in-person meetings. In addition to briefings, BVES will solicit feedback from local government and agencies on its emergency preparedness communication plans and overall protocols.
    - **During / After Emergencies:** When an emergency occurs, BVES will notify all relevant local government and agencies immediately to ensure proper coordination of response. BVES will also provide its pre-prepared customer statements for staff to disseminate information to customers. Once notified, BVES will continue to provide timely communications until the situation has been resolved. These notifications will happen through phone and email.
- **Mountain Mutual Aid Association (MMAA) Participation:** The outreach and engagement with the MMAA will be similar to that of the local government and agency communications. Specifically, the goal of this engagement will be to inform, prepare, and coordinate closely with the group.
    - **Before Emergencies**: The proactive briefings will center on how the plan impacts the distribution system and members. These briefings will occur through emails, trainings, and in-person meetings. In addition to briefings, BVES will solicit feedback from MMAA on its emergency preparedness communication plans and overall protocols.
    - **During / After Emergencies:** When an emergency occurs, BVES will notify MMAA members immediately to ensure proper coordination of response. BVES will also provide its pre-prepared customer statements for staff to disseminate information to customers. Once notified, BVES will continue to provide timely communications until the situation has been resolved. These notifications will happen through phone and email.
- **CPUC Reporting:** CPUC communications will align with mandated standards.
    - **Before Emergencies**: The utility will notify the Director of Safety Enforcement Division (SED) within 12 hours of the power being shut off per ESRB-8. BVES will also notify the 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.
    - **During / After Emergencies:** BVES will provide a written report to the Director of SED no later than 10 business days after the shut-off event ends per ESRB-8. The utility will

also comply with all future analysis and report requests during and after any emergencies.

Outage data shall also be included in BVES' annual reliability indices report to the CPUC.

5.9.2 Plans to Prepare for and Restore Service

In the event of a wildfire or other emergency event, BVES will invoke its Emergency Preparedness and Response Plan and staff up its Emergency Operations Center to coordinate activities to restore service. The BVES restoration strategy and priorities was detailed in its Emergency Preparedness and Response Plan.

5.9.3 Restoration Resource Adequacy

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

5.10 Plan Compliance

The emergency preparedness and response plans described in this section comply with Public Utilities Code Section 768.6 and 8386[23,24]. Specifically, the plan complies with the following mandates:

- Sharing of plan 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.
- 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.
- Protocols for compliance with CPUC reporting guidelines.

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

5.11 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 and/or resulted in the degradation of the quality of utility service, BVES shall implement certain customer service actions as

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

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

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.

5.11.1 Support for Low Income Customers

The Customer Care team will freeze low income customers' accounts 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.

5.11.2 Billing Adjustments

The Customer Care team will freeze 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 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.

5.11.3 Deposit Waivers

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

5.11.4 Extended Payment Plans

The Customer Care team will freeze all payments on affected customers' account to avoid affecting their credit. All affected customers will be notified that an extended payment plan option is available for any past due payments.

5.11.5 Suspension of Disconnection and Nonpayment Fees

The Customer Care team will freeze affected customer accounts, so disconnections and nonpayment fees are not generated during the wildfire event. Once the emergency ends, the Superintendent and/or Specialist will contact the CC&B team to "close" all affected customer cases. This will automatically transition the customer's account back to the normal state. BVES will simultaneously begin assisting with service restoration and deposit waivers.

5.11.6 Repair Processing and Time

During emergencies, BVES will set up specialized repair teams to expedite repair processing. If additional support is needed, BVES will leverage mutual aid programs with other emergency response resources and will work with electrical contractors to ensure timely service restoration. Exact timing will be dependent on the nature of the situation.

5.11.7 Access to Utility Representatives

The BVES Engineering Inspector will arrange for connections and facilitate expedited services. Leveraging its IVR system, BVES will be able to handle thousands of phone calls simultaneously and divert customers to the appropriate utility representative.