



**Bear Valley
Electric Service**
A Division of Golden State Water Company

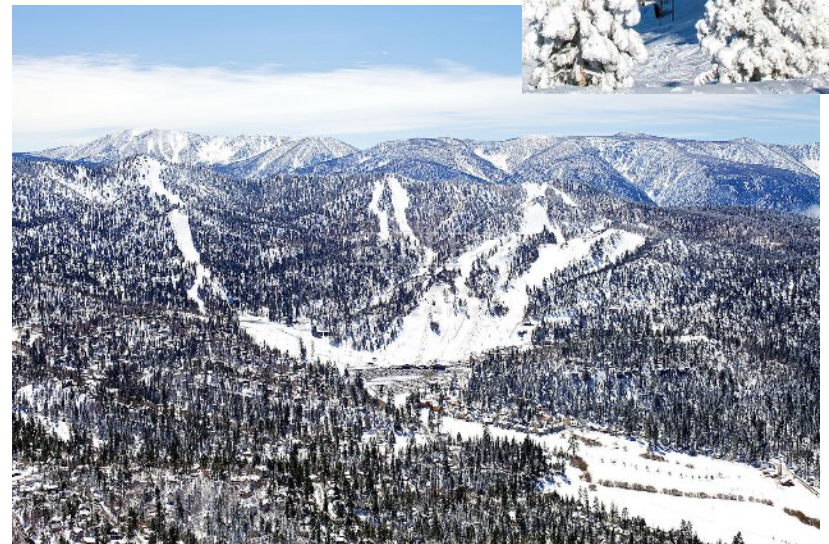
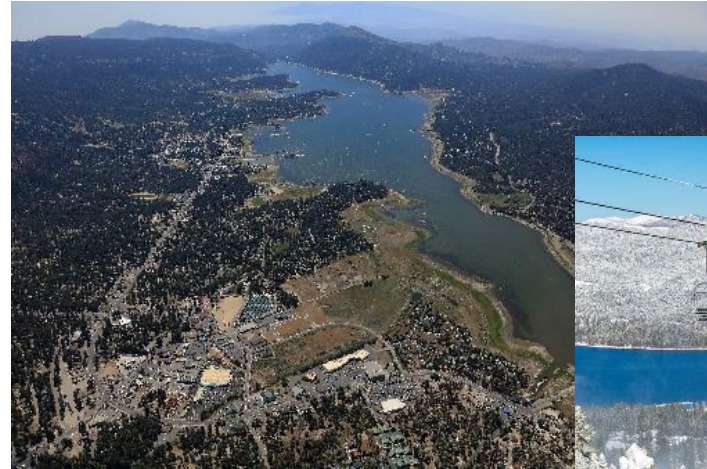
Wildfire Mitigation Plan Update R18-10-007 Workshop Phase 2

Bear Valley Electric Service

September 17, 2019

Key Discussion Points

- Where are we focused?
- What has been done so far?
- Working/not working?
- What Concerns/Problems/Delays have Arisen?



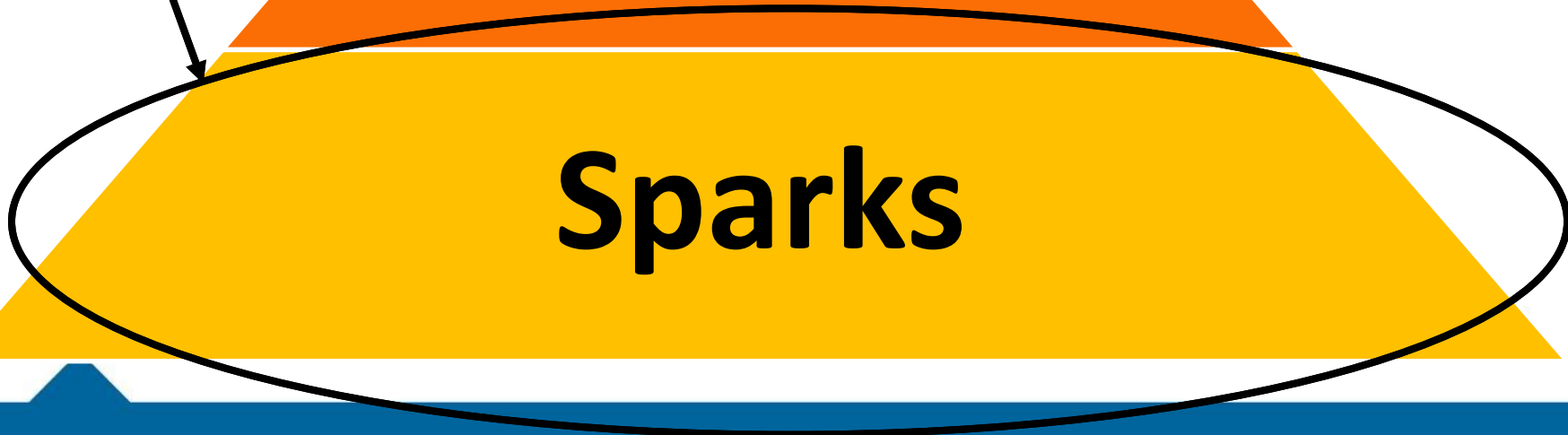
Where We Are Focused?

Wildfire

Fire

Sparks

**BVES WMP
aims to
eliminate
system sparks.**



What Has Been Done So Far?

Design and Construction



Mitigation Measure	Description	Status
Pineknott Substation Upgrades	Technical and safety upgrades to prevent equipment exposure to the elements and human contact	In progress. 23% complete. ECD November 2019.
Ute Undergrounding	Asset transfer from SCE; line undergrounding to mitigate proximity to forested areas	Conducting preliminary planning & discussions.
Fuse Upgrades	Conventional fuse replacements with current limiting fuses and electronic programmable (vacuum switch) TripSaver technology to limit potential sparking when faults occur WMP 2019-2020 Goal: Replace: 1,393 fuses	In progress. 9.9% complete.
Tree Attachment Removal Project	Removal of tree attachments to avoid proximity of fuel and ignition sources (5-year project to remove 1,207 tree attachments) WMP 2019-2020 Goal: Remove 242 tree attachments.	In progress. 22.2% complete.
Pole Loading Assessment & Remediation Program	Increase rate of pole assessments to identify pole issues sooner, which can result in wildfires (5-year project to assess 8,737 poles) WMP 2019-2020 Goal: Assess 1,747 poles.	In progress. 26.6% complete.
Covered Conductor Replacement Pilot Program	Pilot to determine the effectiveness of using covered tree wire conductor to test feasibility of a larger rollout	Received material. Planning project. ECD November 2019.
Covered Conductor Wren Pilot	Pilot of a wire wren for high risk wires to test feasibility of a	As of this point, not considered

Radford Covered Conductor

- 34.5kV Radford line is in the HFTD Tier 3
- BVES WMP 2019-2020
 - Convert Radford to covered conductors and hardened poles
 - Estimated cost \$2,500,000
- Bids averaged 2x estimate
- Re-bid with design phase in 2019 and construction phase in 2020
- Implemented operational measures to mitigate wildfire risk



What Has Been Done So Far?



Inspection and Maintenance

Mitigation Measure	Description	Status
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.
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	Starting September 2019. ECD October 2019.
Predictive-Based Maintenance	System examination using infrared sensors and electromagnetic inference systems	Completed.
Electrical Preventative Maintenance Program	System examination using additional diagnostics on assets to further inspect the condition of assets	Starting September 2019. ECD November 2019.
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	Starting September 2019. ECD November 2019.
GIS Data Collection & Sharing	Geographic Information System (GIS) database on system infrastructure for asset management and planning with key stakeholders	In progress.
Vegetation Management Plan	Vegetation maintenance program to avoid system proximity, which may cause wildfires	In progress.

What Has Been Done So Far?



Operational Practices

Mitigation Measure	Description	Status
Operational Considerations / Special Work Procedures	Protocols and procedures for staff during high-risk fire conditions	Completed.
Automatic Recloser Upgrades	Recloser replacement to reduce electrical sparking, while also helping mitigate power outages and equipment damage	In progress. ECD November 2019.
Emergency Reporting	Protocols and procedures for staff when third-parties (e.g. customers) report potential fires, including "arcing, sparks, smoldering, smoke, or fire"	Completed.
Wildfire Infrastructure Protection Teams	Roles and responsibilities for staff to respond to protect system infrastructure in case of emergencies	Completed.

What Has Been Done So Far?



Situational & Conditional Awareness

Mitigation Measure	Description	Status
Grid Automation	Grid automation (e.g. FLISR and SCADA) to improve system responses to prevent wildfires and enhance safety (4-year 4-phase project). WMP 2019-2020 Goal: Complete phase 1.	In progress. 22% complete.
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.
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.
BVES-Owned Weather Stations	Monitoring of BVES-specific weather stations in strategic locations to evaluate forecasted weather and monitor potential extreme fire conditions	50% complete. ECD November 2019.
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	Completed.
Remote Monitoring	Monitoring of system and assets in remote areas using HD cameras to improve situational awareness and maintenance of key assets	Not started.

What Has Been Done So Far?



Response & Recovery

Mitigation Measure	Description	Status
Public Safety Power Shut-Off (PSPS) Protocols	Protocols and procedures to respond to and recover from de-energization events, which proactively prevent wildfires	Completed.
Post Incident Recovery, Restoration & Remediation	Protocols and procedures to respond to and recover from any wildfire or related emergency events	Completed.

Working/Not Working?

- + Exacter surveys useful**
 - Found problems that a regular GO-165 ground inspection would have missed
- + Vegetation management clearances above the minimum required**
 - 72" Clearance likely contributed to unprecedented zero tree-contact events
 - General public & local government very supportive of trimming efforts
- Wrap covered wire pilot project**
 - Sourcing and engineering evaluations failed



What Concerns/Problems/ Delays have Arisen?

- **Lead time on current limiting fuses and FuseTripSavers is long due to high demand.**
- **Lead time on covered conductor is similarly long due to high demand.**
- **T&D constructions costs are higher than originally projected due to high construction demand in California.**
- **Difficult to find available contractors to conduct construction work.**
- **Many vendors pushing technologies not ready for prime time.**



Questions?



Bear Valley
Electric Service
A Division of Golden State Water Company