

# **Safety and Operations Committee Board Level Brief to CPUC and OEIS**

Paul Marconi, President, Treasurer, Secretary, & Safety Committee Chairman  
August 28, 2024

# Outline



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

- System Overview
- Safety Governance Model
- Safety Committee Topics & Recommendations
- Safety Performance
- Update on WMP Implementation Progress
- 2022 & 2023 SCA Recommendations Progress
- Lessons learned (internal & external sources)



# Service Area Overview



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**Location:** 32-sq. miles of rural and mountainous terrain at approximately 7,000 ft. in San Bernardino Mountains (80 miles East of Los Angeles).

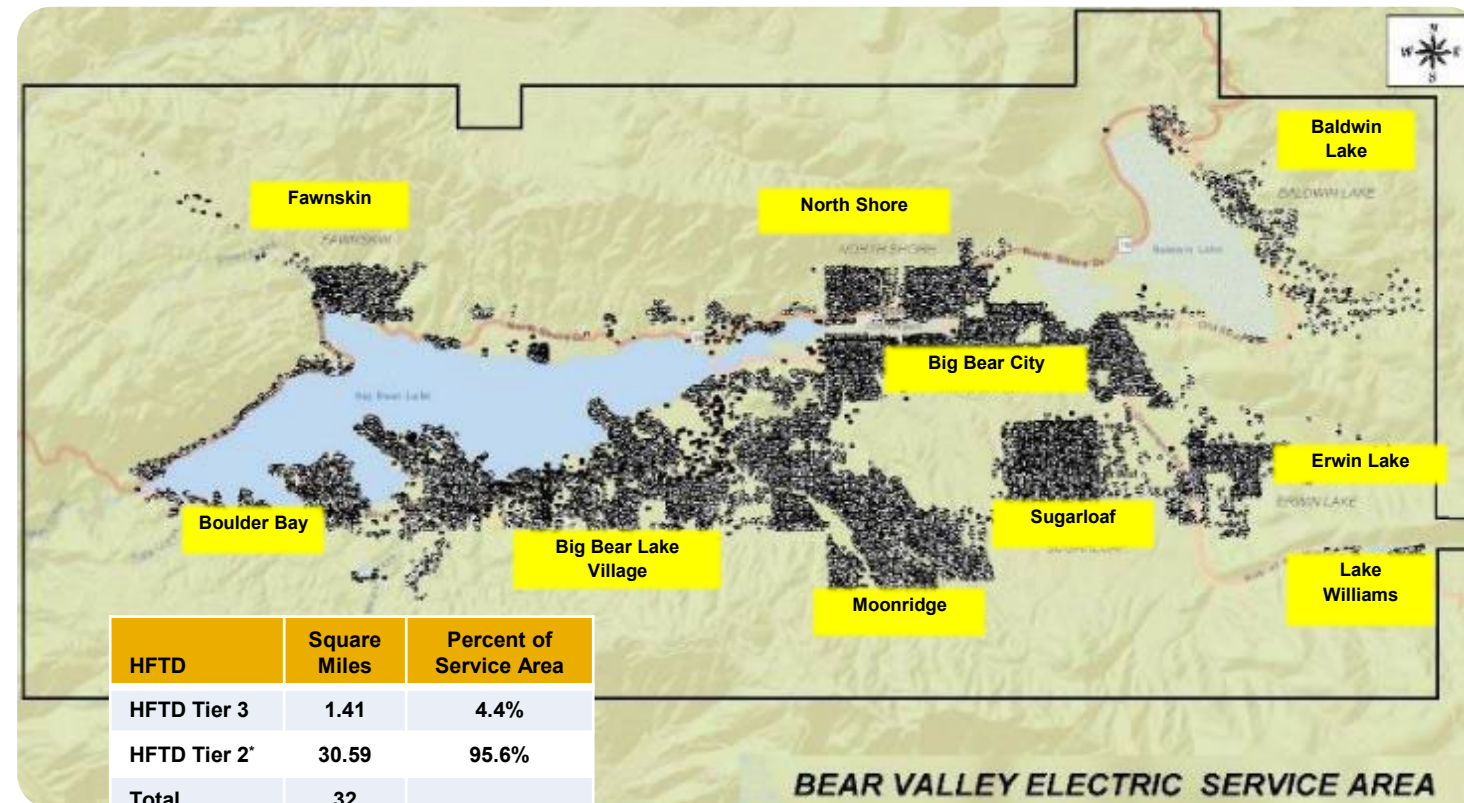
- Entire Service Area is > 3,000 ft. elevation requiring more resilient construction standards.
- Entire Service Area is in the High Fire Threat District Tier 2 and Tier 3

**Key jurisdictions:** County of San Bernardino, City of Big Bear Lake, U.S. Forest Service, CALTRANS.

**Customer Meters:** 24,822 total [Residential: 23,331; Commercial: 1,491; CARE: 1,775; AFN: 716; MBL: 163].

## Electrical System:

- Sub-transmission (34.5 kV)
  - 9.8 circuit miles bare overhead (OH) conductor (32.9%)
  - 19.1 circuit miles covered OH conductor (64.1%)
  - 0.9 circuit miles underground (UG) (3.0%)
- Distribution (4 kV)
  - 143.1 circuit miles bare OH conductor (60.8%)
  - 38.9 circuit miles covered OH conductor (16.6%)
  - 53.2 circuit miles UG (22.6%)
- Substations: 13
- Supply Lines: 39 MW total
- Bear Valley Power Plant: 8.4 MW
- Service Area Renewable Generation: 6.16 MW
- Load is winter & evening peaking
  - Historical peak: 46 MW (2021)
  - Load delivered: 138,272 MWh (2023)
  - 41.3% qualified to Renewable Portfolio Standards



\*1.78 sq. mi. (5.6%) is Big Bear Lake (no assets).

# Safety Governance

**Bear Valley Electric Service, Inc.**

Board of Directors

Safety & Operations Committee

Management Team

**Safety & Operations Committee is responsible for overseeing:**

- Preparation of BVES's wildfire mitigation plan and the assessment of BVES's compliance with the plan,
- Other activities intended to identify wildfire risks and other safety risks related to the operation and maintenance of the BVES electric utility system,
- Steps taken to reduce such risks and to respond to safety events, and
- Such other matters as set forth in the charter or delegated to the Committee from time to time by the Board.





# Safety Governance Model



# Safety & Operations Committee

## Topics



### 12 Months Prior Topics:

- The Committee is briefed each quarter in detail on the following: WMP Compliance; WMP initiatives, targets, progress, and challenges; safety metrics and performance; safety certification; and safety culture assessment recommendations status.
- Other topics:
  - Risk modeling improvements.
  - Results of Wildfire Awareness Survey and trends from past surveys.
  - Independent Evaluator 2022 Annual Report on WMP compliance.
  - Public Safety Power Shut-off (PSPS) Decision Process.
  - PSPS processes for local government, agencies, stakeholders, and customers (notifications and support).
  - Fast Trip/Fast Curve settings.
  - Preparations for fire season.
  - Implementation of fire potential index (FPI) model.
  - FireSight model output (asset risk and grid hardening prioritization).
  - 2023 Safety Culture Assessment Report.
  - Independent Evaluator 2023 Annual Report on WMP compliance (draft report).

# Safety & Operations Committee Recommendations & Outcomes



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## Last 12 Months Recommendations Include:

- That the Board authorize an increase to the 2023 Capital Investment budget to support WMP grid hardening projects scheduled for 2023.
- That the Board authorize a proposed 2024 Capital Investment budget to support WMP grid hardening initiatives scheduled for 2024.
- That Management engage an expert consultant to examine use of Fast Trip settings in the sub-transmission and distribution system.
- That the Board authorize an increase to the 2024 and 2025 Capital Investment budgets to support WMP grid hardening projects scheduled for 2024 and 2025.
- That the Board authorize an increase to the 2024 Capital Investment budget to support a WMP grid hardening project scheduled for 2024.
- The Committee agreed with Management's decision to accept and implement the recommendations of the 2023 Safety Culture Assessment (SCA).
- The Committee agreed with Management's proposed plan of action to implement the 2023 SCA recommendations.
- That the Board authorize an increase to the 2025 Capital Investment budget to support WMP grid hardening projects scheduled for 2025.

## 12 Months Prior Outcomes Include:

- Capital budget authorizations have allowed Management to order long lead equipment and material and complete WMP grid hardening projects according to the targets set forth in BVES's approved WMP.
- Management hired an expert consultant to examine use of Fast Trip settings in the sub-transmission and distribution system; results of this project are expected in December 2024.
- Management is implementing the recommendations of the 2022 and 2023 SCA conducted by Energy Safety.

# Safety Performance

## As of August 16, 2024, BVES's Safety Record:

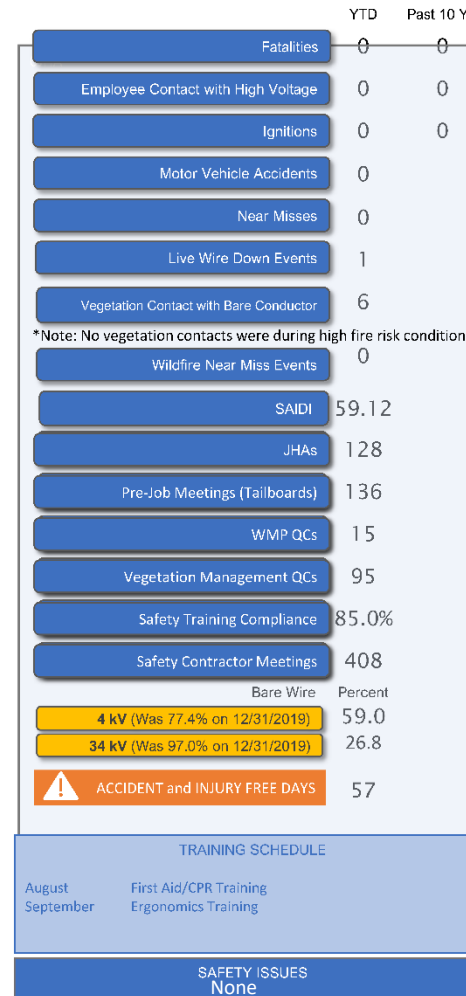
- Zero BVES caused wildfires ever.
- Zero ignitions in over 20 years.
- Zero public injuries or fatalities due to BVES facilities or operations in over 20 years.
- Zero employee fatalities in over 20 years.
- Zero employee contact with High Voltage in over 10 years.

**Be Vigilant about Emphasizing Safety in all that we do!**

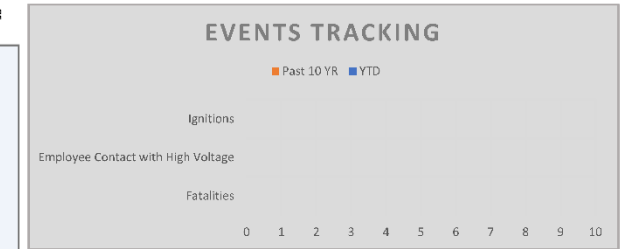


BVES has not had to invoke a PSPS ever; but does remain trained and ready.

### MONTHLY DASHBOARD



### July 2024



#### SAFETY MESSAGE: Working Near Open Water



Open water may pose a safety risk when working in areas such as docks and marinas

#### General Water Safety Practices

- Where drowning hazards exist, perform a pre-task assessment to: identify drowning hazards, identify requirements for PPE such as Personal Floatation Devices (PFDs), and review safe work practices/SOPs/emergency procedures.
- Wear slip-resistant footwear to prevent slips, trips, and falls into open water.
- Do not lean over guardrails or railings where open water is present.
- Always walk (don't run) when working near areas where there are unprotected edges or openings where an employee may fall into open water.



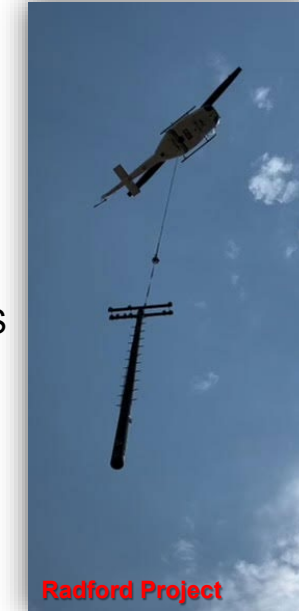
# WMP Implementation Progress



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## Initiatives

- **Covered Conductors Project:** Replaced 19.1 circuit miles of 34.5 kV bare conductors with covered wire. Overall 34.5 kV system is 32.9% bare wire, 64.1% covered wire, and 3.0% underground. Replaced 38.9 circuit miles of 4 kV bare conductors with covered wire. Overall 4 kV system is 60.8% of bare wire, 16.6% covered wire, and 22.6% underground.
- **Radford Line Replacement Project:** Received USFS Permit in January 2024. Commenced construction in May 2024. 2 circuit miles of covered conductors have been installed (2.7 circuits for project completion) and 64 fire resistant poles installed (88 poles for completion). Expect to complete by end of October 2024.
- **Expulsion Fuse Replacement Project:** Replaced all expulsion fuses (a total of 3,114) with 2,578 current limiting fuses and 536 electronic fuses. There are no expulsion fuses in system. Project is completed.
- **Pole Loading & Assessment:** Assessed 4,113 poles and replaced or remediated 1,652 poles. Project is now combined with Covered Conductors Project due to synergy of the work.
- **Evacuation Route Hardening Project:** All primary evacuation routes have been hardened. BVES is now focused on secondary routes. To date installed 2,916 wire mesh wrap on wood poles and replaced 427 wood poles with 297 LWS poles, 128 fire resistant composite poles, and 2 ductile iron poles.
- **Tree Attachment Removal Project (removes 100 per year):** Overall removed 842 tree attachments since 2019. 365 tree attachments remain in the distribution system and are programmed for removal.
- **Advanced Inspection:** Established routine of conducting annual LiDAR, UAV Photography & Videography, UAV Thermography, 3rd Party Independent Patrols and satellite imagery of entire system. These are in addition to GO-165 Detailed & Patrol Inspections. Conducting 850 intrusive wood pole inspections per year.
- **FLISR:** Installed 10 IntelliRupter Switches on sub-transmission system loop to establish a Fault Localization Isolation and Service Restoration (FLISR) self-healing system. Project is completed.
- **Grid Automation Project:** Installed fiber optic network throughout service area (mimics sub-transmission system) and fully automated three substations. Project is completed.
- **Install Fault Indicators:** This project installs an additional 129 fault indicators (FIs) in the distribution system and connects them to SCADA. To date 134 FIs have been installed and 9 of the FIs have been connected to SCADA.



# WMP Implementation Progress



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## Initiatives (continued)

- **Switch and Field Device Automation:** Connects and automates 28 34 kV and 20 4 kV switches to SCADA network over 4 years. To date 15 switches have been connected to SCADA.
- **Capacitor Bank Upgrade Project:** Replaces 24 capacitor banks with automated capacitor banks connected to SCADA network over 4 years. To date 12 capacitor banks have been installed and 7 capacitor banks connected to SCADA.
- **Substation Automation:** Connects and automates 9 substations to SCADA network over 3 years. To date 4 substations have been connected to SCADA under this project.
- **Fuse TripSaver Automation:** Connects and automates 160 Fuse TripSaver devices (electronic fuses) to SCADA network over 4 years. To date 21 Fuse TripSavers have been connected to SCADA.
- **Substation Upgrade Projects:** Completed technical and safety updates to the Pineknot Substation and the Palomino Substation. Working on upgrades to Maltby Substation and Lake Substation.
- **Risk Modeling Capability:** Developed full field effect wildfire probability and consequence maps for 2021 & 2050 (REAX Engineering). Implemented Technosylva's Wildfire Analyst Enterprise (WFA-E) in 2022, FireSight (formerly Wildfire Risk Reduction Model (WRRM)) in 2023 and Fire Potential Index (FPI) Model in 2024. In the process of implementing a utility risk model that evaluates ignition risk and PSPS risk (Direxyon).
- **Enhanced Vegetation Management:** Implemented increased radial clearances on all power lines and "blue-sky" requirement on sub-transmission lines. Since 2018, BVES has removed 830 hazard trees and trimmed 37,772 trees.
- **Weather Stations:** Installed 20 weather stations providing continuous complete and overlapping weather monitoring and weather data recording in a historian with outputs available to BVES staff, BVES's weather consultant, Technosylva's WFA-E models, and to open-source forecasting (NOAA). Project is completed.
- **ALERTWildfire Cameras:** Installed 15 Cameras in 7 locations in the ALERTWildfire High Definition Camera system providing complete and overlapping coverage of the entire BVES service area and surrounding boundary areas. Project is completed.



HD Photography & Videography



Fire Potential Index

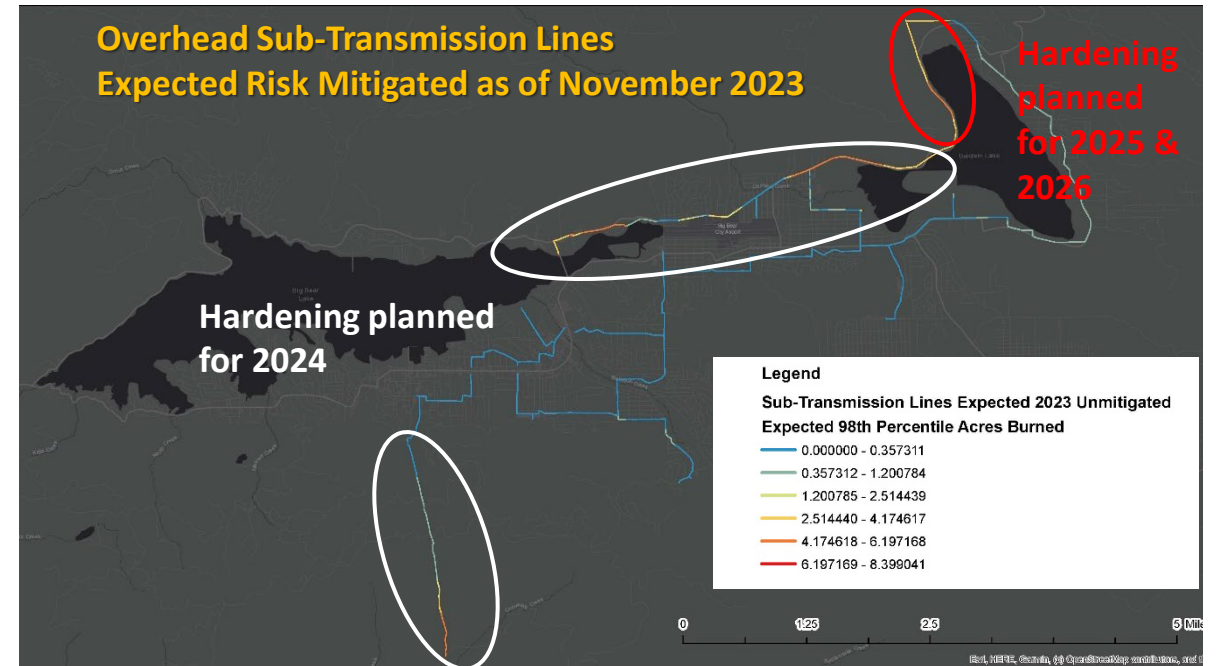
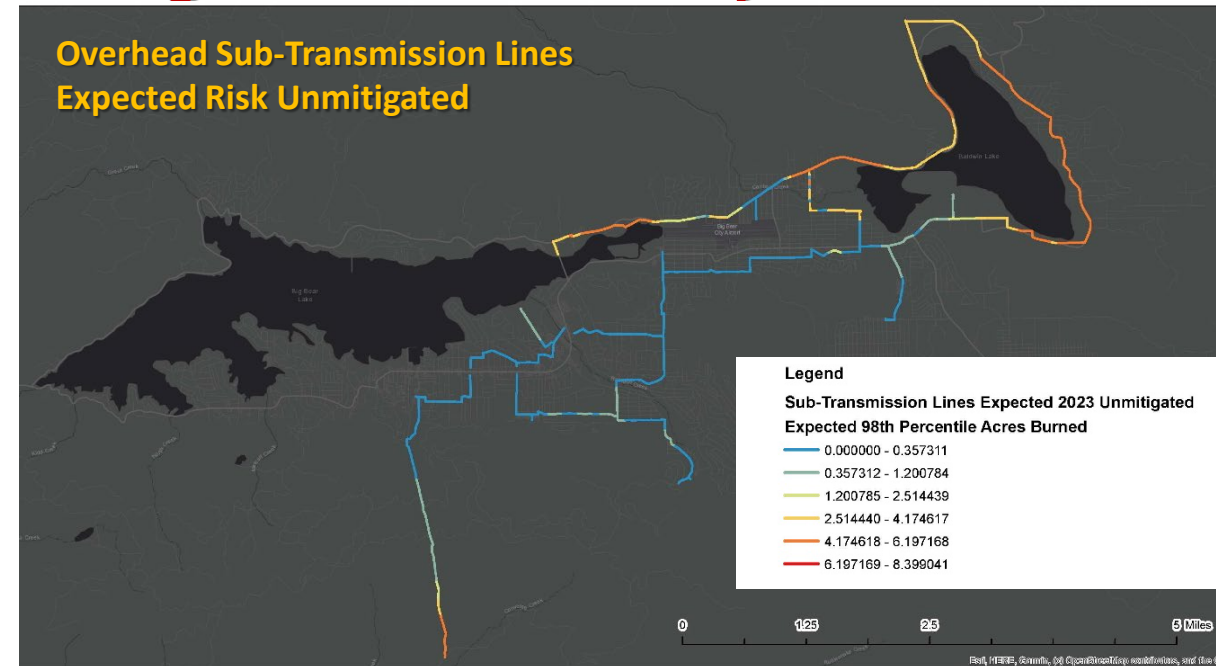


Weather Station

# WMP Implementation Progress

## Initiative prioritization and risk modeling

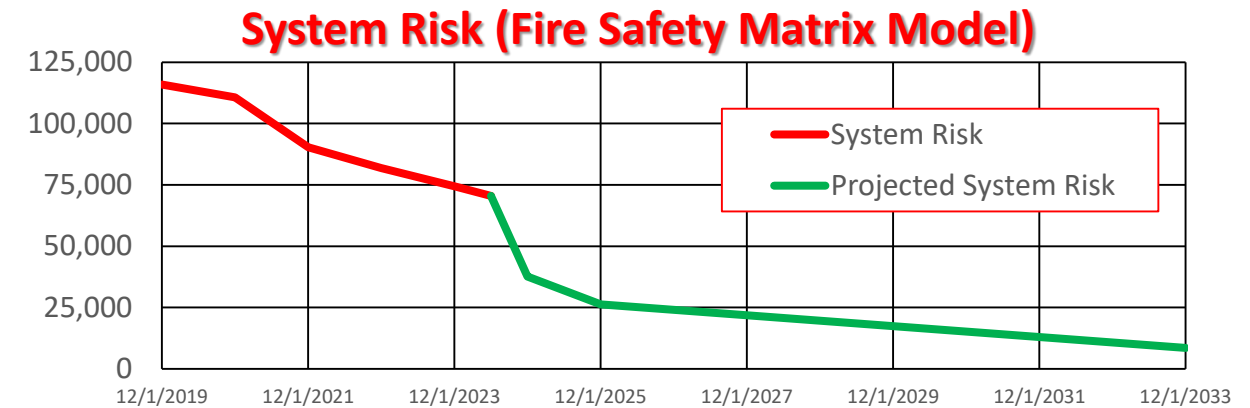
### FireSight\* Risk Model Analysis



\*FireSight was previously named Wildfire Risk Reduction Model (WRRM).

Vegetation density in right of ways has been significantly reduced (as measured by LiDAR):

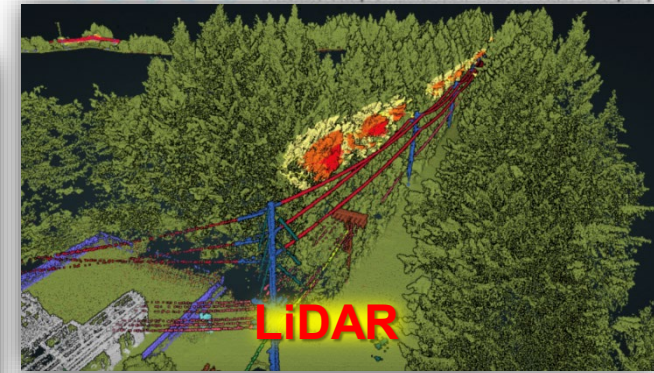
- 2020: 25.4%
- 2022: 20.2%
- 2023: 15.4%



# WMP Implementation Progress

## Inspections/quality controls planned 2023-2025 WMP

- Patrol Inspections (GO-165)
- Detailed Inspections (GO-165)
- Intrusive Pole Inspections (GO-165)
- UAV Thermography
- UAV HD Photography/Videography
- LiDAR Inspection
- Satellite Imagery
- 3rd Party Ground Patrol
- Substation inspections (GO-174)
- Asset management, vegetation management, and inspection enterprise system(s)
- Asset quality assurance/quality control
- Vegetation management quality assurance/quality control



# 2022 SCA Recommendations



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## Recommendation

Refine strategic improvement plan to address gaps in contractor safety culture. Improve contractor relationships & empower contractors to address problems. Builds upon a 2021 SCA recommendation.

Implement plan to address survey result indicating Design & Construction employees have a less positive experience of safety culture in wildfire mitigation work context than other employees.

Strengthen safety-enabling systems by improving protocols for responding to near misses & hazards. Build upon the “Continuous Improvement Program” to improve employee understanding of the importance of submitting near-miss reports.

Implement use of specific leading indicators to improve safety & health outcomes in connection with its 12-month goal to establish, collect, and publish a set of safety metrics, including leading indicators, to evaluate safety.

## Accepted & Implemented



# 2023 SCA



## Recommendation: Continue to Refine Contractor Strategic Improvement Plan.

SCA TASKS	Specific Actions To Achieve Tasks	Scheduled	Completed
Meet with contractor management to discuss SCA results and solicit their cooperation to improve their safety culture.	Review Previous SCA Results with contractor management.	Week of June 13, 2024	Yes
Conduct listening sessions to better understand and respond to contractor perceptions.	Schedule listening sessions with contractors and President and Field Operations Supervisor.	Week of September 16, 2024	Scheduled
Increase presence of leadership at job sites to witness challenges encountered by contractors.	Increase Supervisory JHAs July 1-August 31, 2024. Each Manager and Supervisor must monitor contractor work 2 times per month.	July-August 2024	In progress
Increase training to improve the ability of frontline supervisors to communicate effectively with contractors and ultimately improve the safety culture among contractors.	Schedule training with Staff who interact with contractors.	Week of July 22, 2024	Yes
Conduct training to make sure contractors understand how their work is an integral part of the BVES Wildfire Mitigation Plan and impacts public safety.	Schedule training with contractors and President.	Week of September 16, 2024	Scheduled
Add "Contractor Engagement Strategy" as a BVES Safety Culture Objective in the 3-year Safety Culture Plan (fully achieve objective by 2026).	Develop "write-up" for this objective and add to the 3-year plan. Discuss this at the June 2024 Management-Employee Safety Committee Meeting.	Week of September 16, 2024	Draft in review

# 2023 SCA



## **Recommendation: Continue to Address Safety Culture Opportunities for the Design and Construction Business Unit.**

SCA TASKS	Specific Actions To Achieve Tasks	Scheduled	Completed
Conduct listening sessions to better understand and respond to Engineering & Planning perceptions.	Utility Engineer & Wildfire Mitigation Supervisor conduct listening session with Engineering & Planning Group. President sit-in.	Week of July 22, 2024	Yes
Conduct one-on-one meetings between the BVES President and Engineering & Planning employees to further gauge their safety culture views and refine plan to improve their safety culture. These sessions are designed to be open two-way conversations and to solicit employee inputs and perceptions on safety culture at BVES.	Conduct one-on-one meetings between BVES President and Engineering & Planning employees.	July-August 2024	In progress
<p>Increase training to reinforce the elements that promote improved safety culture and safety related communications. For example, BVES President will continue to make it clear:</p> <ul style="list-style-type: none"> <li>*No job should start until everyone on the team understands the task at hand and safety precautions and is satisfied that the safety precautions being taken are appropriate and more than sufficient.</li> <li>*No job should be performed in a manner below the Company's high standards that might in any way compromise worker or public safety.</li> <li>*Any employee is fully empowered to stop work and has the duty to do so, if they believe public or worker safety is at risk or being compromised.</li> <li>*While the Company has set challenging WMP initiative targets, the drive to achieve these targets should never serve as a cause to compromise the Company's high standards and put worker or public safety at risk.</li> <li>*Discuss the importance of focusing on one task at a time and avoiding distractions. Explain while multi-tasking is present in our daily work, employees should still only focus on one task at a time and avoid distractions. If conflicts arise, employees should stop work and alert their Supervisor for further guidance.</li> </ul>	Conduct training with Engineering and Planning employees.	Week of September 16, 2024	Scheduled
Conduct training to make sure Engineering & Planning employees understand how their work is an integral part of the BVES Wildfire Mitigation Plan and impacts public safety.	Conduct training with Engineering and Planning employees.	Week of September 16, 2024	Scheduled

# 2023 SCA Update

## Recommendation: Strengthen Safety-Enabling Systems.



SCA TASKS	Specific Actions To Achieve Tasks	Scheduled	Completed
Develop and implement improved protocols for responding to safety events (near misses and hazards), including their reporting and management.	Add Near Miss Reports to Weekly Management Meeting. Add Near Miss Reports to Safety Committee Meeting Agendas.	Week of June 17, 2024	Completed
Further develop BVES's "Empowered Employees" 3-year objective, described in BVES's 2023 safety culture objectives, to improve employee understanding of the importance of reporting unsafe conditions and monitoring the number and quality of near miss and hazard reporting.	Reinforce objective implementation actions with staff.	Week of September 16, 2024	On-going
Conduct at least one training session on near-miss reporting protocols. BVES should identify and address any barriers to reporting within its safety-enabling systems (procedures, software, communication, etc.).	Conduct Staff Training - Use BSI.	July-August 2024	Partially completed
Develop Behavioral Based Training Form to be used for new 2023 training.	Draft form.	Week of September 16, 2024	Draft completed
Set up training class to introduce Behavioral Based Training for the operations crews.	Conduct Staff Training - Use BSI.	Week of September 16, 2024	Scheduled
Discuss SCA contractor scores with other IOUs and how they manage contractor safety.	Reach out to large and small IOUs.	Week of September 23, 2024	In progress



# Notable Lessons Learned

- Value of risk modeling
  - Climate change impact evaluation
  - Grid hardening and other initiative prioritization
  - Integral to daily battle rhythm
- High impact initiatives:
  - Minimizing bare conductors
  - Comprehensive inspections
  - Vegetation clearances
- Joint utility information exchanges
  - Expands the pool of thought and ideas
  - Sharing of experiences





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# Questions