2024 Update

2023 – 2025 Wildfire Mitigation Plan

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1 Executive Summary

SMUD adopted a three-year Wildfire Mitigation Plan (WMP) in 2023. This 2023-2025 WMP was a comprehensive update of SMUD's WMP and included a risk assessment, analysis on the impact of climate change, descriptions of prevention and mitigation initiatives, discussion of project updates and outcomes, and metrics to evaluate the WMP performance. This 2024 update to the 2023-2025 WMP outlines progress made on several multi-year projects and provides other minor updates to reported initiatives.

Projects. The multi-year projects outlined in SMUD's 2023 comprehensive update are complete or on-track with one exception. Although SMUD's service territory is outside the CPUC's High Fire Threat District (HFTD), SMUD has been installing Cal FIRE exempt arrestors, connectors, and fuses in the Pole Clearing Area (PCA). In late 2023, a manufacturer of a particular fuse holder halted production and shipments to utilities. This has caused a slight disruption in the overall project. SMUD staff and vendors are exploring alternatives in addition to working with the vendor to see if production will be resumed with a design change. SMUD staff have adjusted the plan to continue installing other hardware that have not been impacted. Overall project completion target remains the same, however, this target may be adjusted if hardware remains unavailable.

Risk management. The bulk of SMUD's efforts continue to be reducing fuel around our facilities to reduce ignition risk. Winter season arrived late in 2022. The late winter season allowed vegetation contractors to continue working in our highest fire risk Upper American River Project (UARP) area late into the fall of 2022, enabling us to get ahead of the scheduled 2023 work. As a result of this accelerated work, 2023 vegetation removal activities in the UARP concluded much earlier than planned. Earlier completion allowed SMUD to lower its wildfire risk in the UARP prior to the hot-dry months of August and September

Northern CA has benefited from atmospheric rivers and snowpacks that have delivered above average rain and water totals in 2023 and 2024. The late wet winter/spring resulted in a shortened and mild wildfire season for Northern CA in 2023. The outlook for wildland fire potential in Northern California looks similar for 2024[1].

The various programs and projects described in the2023-2025 WMP continue to provide a comprehensive and innovative approach to SMUD's wildfire risk reduction.

1.1 Document Introduction

The numbered sections in this 2024 WMP update are intended to replace the respective numbered sections within the 2023 – 2025 WMP published in July 2023.

[1] https://www.nifc.gov/nicc-files/predictive/outlooks/monthly_seasonal_outlook.pdf. Accessed April 2nd, 2024. (The link will open the most current month. To view historical data, use this link to access the archived monthly reports: https://www.nifc.gov/nicc/predictive-services/outlooks)

2.5 Accountability of the plan

SMUD's Chief Operating Officer has overall responsibility for the WMP. The Chief Operating Officer and Chief Customer Officer are responsible for executing the various components of the WMP.

2.5.1 SMUD operating unit responsibility specific to each component of the plan

Table 3 lists the Director with responsibility for the departments or workgroups that are accountable for the various components of SMUD's WMP. In each case the Director or the Director's designees will be responsible for the accuracy of, and for operations in accordance with, the specified component of the plan.

Table 3 Accountability for the WMP components.

Mitigation Activities	Responsible Department and Workgroup
Risk analysis	Manager, Enterprise Strategy and Risk
Fire threat assessment in service area and UARP	Director, Distribution Planning & Operations
Wildfire prevention strategy and programs	
- Disable automatic reclosing - Planned de-energizations	Director, Transmission Planning & Operations, Director, Distribution Planning & Operations
- T&D line patrols - Aerial patrols - 69kV & Transmission line IR inspections - Wood pole intrusive inspection - Splice assessment - Detailed line inspections	Director, Line Assets
- Substation visual inspections	Director, Substation, Telecom & Metering Assets
- Vegetation management - Pole clearing program	Director, Line Assets
Fire mitigation construction	
- Natural Ester-based fluid - Cal FIRE exempt equipment in PCA	Director, Distribution Planning & Operations
- Weather stations	Director, Transmission Planning & Operations
Enhancement projects	
- Install SCADA reclosers in PCA	Director, Distribution Planning & Operations Director, Line Assets
Pilot projects	
- Light Detection and Ranging and Ortho Imagery	Director, Line Assets
Emergency preparedness	
- SMUD Emergency Operations Centers	Director, Facilities, Security & IPPS
- Public and agency communications for wildfires	Director, Customer Operations & Community Energy Services, Director, Customer Experience Delivery, Director, Corporate Communications, Director, Commercial Development & Solutions

5.1 CAL FIRE Fire Resource and Assessment Program (FRAP)

CAL FIRE publishes multiple maps related to fire threat throughout the state. SMUD refers to the Fire Hazard Severity Zone (FHSZ)[6] map for many years to inform and plan maintenance activities. CAL FIRE published new FHSZ map in April 2024. The new map depicts slight changes in fire hazard severity in the PCA. SMUD staff have begun the process of importing the map data. SMUD staff will analyze the impacts of the new map and adjust SMUD's mitigation programs as needed. However, CAL FIRE has not published a new map depicting FHSZ for Local Responsibility Area (LRA)[7] and Federal Responsibility Area (FRA). The LRA and FRA depict fire hazard within Sacramento County areas, and portions of the UARP where SMUD has transmission lines respectively. SMUD staff will continue monitoring CAL FIRE's website for updates to these two maps.

Although SMUD takes CAL FIRE's FHSZ mapping into consideration as part of its wildfire mitigation planning, SMUD's Wildfire Mitigation Plan references the CPUC Fire Threat Map that focuses on the risk of utility associated wildfires[8] .

6.2 Transmission grid operational practices

6.2.1 Disabling reclosing

All Valley 115 kV, 230 kV and UARP 69 kV, 230 kV transmission auto reclosers are disabled and will remain disabled to mitigate wildfire risks. The disabling of reclosing follows fire season described in 6.1.1

6.2.2 Planned de-energization during fire season

SMUD's Power System Operators (PSO) have the authority to de-energize portions or all the Valley and UARP transmission line(s) for safety, reliability, conditions beyond design criteria, threat of wildfires and during emergency conditions when requested by local law enforcement or fire officials. Per existing protocols, planned de-energizations are coordinated with interconnected agencies.

During active fire season as declared by CAL FIRE the PSO is authorized to de-energize portions or all the Valley and UARP transmission line(s) when there is imminent fire danger, mandatory fire orders are in effect, and/or the transmission system is experiencing conditions beyond design criteria. The PSO will take a combination of many factors into consideration when implementing de-energization procedures, which include the triggers listed below, as well as power system knowledge and potential community impacts. De-energization decisions require a balancing of all these factors as well as a knowledge of the area and operation of the power system. No single element is determinative.

- Extreme fire danger threat levels, as classified by the National Fire Danger Rating System
- A RFW declaration by the National Weather Service
- Low humidity levels lower than what is required for a RFW
- Sustained winds exceeding design standards
- Site-specific conditions such as temperature, terrain, and local climate
- Critically dry vegetation that could serve as fuel for a wildfire
- On-the-ground, real-time observation from SMUD or other agency field staff

The PSO utilizes various operational and situational awareness tools to determine when de-energization is appropriate. The tools are listed below:

[6] https://osfm.fire.ca.gov/what-we-do/community-wildfire-preparedness-and-mitigation/fire-hazard-severity-zones
[7] https://osfm.fire.ca.gov/what-we-do/community-wildfire-preparedness-and-mitigation/fire-hazard-severity-zones/fire-hazard-severity-zones-maps
[8] https://www.cpuc.ca.gov/industries-and-topics/wildfires/fire-threat-maps-and-fire-safety-rulemaking

- Weather data telemetered into SMUD's Energy Management System, such as wind speed, wind direction, air temperature, barometric pressure and relative humidity
- US Forest Service – Wildland Fire Assessment System, https://www.wfas.net/
- CAL FIRE Incidents Information, https://www.fire.ca.gov/incidents
- CAL FIRE California Statewide Fire Map: https://www.fire.ca.gov/incidents/
- National Weather Service: https://www.weather.gov/
- Indji Watch real time operational tool
- Geographic Information System (GIS) based tools
- ALERTWildfire: http://www.alertwildfire.org/tahoe/index.html
- NOAA/National Weather Service Storm Prediction Center: https://www.spc.noaa.gov/
- National Significant Wildland and Fire Potential Outlook, https://www.predictiveservices.nifc.gov/outlooks/outlooks.htm
- Wildfire Forecast & Threat Intelligence Integration Center (WFTIIC), https://hub.wftiic.ca.gov/

6.6 Enhancement and mitigation projects

SMUD forecasts and plans for upcoming work several years in advance. This planning process allows adequate level of staffing and funding for needed projects. This section identifies the specific upcoming projects that help reduce SMUD's wildfire risk.

6.6.2 Replace #6 Copper conductors in PCA

Status: Completed 2023
Start Date: 2021
Expected Completion: 2023

This project targets SMUD's PCA for removal of #6 copper conductors and replacement with heavier gauge aluminum. The project was proposed in conjunction with Eagle Take Permit mitigation work to reduce avian contacts issued in connection with the expansion of SMUD's Wind Farm in Solano County. The mitigation activity involves re-framing approximately 185 poles to increase overhead conductor spacing.

6.6.4 UARP Fuels Reduction

Status: Completed 2023
Start Date: 2019
Expected Completion: 2023

This project is designed to help protect the UARP transmission lines and strengthen the fire break value it provides. The project area includes the entire length of SMUD's UARP transmission line within the existing right-of-way corridor plus approximately 200 feet on each side. Project treatments are designed to increase the area of forest lands treated for fuels reduction and prescribed fire and contribute to the longer-term restoration of the Crystal Basin forested landscape. Implementation measures will reduce the density of surface and ladder fuels by mechanical thinning, mastication, and hand crew work as part of a larger suite of silvicultural prescriptions that restore mixed conifer composition, health, and vigor. The project seeks to establish conditions that allow for a mosaic of multiple age class forest stands, variation in tree size, density, and species composition through treatments that retain the largest trees while establishing conditions that allow for safe and efficient fire suppression, especially around private inholdings of Sierra foothill communities.

6.6.5 Install SCADA reclosers in PCA

Status: Deferred 2025 to 2027 due to unforeseen design and supply chain constraints
Start Date: 2025
Expected Completion: 2027

The existing 12kV feeders serving PCA customers are non-SCADA. This project will install SCADA enabled reclosers on feeders that serves SMUD's PCA customers. The SCADA reclosers will provide distribution operators visibility to the circuits and ability to operate the recloser remotely, including remotely disabling the reclosing function. The SCADA enabled reclosers will have modern microprocessor-based controllers, which will provide SMUD engineers the flexibility of fast-trip settings during fire season, and normal settings for improved reliability during storm season. Visibility to circuit's measured values will provide distribution operators the ability to remotely de-energize the circuit(s) when conditions warrant or when requested by emergency response personnel.

7.2 Public and agency communications for a potential wildfire

Public safety is a guiding principle at SMUD. While SMUD's WMP activities are designed to mitigate wildfire danger, in instances of high fire threat conditions, interruption of electrical service by de-energizing powerlines may be necessary as a last resort. De-energizing powerlines may be the safest approach and makes sense if the risk of a wildfire starting and spreading is severe. SMUD proactively communicates with customers and key stakeholders through multiple channels about preparing for potential power outages, and the power restoration process. SMUD recognizes that many entities and individuals are particularly vulnerable during extended power outages and makes every effort to provide up-to-date information to these populations prior to, during and after an event.

This proactive communication is utilized for:

1) A wildfire threat to localized circuits within the SMUD service territory that results in localized de-energization.
2) A wildfire threat to SMUD's UARP hydroelectric generation and transmission system that results in a de-energization event causing a capacity/energy shortage (rotating outages).
3) A wildfire threat to a major shared transmission line(s) that impacts the statewide grid or parts of it and creates a resource shortage for the utilities, including SMUD, that rely on the resources the line(s) provides.

SMUD has implemented an opt-in program on smud.org that allows for vulnerable populations to receive additional information or notifications in the unlikely event of a wildfire in SMUD service territory.

Among SMUD's most vulnerable customers are those enrolled in the Medical Equipment Discount Rate program (MED rate). These customers rely on specialized medical equipment that may require power. SMUD also has a Vulnerable Customer program which allows customers to self-identify as vulnerable for concerns not covered by our MED Rate, we include our Energy Assistance Program Rate (EAPR) and 3rd Party/Senior Id customers in this group. SMUD has more than 13,000 customers who rely on specialized medical equipment and who are enrolled in the MED rate program, 3rd Party/Senior ID program or enrolled in our Vulnerable Customer program. Additionally, SMUD has nearly 90,000 customers that participate in our EAPR program. SMUD will send these customers an email or letter each year to remind them of the risk of wildfire danger, to have an emergency back-up plan if an outage occurs, to update their contact information and refer them to Smud.org/wildfiresafety for more information.

All SMUD customers can visit the smud.org/wildfiresafety webpage where they'll be able to find:

- Wildfire mitigation plan
- Information on how SMUD mitigates fire risk
- Emergency preparedness tips guide (7 languages)
- Links to additional resources
- Video on wildfire mitigation efforts
- Rotating outage map and periodic event updates
- Frequently Asked Questions on the de-energization process

Smud.org/WildfireSafety provides access to information about SMUD's effort in wildfire planning and prevention (including an archive of this and prior WMPs), how to identify fire risk in areas where SMUD maintains electric facilities, a video on our wildfire mitigation efforts, emergency planning and preparation (six different languages) and SMUD's de-energization protocols.

SMUD also proactively communicates before potential emergency events about our efforts to prepare for and reduce wildfire risk.

In advance of peak wildfire season, SMUD conducts ongoing communications about how to prepare for emergencies in the event of a wildfire, natural disaster or major outage. The communications include:

- Letters and emails to MED Rate, EAPR 3rd Party/Senior ID and self-identified vulnerable customers, with preparation checklists.
- Outdoor billboards
- Digital monitors in our customer lobby
- Bill inserts
- Reminders on SMUD.org homepage encouraging customers to update contact information
- Customer newsletters (print and email) on safety tips, preparation.

SMUD's public information specialists will provide ongoing updates on multiple platforms, including social media, to provide customers and the community with up-to-date information about an emergency or potential emergency.

SMUD's government affairs representatives will reach out to the executive staff of local governments, elected officials, SMUD's state delegation, federal and tribe representatives and appropriate agency staff to provide initial contact and ongoing communications by email and phone with messages for their constituents.

In the time leading up to a potential or imminent de-energization event or emergency, SMUD makes every effort to maintain contact with customers it believes may be impacted and keep the media, local agencies and the public aware of the number of customers affected, and SMUD's activities and restoration efforts.

Key stakeholders and public safety partners, including potentially impacted federal, state and local elected officials, City and County executive staff, tribe representatives and first responders are also contacted via a variety of channels. SMUD has specific personnel assigned to elected officials and agencies, and to critical customers including water and telecommunications utilities potentially affected by de-energized powerlines.

9.1 Effectiveness of the WMP

In the initial WMP, SMUD staff identified metrics that met the criteria of PUC 8387. These identified metrics were general in nature. Since those initial metric criteria were identified, the wildfire planning process has continued to develop, and SMUD has received independent evaluation of its WMP. In response to the industry's maturing understanding of wildfire metrics and recommendations received, SMUD undertook a multi-step effort to identify new metrics that can better gauge the success of its many programs and mitigation activities outlined in the WMP.

The first step in this multi-step effort was to assess, identify and establish useful metrics that best measure the activities related to minimizing the probability that SMUD's transmission and distribution system may be the origin or contributing source for the ignition of a wildfire. Metrics identified in this section are measures of quantitative assessment that will be used for assessing, comparing, and tracking performance of the programs and efforts identified in this WMP. This step was completed and reflected in the metrics identified in this WMP.

The second step is to define the benchmarks associated with the metrics. The purpose of these benchmarks is to establish criteria to measure performance of the various activities. Some activities can be measured with specific units of work that are forecasted at the beginning of a year, such as quantities of inspected units etc. Progress towards these forecasted units would indicate on- or off-track completion cadence, which can be adjusted as needed during the year. Other metrics are identified to count uncontrollable units that indicate performance of the grid, such as outage event counts or number of corrective action findings. Development of these benchmarks will require several years of data to determine trendlines and averages. Data collection for the new metrics began in 2021. Following existing practices, SMUD anticipates five years of data will be required to establish the benchmarks, with a target period in 2026.

The third and final step is to determine or define the percentage reduction targets against the benchmarks. Percent reductions against benchmarks would need to be realistic, and not easily achievable. SMUD anticipates the initial benchmarks would require fine adjustments periodically to ensure continued effort towards risk reduction activities. These benchmarks and adjustments will be reflected in SMUD's annual WMP updates.

9.1.1 Metrics and assumptions for measuring WMP performance

SMUD will track the following metrics to measure the performance of this WMP, and its effectiveness in reducing catastrophic wildfire. These new set of metrics are more granular and targeted towards specific maintenance activities that can more closely be tied to performance of the WMP.

Work is identified in annual work plans authorized on an executive level, and work that remains incomplete will be flagged in future work plans. Work may be field-verified and open work notifications are regularly reviewed to allow management to prioritize work in accordance with current risks. SMUD's target is always to complete 100 percent of the work within the initially scheduled time frame. However, emergencies or other unforeseen contingencies can occur that require material and labor resources to be otherwise assigned. In this instance delayed work will be prioritized in following time periods. All work is completed within time periods to allow for the safe and reliable operation of the electric system in accordance with applicable requirements and industry standards.

The Inspection Program Performance metrics shown in Table 88 are based on inspection activities for targeted areas. These are key performance indicators (KPI) based metrics, with specific targets for completion within a year.

Table 8 Inspection Program Performance

Inspection Program Performance (KPI)	Target
Number of circuit miles inspected from Visual Patrol, Distribution Primary, PCA	>=95%
Number of poles inspected from DLI, Distribution, PCA	>=95%
Number of poles inspected from DLI, Distribution, UARP (HFTD Tiers 2 & 3)	>=95%
Number of structures inspected from Patrol, Transmission, PCA	>=95%
Number of structures inspected from Patrol, Transmission, HFTD Tier 2	>=95%
Number of structures inspected from Patrol, Transmission, HFTD Tier 3	>=95%
Percentage of circuit miles inspected for vegetation compliance, Distribution, PCA	>=95%
Percentage of circuit miles inspected for vegetation compliance, Distribution, HFTD Tier 2	>=95%
Percentage of circuit miles inspected for vegetation compliance, Distribution, HFTD Tier 3	>=95%
Percentage of circuit miles inspected for vegetation compliance, Transmission, PCA	>=95%
Percentage of circuit miles inspected for vegetation compliance, Transmission, HFTD Tier 2	>=95%
Percentage of circuit miles inspected for vegetation compliance, Transmission, HFTD Tier 3	>=95%
Number of aerial Flight Patrols, Visual, Valley	1
Number of aerial Flight Patrols, Visual, UARP	2
Number of aerial Flight Patrols, Infrared, Valley	1
Number of aerial Flight Patrols, Infrared, UARP	1
Number of aerial Flight Patrols, 69kV, Infrared, Valley	1
Number of aerial Flight Patrols, 12kV, Infrared, PCA	1
VM Quality Control for Transmission, Sacramento County	>=95%
VM Quality Control for Transmission, UARP	>=95%
Number of trees trimmed or removed, normal activities, PCA	>=95%
Number of trees trimmed or removed, normal activities, UARP	>=95%
Number of poles cleared/treated before start of fire season, PCA	>=95%

9.1.2 Outcome Metrics

Two sets of outcome metrics were identified that measure performance of the grid. These metrics replace the more general "ignition events" identified in previous WMPs, which couldn't directly be tied to risk categories. The outcome metrics shown in Table 9 are consistent with GO95 Rule 18[11] repair priority levels.

Table 9 Grid Condition Findings

Grid Condition Findings (Non-KPI)
Number of GO95 Rule 18 Level 1 findings, Distribution, PCA
Number of GO95 Rule 18 Level 1 findings, Distribution, HFTD Tier 2
Number of GO95 Rule 18 Level 1 findings, Distribution, HFTD Tier 3
Number of GO95 Rule 18 Level 1 findings, Transmission, PCA
Number of GO95 Rule 18 Level 1 findings, Transmission, HFTD Tier 2
Number of GO95 Rule 18 Level 1 findings, Transmission, HFTD Tier 3
Number of GO95 Rule 18 Level 2 findings, Distribution, PCA
Number of GO95 Rule 18 Level 2 findings, Distribution, HFTD Tier 2
Number of GO95 Rule 18 Level 2 findings, Distribution, HFTD Tier 3
Number of GO95 Rule 18 Level 2 findings, Transmission, PCA
Number of GO95 Rule 18 Level 2 findings, Transmission, HFTD Tier 2
Number of GO95 Rule 18 Level 2 findings, Transmission, HFTD Tier 3
Number of GO95 Rule 18 Level 3 findings, Distribution, PCA
Number of GO95 Rule 18 Level 3 findings, Distribution, HFTD Tier 2
Number of GO95 Rule 18 Level 3 findings, Distribution, HFTD Tier 3
Number of GO95 Rule 18 Level 3 findings, Transmission, PCA
Number of GO95 Rule 18 Level 3 findings, Transmission, HFTD Tier 2
Number of GO95 Rule 18 Level 3 findings, Transmission, HFTD Tier 3

The second set of outcome metrics are a measure of the ignition drivers during fire season, shown in Table 10.

Table 10 Drivers of Ignitions

Drivers of Ignitions, fire season only (Non-KPI)
Number of wire downs, inside PCA
Number of Overhead Outage Events caused by animals, inside PCA
Number of Overhead Outage Events caused by foreign material, inside PCA
Number of Overhead Outage Events caused by Vegetation - Tree Preventable, inside PCA
Number of Overhead Outage Events caused by Vegetation - Tree Non-Preventable, inside PCA

[11] https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M338/K730/338730245.pdf

9.1.3 Enhancement Projects

Once a project or program is approved, it is planned for execution based on the upcoming year's work schedule. The targets listed here for the approved projects are monitored via milestone achievements.

Table 11 System enhancement capital project performance

Project (KPI)	Target
Number of poles completed, PCA, Hardware Replacement	>=95%
Circuit feet completed, PCA, #6CU Reconductor (Completed in 2023)	>=95%
Units of trees pruned or removed, Wildfire Mitigation Vegetation Management work, UARP (Completed in 2023)	>=95%
Number of SCADA reclosers installed, PCA (Scheduled Start 2025)	>=95%

9.1.4 Community Outreach Measures

SMUD reaches out to customers, local communities, and government agencies for multiple programs. Metrics were developed specific to wildfire mitigation efforts and communication. The various type of community outreach measures is shown in Table 12.

Table 12 Community Outreach Programs

Community Outreach Programs (non-KPI)
Number of contacts with Federal, State and Local Govt offices, specific to wildfire or de-energization related contacts
Number of mailers sent to customers related to Wildfire Mitigation Activities, Email, MED rate
Number of mailers sent to customers related to Wildfire Mitigation Activities, Email, Senior ID
Number of mailers sent to customers related to Wildfire Mitigation Activities, Direct Mail, MED rate
Number of mailers sent to customers related to Wildfire Mitigation Activities, Direct Mail, Customer Connection