



Ukiah Electric Utility



2026 Wildfire Mitigation Plan

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1. OVERVIEW

A. Policy Statement

Ukiah Electric Utility (UEU) has been operating its electric system for over one hundred years. Public and employee safety are paramount in the operation, construction, and maintenance of the electric system. California Code, Public Utilities Code - PUC § 8387 contains the requirements for publicly owned utilities to prepare and present a Wildfire Mitigation Plan (WMP or Plan) to its governing body. The California Wildfire Safety Advisory Board has established a schedule that identifies the filing timeline for UEU's next WMP as October 2, 2026.

The risk of wildfire continues to be a top concern for the community of Ukiah. The increased risk of devastating wildfires coupled with increased housing in and adjacent to wildland urban interfaces (WUI) requires Ukiah Electric Utility to continually evaluate operational procedures, construction standards, and refresh ways to improve safe and reliable electric service.

Portions of UEU's electric system are in and adjacent to California Public Utilities Commission (CPUC) designated Tier 2 High Fire-Threat Districts (HFTD). UEU's overarching goal is to provide safe, reliable, and affordable electric service to its community. To meet this goal, UEU constructs, maintains, and operates its electrical lines and equipment to minimize the risk posed by catastrophic wildfires to its electrical lines and equipment.

This document is Ukiah Electric Utility's Wildfire Mitigation Plan developed in response to the requirements of SB 901, embodied in Public Utilities Code - PUC § 8387, and guides the efforts to reduce and track utility-caused wildfires.

B. Purpose of the Wildfire Mitigation Plan

This WMP describes the activities being implemented or considered by UEU to mitigate the likelihood and consequence of powerline-ignited wildfires. This Plan complies with the requirements of PUC § 8387 for publicly owned electric utilities and contains the programs, policies, and procedures UEU uses to manage wildfire risk in its service territory. The Plan is iterative, promotes continuous improvement year-over-year, and deploys leading industry practices in a prudent and reasonable manner.

UEU is a department within the City of Ukiah. For wildfire prevention and response, UEU coordinates with Ukiah Valley Fire Authority (UVFA), the City of Ukiah Police Department (UPD), and the City's Office of Emergency Management consistent with the City's Emergency Operations Plan and applicable Incident Command structure. UEU retains responsibility for

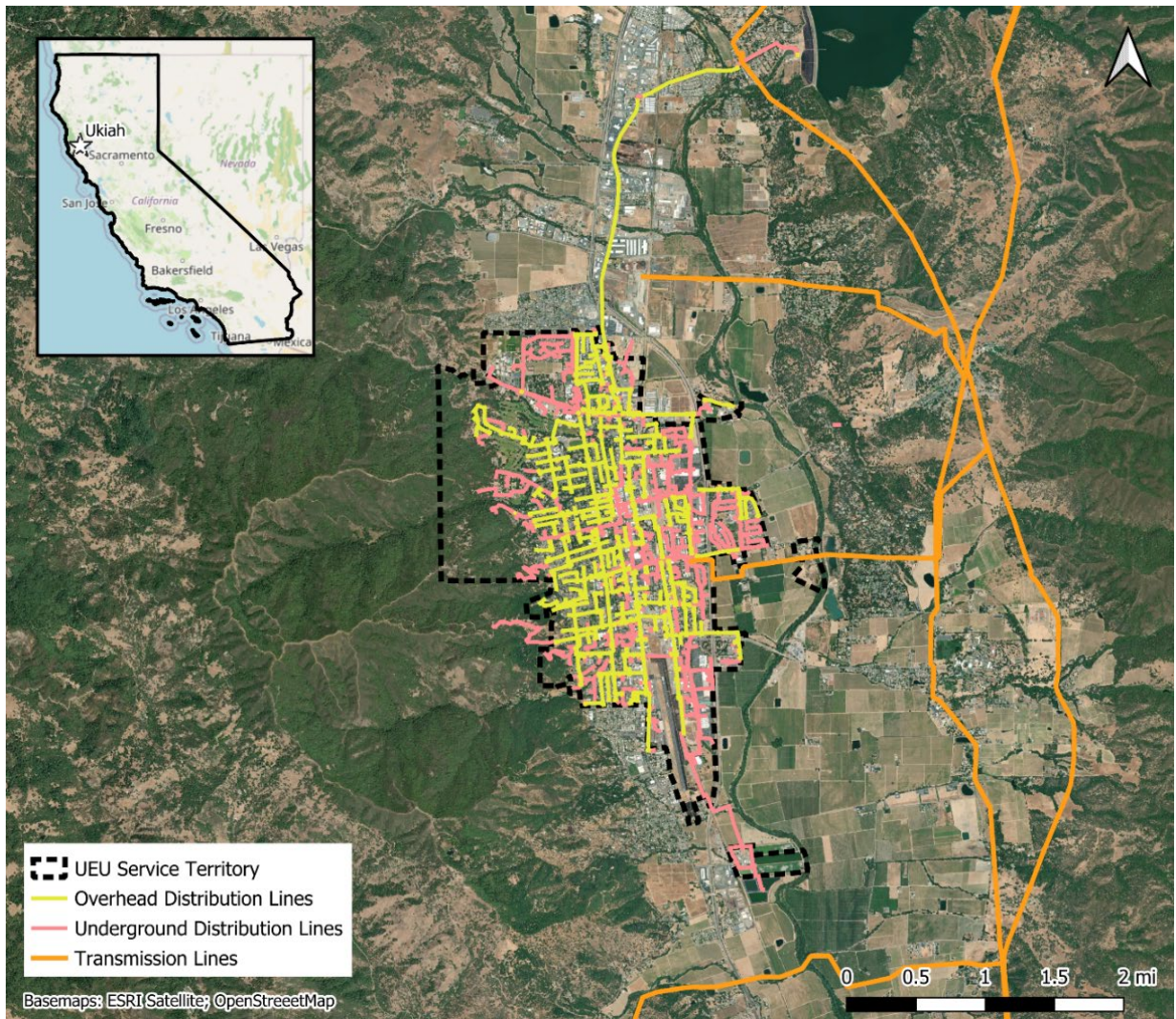
electric system operations. The UEU WMP is supported by other City of Ukiah plans.¹ UEU's service territory is shown in Figure 1.

The goals supported by this Plan include:

- Minimize the likelihood and consequence of utility-caused wildfires, including minimizing risks to humans and property.
- Educate the public about wildfire dangers and steps to prevent or minimize the effects.
- Maintain an Emergency Operations Center (EOC) for coordination of information and resources.
- Reduce the potential for destructive actions of a fire, should ignition occur, utilizing fire pre-plans, ensuring properly trained, staffed, and equipped emergency response capability, and timely response to prevent the spread of the fire,
- Ensure adequate resources to plan for potential incidents in high fire hazard severity zones within the City of Ukiah.

¹ The City of Ukiah adopted an Emergency Operations Plan (EOP) in 2021 and the Building Community Preparedness and Resilience Program in 2019.

Figure 1. Ukiah Electric Utility's Service Territory



C. Organization of The Wildfire Mitigation Plan

This Wildfire Mitigation Plan includes the following elements according to PUC § 8387. A detailed mapping of the requirements is contained in Appendix D.

- Section 2 - Objectives of the Plan
- Section 3 - Roles And Responsibilities for Carrying Out the Plan
- Section 4 - Identification of Key Wildfire Risks and Risk Drivers
- Section 5 - Description of Wildfire Prevention, Mitigation, and Response Strategies and Programs
- Section 6 - Community Outreach and Education

- Section 7 - Restoration of Service Following a Wildfire.
- Section 8 - Metrics for Evaluating the Performance of the WMP and Identifying Areas for Improvement
- Section 9 - Independent Audit of the Plan.

2. OBJECTIVES OF THE WILDFIRE MITIGATION PLAN

This section discusses the objectives and desired outcomes of the WMP.²

A. Minimize Sources of Ignition

The overarching objective of the WMP is to minimize the probability and impact of UEU's transmission and distribution system as the origin or contributing source for wildfire ignition. To meet these objectives and to reduce wildfire impacts, UEU is continually evaluating prudent and cost-effective improvements to its physical assets, operations, and training. UEU implements cost-effective measures to protect the system and the public from utility-caused wildfires as staffing and budget allows.

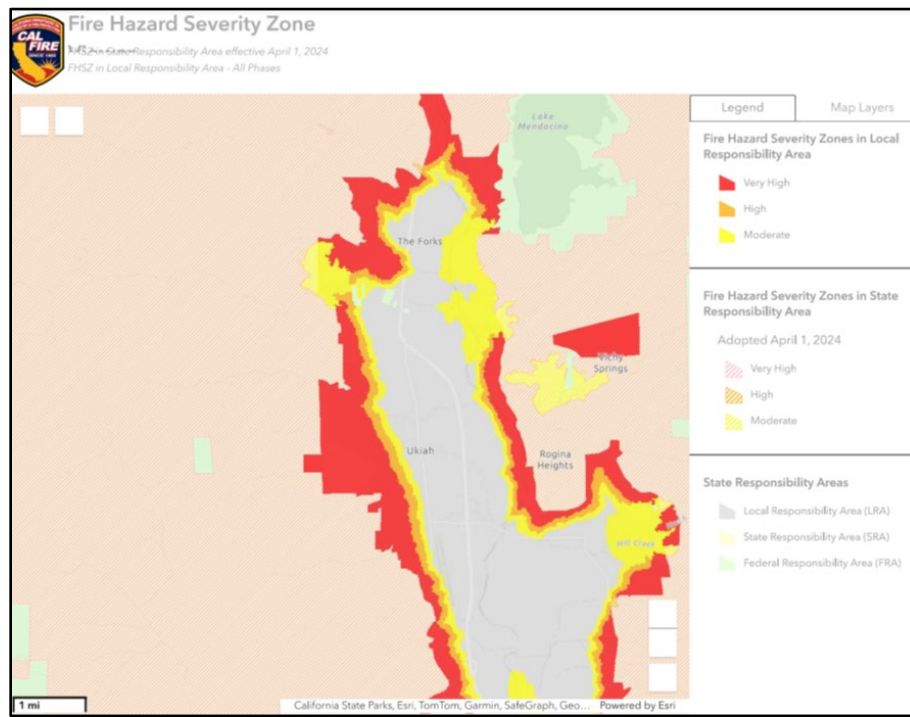
B. Resilience of the Electric Grid

Another objective of the WMP is to improve the resilience of the electric grid. UEU assesses industry practices and technologies to reduce the frequency of a wildfire-related service interruption and to improve service restoration.

Other resilience efforts include mitigating vegetative fuels that threaten electric utility facilities and equipment, reducing the chance that lives or property will be lost due to wildfire. Improved fire coordination improves resilience and helps avoid the need for public safety power shut-off protocols during high fire threat conditions. Fuels reduction and improved fire response are incorporated into UEU's Wildfire Prevention Program. CAL FIRE's Severity Zone Map is shown in Figure 2.

² PUC § 8387 (b)(2)(B) The objectives of the wildfire mitigation plan.

Figure 2. CAL FIRE Severity Zone Map for Ukiah Area



Source: CAL FIRE

C. Wildfire Prevention Strategies and Programs³

UEU uses a combination of prevention strategies and programs as outlined below.

Wildfire Mitigation Strategies:

UEU's wildfire prevention strategies are listed in Table 1 and described in detail in Section 5.

Table 1. Wildfire Prevention Strategies

Risk Reduction Initiative	Description
Vegetation Management	To control vegetation near UEU overhead transmission and distribution lines according to clearance specifications, including fuels mitigation and related work to prevent the electric system from causing a fire and to protect the system from a fire.
Inspections and Corrections	Infrastructure assessments, diagnostics, repairs, and replacements to assure proper working condition and support vegetation minimum distance specifications.

³ PUC § 8387(b)(2)(C) A description of the preventive strategies and programs.

Risk Reduction Initiative	Description
Situational Awareness	Improve system visualization and environmental condition awareness with tools that guide components of the Plan.
Operational Practices	Actions to lower wildfire risks and ensure preparedness under wildfire-prone conditions, such as hot, dry, or windy environmental conditions.
System Hardening	The ruggedized design of equipment, structures, and the system overall to prevent contact between infrastructure and ignition sources, such as vegetation and animals, and to reduce consequences should contact occur. Initiatives to make the system more resilient to wildfire and other natural disasters also inform the 5-year Capital Improvement Plan.
Public Safety and Notification	Engage community partners and members in preventing and identifying wildfire risks, including outage notification for improved public safety.
Reclosing and Deenergization	Include discussion of deenergization as well as circuit reclosing.
Wildfire Response and Recovery	Procedures to address wildfire or other emergency conditions impacting the power grid, including formalized protocols for response and recovery.
Staffing and Staff Training	Staff at appropriate levels and train staff for understanding and preparedness, that includes cross-training to build redundancies and succession planning for retirements and turnover.
Complementary Programs	UEU Wildfire Prevention Program (Appendix A) UEU Distribution Capital Improvement Program ⁴ COU Emergency Operation Plan (EOP) ⁵

Wildfire Mitigation Programs

The strategies are implemented through programs as budget and staffing permit. The following programs are coordinated as part of this WMP and are described in more detail in Section 5.

- UEU Wildfire Prevention Program - Appendix A
- UEU Distribution Capital Improvement Program
- COU Emergency Response Plan (EOP)

⁴ <https://stories.opengov.com/ukiahca/published/qDu2X5iGRN>.

⁵ <https://cityofukiah.com/wp-content/uploads/2021/10/City-of-Ukiah-Emergency-Operation-Plan.pdf>.

UEU Wildfire Prevention Strategies and Program Matrix is shown in Table 2.

Table 2. UEU Wildfire Prevention Strategies and Program Matrix

	Wildfire Prevention Plan	5-year Capital Improvement Plan	COU EOP
Vegetation Management	x		
Enhanced Inspections	x	x	
Situational Awareness		x	x
Operational Practices		x	x
System Hardening		x	
Public Safety and Notification	x		x
Reclosing and Deenergization	x	x	x
Wildfire Response and Recovery	x		x

D. Identifying Unnecessary or Ineffective Actions

Another WMP goal is to measure the effectiveness of specific wildfire mitigation strategies. The Plan explores whether more cost-effective measures would produce the same or improved results as UEU continues to assess the merits of future modifications.

3. ROLES AND RESPONSIBILITIES⁶

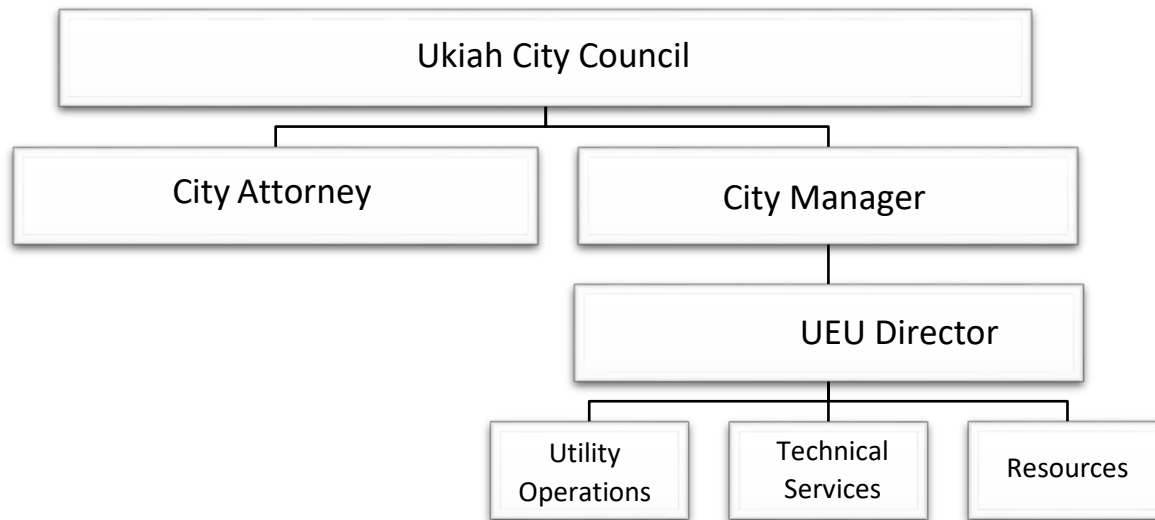
Designation and coordination of roles and responsibilities is reflected in this section.

A. UEU Governance Structure

UEU's WMP is supervised by the Ukiah City Council (Council) and implemented by the UEU Director (Director), as shown in Figure 3. The City of Ukiah, a general law city, has a City Council - Manager form of governance. The City Council is the Utility Commission for UEU.

⁶ PUC § 8387(b)(2)(A) persons responsible for executing the plan.

Figure 3. City of Ukiah Governance



B. Roles and Responsibilities for Plan Approval and Execution

Plan Approval and Public Input: UEU is governed by the Ukiah City Council. The Wildfire Mitigation Plan is periodically approved by the City Council at a public meeting. The public can review the Staff Report and Wildfire Mitigation Plan up to 72 hours prior to the meeting and provide comments in person or in writing. The City Council may adopt the Plan or provide additional guidance to Staff.

Executive Level Responsibility: The Director oversees implementation and ensure that staff follow procedures and protocols. Additionally, the Director, or designee, manages the execution of performance monitoring. This includes providing guidance to staff and leading the development of reports. The staff responsible for each metric area aggregates relevant metrics based on guidance from the Director.

Program Owners:

Table 3 shows the Program Owners and is subject to change.

Table 3. Program Owners

Program	Owner
UEU Wildfire Prevention Program	COU/UVFA Fire Marshal's Office and UEU Director
UEU Distribution Capital Improvement Program	UEU Director
COU EOP	COU Office of Emergency Management Coordinator

Strategy Leads:

Table 4 outlines the WMP Strategy Leads assignments and are subject to change.

Table 4. WMP Strategy Leads

Strategy	Lead Personnel	Key Technical Personnel
Vegetation Management	Electric Superintendent	Senior Electrical Engineer
Enhanced Inspections	Electric Superintendent Electrical Technicians	Senior Electrical Engineer Electric Superintendent Foreman Electrical Technicians
Situational Awareness	UEU Director	Senior Electrical Engineer Electric Superintendent
Operational Practices	Senior Electrical Engineer	Electric Superintendent
System Hardening	Senior Electrical Engineer	Senior Electrical Engineer Electric Superintendent
Public Safety and Notification	UEU Director	UEU Program Coordinator Management Analyst
Reclosing and Deenergization	Senior Electrical Engineer	Senior Electrical Engineer Electric Superintendent Foreman
Wildfire Response and Recovery	Electric Superintendent	UVFA Fire Chief Senior Electrical Engineer Line Foremen

C. Coordination with Joint Pole Infrastructure Providers

UEU takes the lead role for joint pole fire prevention and informs partners when compromised poles due to third-party attachments or other safety issues present. UEU coordinates with communication and electric infrastructure providers when work affects their equipment. If UEU discovers a facility in need of repair owned by a partner entity, UEU issues a repair notice to the facility owner and ensures that necessary repairs are completed in a timely manner. During emergencies, UEU assumes the primary role and informs providers when there is damage or risk to their equipment.

D. Coordination with City of Ukiah Departments

Ukiah Valley Fire Authority (UVFA) - The UVFA provides fire response expertise and coordinates fire-related public safety priorities with UEU through the applicable Incident Command structure.

Ukiah Police Department (UPD) - UEU coordinates with UPD on law enforcement, traffic control, and other public safety needs during emergencies. UEU works closely with the UPD for situational awareness and public safety related to the WMP.

Ukiah Public Works Department - UEU leads opportunities to harden the electrical system and increase survivability for traffic control, water and wastewater infrastructures. During wildfires and other public safety events, UEU works closely with Public Works to ensure power to water/wastewater facilities and other critical infrastructure. These facilities are critical for defending the City from wildfires and are essential for safe recovery following any disaster. The Mendocino Transit Authority (MTA) is also a critical operation for emergency evacuations.

Ukiah Community Services Department - The COU Community Services Department is a key partner for the UEU Wildfire Prevention Program for fire fuels mitigation and other programs and projects.

Other COU Departments and Administration – As a member of the City of Ukiah team, UEU ensures information regarding warnings, alerts, and widespread outages are shared with other departments. The City's Communications Team is an integral part of informing the media and the public. Communications are coordinated with the City's Emergency Management Coordinator and any active Incident Command.

E. California Office of Emergency Services (Cal OES) Standardized Emergency Management System

The City conducts emergency operations consistent with California's Standardized Emergency Management System (SEMS), the Incident Command System, the City's Emergency Operations Plan, and applicable departmental procedures. SEMS is organized into five operational levels - field response, local government, operational area, regional, and state, scaled to respond to an incident.

The City manages emergencies within its jurisdiction and coordinates with the Mendocino County Operational Area when an incident requires multiagency coordination, regional resource support, or communication with Cal OES. During wildfire or electric-system emergencies, UEU coordinates with the City's Emergency Management Coordinator, Ukiah Valley Fire Authority, Ukiah Police Department, Dispatch Center, the Mendocino County Operational Area, Cal OES, utilities, public-safety agencies, and other response partners as appropriate.

UEU coordinates with the City Manager's Office, the City's Emergency Management Coordinator, the Ukiah Police Department and Dispatch Center, Ukiah Valley Fire Authority, and other City departments regarding wildfire conditions, emergency warnings, significant outages, potential de-energization, and restoration activities. Public and media communications are coordinated through established City communication protocols and, when activated, the applicable Incident Command or Emergency Operations Center structure.

During an emergency affecting the electric system, UEU maintains responsibility for electric-system operations and provides technical information, situational updates, and personnel to support incident coordination. UEU may provide a departmental representative or liaison to the City Emergency Operations Center and coordinates with field Incident Command as appropriate.

4. WILDFIRE RISK AND RISK DRIVERS⁷

This section of the WMP identifies, describes and prioritizes wildfire risks and drivers found within UEU's territory. In addition to the overarching enterprise safety and wildfire risk, risk drivers are organized into three categories: enterprise risk; system and operational risk; and topographic, vegetation, and climatological risk. These factors influence the likelihood of a utility-caused ignition and the potential for that ignition to spread.

UEU serves approximately 4.3 square miles within the City of Ukiah. Portions of the western

⁷ PUC § 8387(b)(2)(J) identify, describe and prioritize wildfire risk and drivers.

service territory are located within the CPUC Tier 2 HFTD, encompassing approximately 10% of UEU's facilities.

UEU engaged CloudFire to assess wildfire risk associated with its overhead electric system. The analysis evaluated wildfire risk at both the individual line-segment and circuit levels using modeled ignition likelihood and potential wildfire consequences. The methodology and results are presented in Appendix B. The following subsections describe the system, operational, and environmental risks and risk drivers identified as priorities relevant to UEU's wildfire mitigation planning.

A. Enterprise Safety and Wildfire Risk Methodology⁸

UEU evaluates enterprise safety and wildfire risk using information that includes historical outages, fire records, field observations, and coordination with other City departments. Outage categories with potential relevance to ignition risk include animals, birds, vehicle-pole contacts, vegetation, and overhead equipment failures. These events may result in conditions capable of producing an ignition, such as a downed or arcing conductor. UEU considers these risks and risk drivers in terms of whether they are controllable or uncontrollable to help identify where utility actions can reduce ignition likelihood or wildfire consequences and to inform the development and prioritization of wildfire mitigation activities in the WMP. UEU uses this information, together with operational experience and fire history, to identify trends and support ongoing risk-informed planning.

UEU designs and constructs its electric facilities to meet or exceed applicable federal, state, and industry standards. This includes GO 95, a key California design and construction standard for electric facilities, and relevant National Electric Safety Codes.

B. System and Operational Risk

Risk drivers associated with the design, construction, operation, and maintenance of UEU's electric facilities include vegetation contact, overhead equipment, construction, maintenance, and operating practices. These conditions can contribute to the likelihood of a utility-caused ignition and are addressed through UEU's design standards, inspection and maintenance programs, vegetation management activities, and operating procedures.

The quantitative wildfire risk analysis presented in Appendix B provides additional information regarding how wildfire risk varies spatially across UEU's overhead system. The resulting asset- and circuit-level risk metrics identify locations where a potential utility-caused ignition could result in comparatively greater modeled wildfire consequences. The analysis provides a spatial basis for identifying portions of the overhead system where wildfire consequences may warrant

⁸ PUC § 8387(b)(2)(L) methodology for identifying and presenting enterprisewide safety and wildfire risk.

greater consideration and prioritization in mitigation planning.

Primary system and operational risk drivers include:

Vegetation Contact: Vegetation near UEU electric lines presents a risk for utility caused wildfires. Mitigation of this risk is done through routine tree trimming and inspections. UEU meets or exceeds the CPUC's GO 95 Rule 35 requirements by increasing the radial clearance of branches to 6 feet throughout the COU and up to 12 feet in some areas adjacent to the Tier 2 HFTD.

Overhead Equipment: Overhead utility equipment can be the source of a utility caused wildfire. Mitigation efforts include hardened design standards and periodic review of equipment for potential alternatives. UEU reviews design standards for equipment on a yearly basis for possible modifications.

Construction, Maintenance, and Operating Practices: Certain work practices or operations can increase the risk of ignition. To mitigate, during red flag conditions, Staff eliminates unnecessary activities that could result in a utility caused wildfire. Additional inspections may be performed during and after the conclusion of red flag events. UEU also uses defined operational criteria to support decisions regarding elevated wildfire conditions and potential de-energization. The applicable thresholds, screening criteria, and decision methodology are part of UEU's operating practices.

C. Topographic, Vegetation, and Climate Risk

Ukiah typically experiences cool, wet winters and hot, dry summers creating extreme fire weather conditions especially from May through October. Daily temperatures during fire season (June-October) can be above 90° Fahrenheit with a relative humidity of less than 30%. Wind conditions throughout the year average 3-5 mph, with gusts up to 35 mph.

Vegetation within and surrounding UEU's service territory includes redwood, oak, pine and fir trees, annual grasses, chaparral and other brush species. Dense brush and grasses can support rapid fire spread, particularly during periods of low fuel moisture and elevated winds. Extended dry periods and drought can further increase fuel availability and contribute to tree mortality or declining vegetation health.

Topography is more varied along the western side of Ukiah. Steep slopes, aspect, and elevation can influence fuel conditions, local weather and winds, fire rate of spread, and fire intensity. Portions of the western service territory are in a designated CPUC Tier 2 HFTD.

These environmental risk drivers are also represented in the quantitative wildfire risk analysis

described in Appendix B. The analysis incorporates historical weather conditions, topography, surface and canopy fuels, and potential wildfire consequences to evaluate spatial variation in wildfire risk across UEU's overhead system. The resulting asset- and circuit-level risk maps show substantial variation in modeled wildfire risk and provide additional information for spatial prioritization of wildfire mitigation activities.

Primary topographic, vegetation, and climatological risk drivers include:

Topography: Steep slopes in the western portion of Ukiah have the potential to increase fire rate of spread and intensity. Topography is explicitly represented in the quantitative wildfire risk analysis described in Appendix B. A shaded fuel break was constructed along the base of the western hills along the length of the City to reduce fuel loads and help protect the community from wildfire.

Drought: Extended drought or periods of below average rainfall can increase dry vegetative fuel loads, increasing wildfire risk. Prolonged drought can also impact and weaken trees. The City's vegetation management program identifies and catalogs tree information, including species, estimated age, diameter, and height. The program assesses diseased or dying trees and allows for removal. Routine visual inspections allow the Utility to remain aware of this risk factor.

Vegetation Type: The western hills area contains dense chaparral and mixed hardwood forest, including native species such as California Bay Laurel and Black Oak, with areas of poison oak, fern, and other understory vegetation. Surface and canopy fuel characteristics are represented in the quantitative wildfire risk analysis using LANDFIRE datasets reviewed against current local conditions.⁹ The shaded fuel break constructed along the base of the western hills reduces fuel loads and associated fire potential.

Vegetation Density: Vegetation density in high fire threat areas increases the risk and speed of which wildfire can spread. Increasing vegetation clearance from overhead power lines in high fire threat and adjacent areas lowers the risk of wildfire.

Seasonal Dryness: Periods of low relative humidity and elevated temperature can dry fine vegetative fuels and increase their receptivity to ignition. Fuel moisture and temperature are incorporated into the ignition-likelihood component of the quantitative wildfire risk analysis described in Appendix B. UEU monitors National Weather Service alerts, including Red Flag Warnings and other weather events that may affect the service territory.

Fire Weather and Wind: High winds and gusts can down trees, break branches, damage utility equipment, and increase fire spread following an ignition. Historical wind and weather conditions are incorporated into the quantitative wildfire risk analysis, which samples the

⁹ <https://landfire.gov/>

historical range of wind speeds and directions affecting the system. UEU monitors National Weather Service wind warnings, advisories, and Red Flag Warnings to inform operational decisions that reduce ignition risk. UEU has also established zone-specific operational thresholds for evaluating elevated wildfire risk and potential PSPS conditions. These thresholds are used as screening criteria to trigger additional evaluation rather than as automatic de-energization triggers. The thresholds and supporting methodology are part of UEU's operating practices. The increased vegetation clearing in HFTD further reduces the risk of ignition caused by these events.

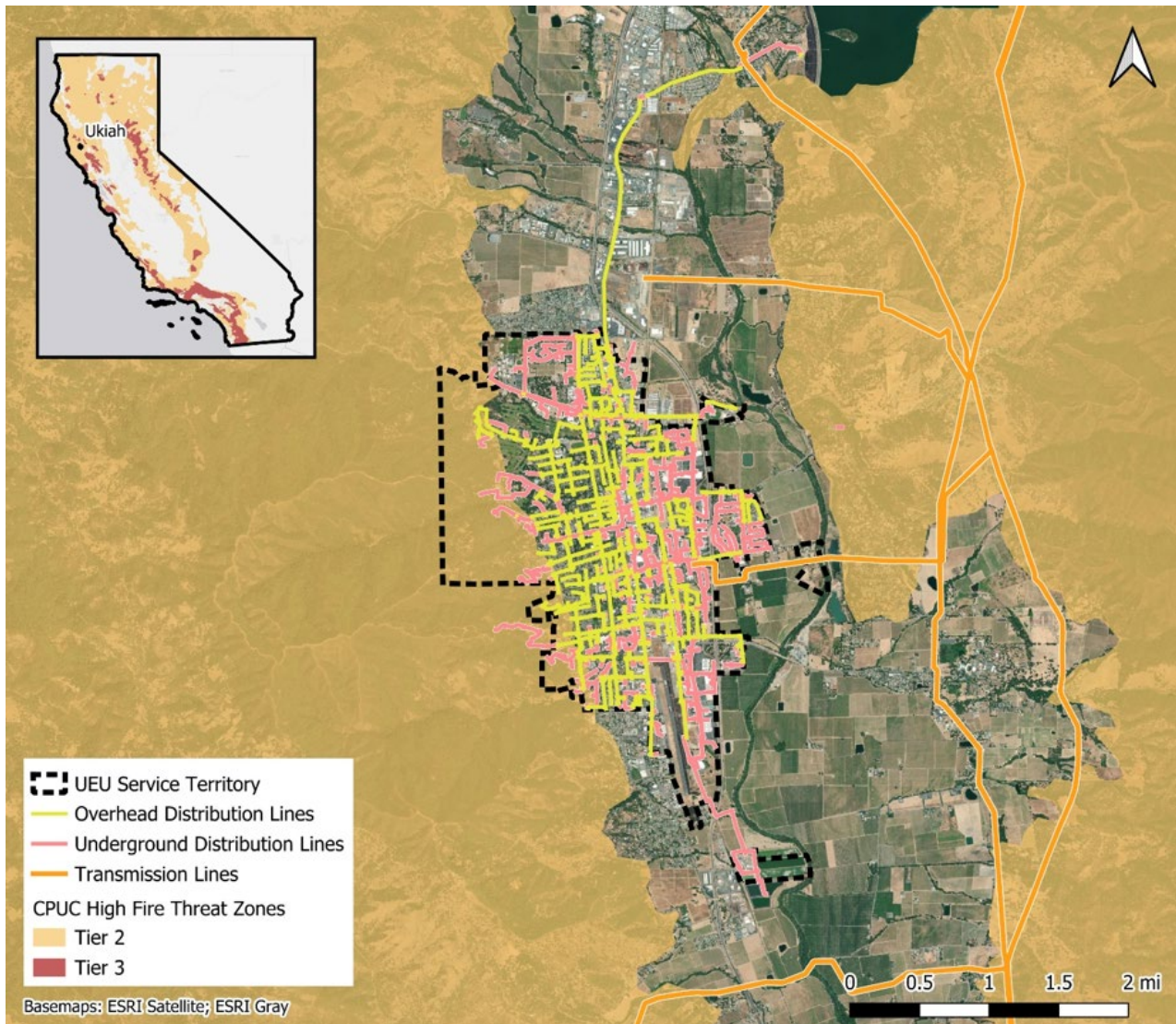
Fire History: Wildfire history within and surrounding the Ukiah city limits provides additional information regarding areas historically exposed to wildfire.

D. CPUC High Fire Threat Districts¹⁰

UEU incorporates the CPUC's Fire Threat Map, shown in Figure 4 into its construction, inspection, maintenance, repair, and clearance practices.

¹⁰ PUC § 8387(b)(2)(K).

Figure 4. CPUC Fire Threat Map



UEU reviews the CPUC Fire Threat Map at least annually to identify adjustments to hazard threat levels due to changes in urban development and vegetative conditions. When adjustments are identified, UEU collaborates with Ukiah Valley Fire Authority, City Departments, and CAL FIRE to update the CPUC Fire Threat Map and UEU's Fire Threat Map. The UEU's Fire Threat Map depicts the highest known fire threats.

The quantitative wildfire risk analysis presented in Appendix B complements the CPUC fire-threat designations by evaluating risk at a finer spatial scale along UEU's overhead electric system. Whereas the CPUC HFTD identifies areas of elevated wildfire hazard, the Appendix B analysis evaluates modeled ignition likelihood and potential wildfire consequences at the

individual line-segment and circuit levels. The results show spatial variation in modeled wildfire risk across UEU's overhead system, including within and outside the CPUC Tier 2 HFTD, and provide additional information for prioritizing wildfire mitigation activities.

5. WILDFIRE PREVENTION STRATEGY AND PROGRAMS

This section describes the strategies and programs deployed by UEU for wildfire mitigation relative to its electric system.

A. Strategy – Vegetation Management¹¹

UEU meets or exceeds the minimum industry standard vegetation management practices. For both transmission and distribution level facilities, UEU meets: (1) GO 95 Rule 35 and (2) the GO 95 Appendix E Guidelines to Rule 35 (See Table 5 below). The standards require significantly increased clearances in the high fire threat areas. In identified high risk areas that border or are close to Tier 2 wildfire threat areas, the radial clearance of branches or foliage from bare conductors is increased up to 12', unless such aggressive trimming would cause fatal damage to the tree or if the trimming would create adverse secondary consequences. The recommended time-of-trim guidelines do not establish a mandatory standard but instead provide useful guidance to utilities. UEU has developed a tree inventory to catalog existing trees and uses specific knowledge of growing conditions and tree species to determine the appropriate time of trim clearance in each circumstance. UEU performs this work with arborists and a contract for tree trimming services as needed. Additionally, vegetation clearing is completed at the base of poles to minimize potential sources of spread.

The radial clearances shown in Table 5 are the recommended minimum clearances established at time of trimming, between the vegetation and the energized conductors and associated live parts where practicable. For public safety or service reliability, vegetation management practices may obtain greater clearances than those listed to ensure compliance until the next scheduled maintenance. Each utility may apply additional clearances beyond those listed below. Practices take into consideration line operating voltage, length of span, line sag, planned maintenance cycles, location of vegetation within the span, species type, experience with particular species, vegetation growth rate and characteristics, vegetation management standards and best practices. Local climate, elevation, fire risk, and vegetation trimming requirements are also applicable to State Responsibility Area lands pursuant to Public Resource Code Sections 4102 and 4293.

UEU's utility-specific wildfire mitigation activities are complemented by broader City and Ukiah Valley Fire Authority initiatives. The City's grant-funded fuels crew has treated more than 500

¹¹ PUC § 8387(b)(2)(H) plans for vegetation management.

acres since the program began, including approximately 200 acres in the western hills. Work includes hazardous-fuels reduction, vegetation management, and construction projects. Maintenance of fuel breaks near residential areas, critical infrastructure, parks, the Great Redwood Trail, airport property, and other locations throughout the region are also included. The fuels crew also provides additional capacity during wildland-fire incidents, pre-positioning assignments, severe-weather events, and other emergencies.

Table 5. GO 95 Guidelines to Rule 35¹²

Voltage of Lines	Radial Clearance of Bare Line Conductors from Tree Branches or Foliage
Radial clearances for any conductor of a line operating at 2,400 or more volts, but less than 72,000 volts	4 feet
Radial clearances for any conductor of a line operating at 72,000 or more volts, but less than 110,000 volts	6 feet
Radial clearances for any conductor of a line operating at 110,000 or more volts, but less than 300,000 volts	10 feet
Radial clearances for any conductor of a line operating at 300,000 or more volts	15 feet

In addition, UEU Wildfire Prevention Program, included as Appendix A, also includes:

- No vertical coverage above UEU transmission lines.
- Vegetation control in a 30-foot perimeter around power plant and substations conductors.
- Clear easement from ground to sky on public lands adjacent to UEU facilities, unless it would result in adverse consequences.
- Collaboration with adjacent customers for wider clearance on their land. This could include tall, diseased, leaning trees at risk of falling into power lines.
- Vegetative fuels reduction in easements on an annual rotation to maintain CPUC recommended clearances based on the fire hazard zone for transmission and

¹² https://ia.cpuc.ca.gov/gos/go95/go_95_appendix_e-guidelines.html.

- distribution lines.
- Undergrounding in areas where heritage trees are prevalent.

B. Strategy - Enhanced Inspections¹³

Inspections play an important role in wildfire prevention. UEU currently follows the inspection cycles outlined in California GO 95, 128, and 165. UEU's current inspection activities incorporate several components including annual infrared (IR) patrol of overhead lines and substations, inspection of wood poles, 115 KV lines and GIS data collection and sharing. All patrols and inspections are completed by a Journeyman Lineman who documents problems found and related actions to ensure issues are timely addressed. For issues that cannot be immediately addressed, work orders are issued with a priority level and completion date.

Annual patrols in and near the Tier 2 Fire Threat areas are conducted every spring prior to fire season. Patrols are documented and findings identified and addressed. Should deenergization occur from critical weather or an ignition, inspection by patrol is completed prior to re-energization. UEU uses unmanned aerial vehicles with IR capability. The frequency of inspections increases in the High Fire Threat areas and when storms or other disasters impact the system.

C. Strategy - Situational Awareness

UEU is evaluating an automated control management system that can be used during outages. UEU is also investigating advanced metering infrastructure (AMI) technology that can track customer outages as part of an Outage management System. The AMI system is included in the FY26/27 Capital Improvement Plan (CIP).

Other efforts include the following, in collaboration with Ukiah PD and Ukiah Valley Fire Authority:

- Use unmanned aerial vehicles (UAVs) during high fire threat days for early detection, infrared inspection of hard-to-reach areas, and to support public safety.
- Communication system upgrades for wildfire and disaster response and recovery.
- AlertCA Wildfire cameras are monitored and used for early detection.
- Reporting tools for customer safety issues.

D. Strategy - Operational Practices

¹³ PUC § 8387 (b)(2)(I) plans for inspections of electrical infrastructure.

UEU operates the system in a manner that minimizes the risk of a catastrophic wildfire being caused or perpetuated by UEU electric facilities. UEU takes corrective actions for identified deficiencies including improperly installed or maintained fire protection measures. Operational practices that help reduce the risk of wildfire and improve fire event response time include:

- During high wildfire threat periods, perform only essential and light non-expulsion work while observing areas of concern, including red flag warnings.
- Place staff at Orchard Substation and Mendocino Hydroelectric Power Plant with an electrical technician or lineman.
- Post linemen where fire danger is higher and have field personnel patrol the City.
- Immediately report any hazardous observations to Fire/Police.
- Place all available UEU Staff on standby.
- Collect and maintain wildfire and system data necessary to implement and evaluate the Wildfire Mitigation Plan.

UEU places the system in no-reclose mode during hot, dry, windy conditions. As new hardware is installed with advanced capabilities, UEU is updating guidelines for recloser setting to more closely match wildfire risk assessment from CloudFire.¹⁴

E. Strategy - System Hardening

UEU's electric facilities are designed, constructed, and maintained to meet or exceed the applicable federal, state, or industry standard. GO 95 provides design and construction standards for overhead electrical facilities throughout California. UEU meets or exceeds all GO 95 standards and follows the National Electric Safety Code.

UEU manages a 5-year capital improvement plan to:

- Add remote-controlled field reclosers.
- Clear every wood pole with operating devices of flammable vegetation to a radius of twelve feet.
- Clear access paths along power line easements to ensure access to inspect and perform maintenance.
- Replace wood poles with steel as 115KV transmission reach end of useful life for Tier 2.
- Revise engineering and construction standards to include arc suppression components, raptor framing, squirrel guards, tree wire, lightening arresters, and arc

¹⁴ PUC § 8387 (b)(2)(F) recloser protocols.

- suppression fusing.
- Establish equipment standards for remote-controlled reclosers tied into the SCADA system.
- Convert overhead lines to underground as feasible and economic.
- Consider alternative technologies, such as wire-break sensing and arc detection technology, based on cost-effectiveness and installation complexity.
- Replace overhead fuses with current limiting, non-arcing models in Tier 2 areas.

F. Strategy - Public Safety and Notification¹⁵

The City ensures robust communication and coordination with the community during High Fire Threat periods and disasters.

- Coordinate with UVFA and UPD, the City Office of Emergency Management, and the County Office of Emergency Services during emergencies or large-scale outages.
- Utilize established emergency communication protocols with County EOC and/or Health and Human Services for outreach and notifications to vulnerable groups by utilizing available resources such as reverse 911, Nixle and other City and County wide notification systems.
- Actively update social media and issue press releases using the COU Communications Team.

Customer notification is a vital component of the City's Wildfire Mitigation Plan. The process begins with customer education and continues with timely updates when weather conditions elevate wildfire risk. Educational outreach is conducted primarily through printed materials, the City's website, and social media platforms.

Should it be necessary to de-energize all or part of the system due to extreme conditions, real time updates are delivered through social media and other technology accessible to City staff. Notifications are coordinated through the City Manager's Office, the City's Emergency Operations Center, or other available means.

The City communicates directly with critical facility operators, such as hospitals, emergency centers, schools, and public agencies prior to any de-energization that may impact their electric service.

G. Strategy - Reclosing and Deenergization

¹⁵ PUC § 8387 (b)(2)(G) deenergization notification procedures.

UEU prioritizes monitoring local and real-time conditions for proactive decisions regarding power shutoffs and re-energizations. UEU leverages its compact service territory and advanced strategies for ongoing risk assessment and real-time monitoring of local weather, ground conditions, and other system threats. This allows UEU to respond to actual hazards, ensuring that power shutoffs are timely enacted and in consultation with the City's Office of Emergency Management, Ukiah Valley Fire Authority, Ukiah Police Department, Cal Fire, and other public safety service partners. This approach is based on:

- The relatively compact service territory of only 4.3 square miles that is visible with proper technology.
- UEU's expanded wildfire mitigation activities, including enhanced vegetation management and undergrounding beyond the Tier 2 threat areas to prevent ignitions near the higher threat areas.
- Over 50% of the City's 77 miles of distribution is undergrounded.
- All law enforcement, fire and hospital facilities are located within Tier 1 boundaries.
- Turning off the power based on limited information, rather than local, real-time observations, could negatively affect a large portion of UEU's small service territory.
- Real-time information is available from staff located in areas at risk of extreme weather conditions.
- UEU can disable automatic reclosing and enable fast-trip protection on circuits that traverse Tier 2 areas or are considered a fire risk based on local conditions.
- UEU leverages system hardening, situational awareness, vegetation management and other strategies to avoid shutting off power.

For public safety, City staff may proactively deenergize all or portions of the City's electric distribution system. Deenergization of City power lines may occur:

- Upon the request of Ukiah Valley Fire Authority, Ukiah Police Department, Cal Fire or other State or local public safety agencies.
- When UEU's operating practices indicate a need for deenergization and situational awareness confirms the necessity.
- When energized power lines are subject to high winds or other weather or atmospheric conditions that may create a substantial public safety risk.
- When real-time information from qualified field staff indicate that wind-driven conditions are threatening City-owned electric utility equipment.
- When PG&E de-energizes the City's transmission source. The City has no control over PG&E's decision to de-energize Ukiah's transmission.

As time permits, deenergization of City-owned power lines is coordinated between the City Manager's Office, Electric Department, and all City Public Safety Departments. The decision to

deenergize City-owned power lines is communicated to the City Manager's Office as soon as practical.

H. Strategy - Wildfire Response and Recovery

Key activities for wildfire response and recovery include:

- Stage fire protection equipment in a ready status and coordinate with the City's Office of Emergency Management regarding EOC readiness and potential activation during high fire threat events.
- Staff critical assets for coverage and necessary shift changes during fire events.
- Execute the City's EOP for Wildfire Response:
- Activate communications through the City of Ukiah Electric Utility, as a member of the California Utility Emergency Association, to ensure communication among utilities during emergencies, including mutual aid.
- Activate the Western Energy Institute's Western Region Mutual Assistance Agreement, covering utilities across several western states.

I. Strategy - Activate Complementary Programs

Strategies are also implemented through the following Programs:

- UEU Wildfire Prevention Program Appendix A
- Program – UEU Capital Improvement Plan
- Program – COU Emergency Operations Plan

6. COMMUNITY OUTREACH AND EDUCATION

COU, UVFA, UPD and UEU conduct proactive outreach and education to create public awareness of fire threats, fire prevention, and available support during a wildfire or large power outages. Prior to an emergency, communication includes regular messages related to wildfire prevention, such as right-of-way management, tree trimming, line inspection, or other relevant topics. Methods of communication include newsletters (Power Line Newsletter), website updates, social media posts, and public service announcements.

7. RESTORATION OF SERVICE¹⁶

In the event of a wildfire or other emergency event, UEU assigns staff to coordinate activities to restore service. After an event, UEU restores power in cooperation with UVFA, UPD, and COU

¹⁶ PUC § 8387 (b)(2)(M) how the utility will restore service after a wildfire.

Departments. UEU management oversees restoration and response activities. If additional staff is needed, UEU may leverage mutual aid agencies, other City of Ukiah staff, and local aid organizations. The utility may also engage contractors as needed.

Steps typically taken for restoration:

- Assess. UEU crews must patrol each line segment to determine the extent of damage that has occurred. The patrol involves assessing equipment access issues, any cleanup/debris removal issues and determining personal protective equipment requirements for the crews. UEU works with the local agency in charge of the fire to access impacted areas as soon as the area is deemed safe by fire officials.
- Plan. After initial assessment, UEU supervisors, managers and engineers meet to plan the needed work. The team works with system operations to prioritize restoration efforts, targeting the circuits that serve the most critical infrastructure needs.
- Mobilize. Based on the size and complexity of the rebuild/restoration efforts, UEU coordinates the crews and materials. Mutual aid and contractors may be used for additional support. UEU maintains a materials vendor list and has contracts for labor and materials. Widespread catastrophic damage may create shortages and delay materials and labor.
- Rebuild. The rebuild effort led by UEU begins when areas become safe and accessible. Initial efforts focus on getting the lines up and restoring damaged circuits. Depending on the extent of damage, demolition may be performed concurrently or after crews start installing new facilities. UEU incorporates new materials and technologies as indicated and available.
- Restore. UEU, mutual aid, or contract crews promptly restore electric service as soon as conditions are safe. Depending on the extent of damage, residential and business customers may have to perform their own repairs on their facilities and pass inspections by local agencies prior to having full electric service restored.

In most cases, restoration priorities depend on the specific incident and available resources:

- Public safety in the affected areas.
- Worker safety in performing the restoration work.
- Life-support or critical care customers.
- Critical infrastructure Hospitals, Key medical, City and County facilities and accounts, Sheriff's Department and jail, City Police and Fire Departments, other key utility facilities (e.g., water, sewage, gas, citywide communications), Incident Command Site or Base Camp, Incident Evacuation Centers, local broadcast and radio Stations, etc.).

- Major commercial activities/accounts critical to continuity of community services (e.g., gas stations, food stores, home supply stores, repair shops, eateries and lodging facilities, financial institutions, etc.
- Reduce the total number of customers affected.
- Reduce the length of time customers have been without power.

UEU Operations find it efficient to dedicate restoration resources in the following order:

- Transmission circuit (115 kV).
- Substation and Mendocino Power Plant Facilities.
- Distribution circuits (600 Amp -12 kV).
- Distribution feeders (200 Amp – 12 kV).
- Distribution transformers.
- Service lines.

8. EVALUATION OF THE PLAN¹⁷

This section describes ways that UEU gauges WMP performance.

A. Metrics for Measuring Plan Performance¹⁸

Reducing wildfires caused by utility equipment and the incident rate of utility caused wildfires is UEU's primary metric. Additional metrics help gauge if the risk of utility-caused wildfires is being reduced. The following five primary metrics are used to measure the effectiveness of UEU's WMP.

Metric 1: Fire Ignitions

A fire ignition is defined as:

- The UEU facility associated with the fire
- Whether the fire was self-propagating and of a material other than electrical and/or communication facilities
- UEU has knowledge of the fire occurring

UEU collects and provides information on any known ignitions in the WMP. Table 6 provides a

¹⁷ PUC § 8387(b)(2)(N) processes and procedures to (i) monitor and audit; (ii) identify deficiencies; monitor and audit effectiveness of inspections.

¹⁸ PUC § 8387(b)(2)(D) metrics to measure and track Plan implementation.

summary of known ignitions.

Table 6. Ignitions Caused by Utility Equipment for Metric 1

Year	UEU Territory Inside Tier 2 Fire Threat Area	UEU Territory Outside Fire Threat Area
2020	0	0
2021	0	0
2022	0	0
2023	0	1*
2024	0	0
2025	0	1**

2023 Grass fire caused by vehicular accident resulting in significant damage to pole and subsequently wire down

** 2025 Tree branch fell on 12kV and tree caught fire, extinguished by fire department

The intent of this metric is to identify and investigate equipment that due to its design, age, construction, or condition should be replaced. This metric was revised in 2023 to align with the City's definition of ignition which includes all ignitions, regardless of the distance of travel. In 2023, a grass fire started in the Tier 1 area from a vehicular accident. The fire was contained quickly.

Metric 2: Wires Down

A wire-down event includes any instance where an electric transmission or primary distribution conductor falls to the ground or onto a foreign object. UEU categorizes a wire-down event as occurring inside or outside of the High Fire Threat District. UEU does not normalize this metric by excluding unusual events, such as severe storms. UEU supplements this metric with a qualitative description of any unusual events. Table 7 summarizes known instances of wires down.

Table 7. Wires Down Events for Metric 2

Year	UEU Territory Inside Tier 2 Fire Threat Area	UEU Territory Outside Fire Threat Area
2020	0	0
2021	0	0
2022	0	0
2023	0	1*
2024	1	1
2025	1	1

*2023 grass fire caused by a vehicular accident resulted in significant damage to the pole and subsequently a wire down.

The 2024 wire down incident occurred when a #6 solid copper wire connection burned off and dropped the wire to the ground. UEU is replacing all #6 solid copper wire due to aging. The 2025 wire down incidents occurred due to two separate failed connections.

Metric 3: Inspection Records and Maintenance

System inspections and timely maintenance are among the leading methods to improve system safety and reliability. UEU follows GO 95 and GO 165 for inspection schedules and performs additional patrols of overhead lines in High Fire Threat areas annually, beginning in the spring. Maintenance or repairs identified during these inspections are tracked and given priority in the work schedule, shown in Table 8.

Table 8. Inspections Records and Maintenance for Metric 3

Year	Grids Completed - Patrols	Grids Completed – Detailed Inspections
2020	27	27
2021	27	0
2022	27	0
2023	0	0
2024	18	0
2025	0*	5

*Note that Patrols were completed in 2025, however, adequate documentation was not submitted to properly quantify the number of grids completed. This error was identified during the Utility’s invasive inspection discussions first quarter 2026, reported to the Director by an Engineering Technician. Steps to correct the issue have started.

Detailed inspections began in 2025 and are being completed in 2026, following completion of the fire mitigation undergrounding project.

Metric 4: Vegetation Management

UEU maintains proper vegetation clearance from utility lines with the assistance of qualified high-voltage tree trimming contractors. The contractors work under the direction of the utility’s Superintendent to ensure proper clearances. Vegetation management is completed on a yearly basis. All 27 Grids in UEU’s service territory are evaluated for trimming annually. Enhanced vegetation management was completed in 2024 for areas adjacent to Tier 2 as part of a wildfire mitigation grant.

Metric 5: Overhead Equipment Failures

The failure of overhead utility equipment can be a source of ignition. This metric identifies

failures to ensure that equipment is replaced proactively. The number of failures is reported annually, shown in Table 9.

Table 9. Overhead Equipment Failures for Metric 5

Year	UEU Territory Inside Tier 2 Fire Threat Area	UEU Territory Outside Fire Threat Area
2020	2	1
2021	0	0
2022	0	1
2023	1	1
2024	0	0
2025	0	0

As data collection history improves it identifies areas of operations and the service territory that are impacted, helping improve the Plan over time.

Previous versions of the WMP’s metrics have informed the current WMP.¹⁹ Two metrics were originally used in the WMP during years 2020 and 2022. Fire Ignitions and Wires Down. UEU concluded that the two original metrics did not adequately assess Plan performance. UEU added metrics to increase oversight into potential ignition sources beginning with the 2023 WMP.

B. Monitoring and Auditing The Plan

Review of this WMP occurs annually and lessons learned have the highest priority for improving steps in the plan, any reference programs, and the process for implementation. UEU presents the WMP to the Ukiah City Council based on the Wildfire Safety Advisory Board revision schedule. The comprehensiveness of this WMP is assessed by an independent evaluator with experience in assessing the safe operation of electrical infrastructure. The independent evaluator issues a report to the Ukiah City Council and is made available on the City’s Website.

C. Identifying and Correcting Deficiencies In The Plan

UEU staff and qualified external stakeholders are encouraged to identify Wildfire Mitigation Plan deficiencies or potential deficiencies to the Electric Utility Director as soon as possible. The Electric Utility Director evaluates each reported deficiency and, if the deficiency is determined to be a valid Plan deficiency, it is logged with the following information:

¹⁹ PUC § 8387(b)(2)(E) A discussion of how the application of previously identified metrics to previous wildfire mitigation plan performances has informed the wildfire mitigation plan.

- 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 Electric Utility Director reviews the log at regularly scheduled Leadership and Supervisor Meetings. The original 2020-2022 WMP metrics were supplemented with 2023 WMP update and continue to be monitored.

Identified corrections include inadequate documentation of some 2025 patrols that were not identified as complete. UEU is working to ensure that all patrols and inspections are properly documented to accurately reflect the comprehensive inspections program.

D. Monitoring the Effectiveness of Inspections

UEU performs inspections on either an annual, 5-year or 10-year cycle, based on GO 95 and GO 165 or fire mitigation recommendations. Any areas of improvement or hazards are documented with a work order, given a priority, and the work order is tracked. When completed the work order contains a close date.

The Electric Utility Director assigns qualified internal staff or engages a third party to review and audit the equipment and line inspection programs called out in the Wildfire Mitigation Plan after the completion of the first six months of the plan. Audit tasks include:

- 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.
- Select random samples of completed corrective actions and verify the effectiveness of the corrective actions.
- Issue a written report of findings.

The Superintendent of Utility Operations reviews the audit findings and assigns corrective actions as applicable. A copy of the audit report is sent to the Director.

9. INDEPENDENT AUDIT

Public Utilities Code section 8387(c) requires UEU to contract with a qualified independent evaluator with experience in assessing the safe operation of electrical infrastructure to review and assess the comprehensiveness of this Wildfire Mitigation Plan.

Revisions of the WMP are evaluated by the Ukiah Valley Fire Chief.²⁰ The Fire Chief's comments function as an independent audit and are incorporated into future revisions. The results of the independent evaluator are presented to the Ukiah City Council at a public meeting.

²⁰ PUC § 8387(c) the utility shall contract with a qualified independent evaluator.

APPENDICES

This section contains the appendices of the WMP as follows:

Appendix A – Ukiah’s Wildfire Prevention Program

Appendix B – Wildfire Risk Quantification Methodology

Appendix C – Abbreviations and Acronyms

Appendix D – Cross-verification to Public Utilities Code section 8387

Appendix E – Wildfire Maps

Appendix A: Ukiah Electric Utility Wildfire Prevention Program

- Introduction

1. Purpose - The purpose of the Ukiah Electric Utility (UEU) Wildfire Prevention Program (WPP) is to establish a framework for the electric utility to conduct an effective, coordinated program to prevent catastrophic impacts to its infrastructure from wildfire. This program is a significant component of the UEU Wildfire Mitigation Plan required by California Public Utilities Code § 8387. The Program aims to prevent the start of wildfires from utility operations in and around the City of Ukiah.
2. Goals and Objectives – The goals and objectives guiding the WPP include:
 - Prevent electric utility caused wildfires by identifying hazards that pose a potential threat of ignition.
 - Prioritize prevention efforts by increasing inspections on overhead lines in Tier 2 fire threat areas.
 - Improve and increase fuel reduction activities conducted during inspections.
 - Develop enhanced inspection techniques using Infrared Technology.
 - Develop a drone inspection program for overhead lines.
 - Create community awareness for utility wildfire prevention.
- Strategy/Scope of Work
 3. Detailed Corrective Maintenance Program Inspections: UEU performs a service territory-wide inspection of its electric distribution system on inspection cycles outlined by General Order 95 (GO 95) and General Order 128 (GO 128). In general, utilities must patrol their systems once a year in urban areas and conduct detailed inspections at a minimum of every three to five years. These inspections help mitigate wildfire risk by providing additional information about the electric distribution system and conditions that could result in ignition.

UEU will implement a detailed inspection of facilities in the Tier 2 areas of the City on an annual basis, in late spring, and expand the inspections to include additional fuels reduction and vegetation management in mid-summer. The following resources will be used to accomplish this:

- UEU-CPUC Fire Threat Map
- Department Inspection Checklist

As part of its efforts to make its electric system more resistant to wildfires, UEU designed and actively maintains a vegetation management program aimed at keeping trees and brush clear of power lines. In areas where current GO 95 rules are currently met, UEU is evaluating and assessing areas where vegetation management may need to exceed GO 95 requirements, eliminating vegetation overhang near power lines and increasing the

clearance distances. In identified high risk areas that border or are close to Tier 2 wildfire threat areas, the radial clearance of branches or foliage from bare conductors will be increased to 12'.

Vegetation Management: UEU's strategy for conducting its vegetation management program focuses on annual, routine inspections. In 2020, UEU began an electronic tree database to project growth and cycles of trimming needed to maintain clearances. The database includes information pertaining to the tree including species, height, diameter, growth rate and clearance. This history provides UEU information on trimming cycles, and which trees require annual work.

UEU's vegetation management operations are conducted in compliance with the City's Tree Management Guidelines and the City's Landmark Tree Program Guidelines and Policies. All debris associated with pruning operations are chipped and recycled.

2. **Periodic Infrared (IR) Inspections:** Based on the success of the 2019 IR Pilot Program for overhead distribution equipment, UEU is creating a formalized program for periodic IR inspections. The program will include convening a thermography team responsible for quality checks on equipment and facilities to identify issues that could lead to a wire down or result in an ignition source, especially from conditions that are not identifiable during visual inspections. The pilot program proved to be successful in identifying several instances that could have resulted in outages. Annual IR inspections will initially be conducted in the high fire threat areas on electrical equipment and connections. Frequency of these IR inspections will be adjusted as warranted.
3. **Drone Inspections:** UEU has enhanced its existing inspections using drones. In 2022, IR inspections using a drone provided close-in infrastructure observations. This technology captures images from multiple angles, including above to gain visual perspectives that cannot be gained from ground inspections. Drone images and data are evaluated by engineering staff to assess risk, determine trends, and identify patterns of infractions. Drone technology detects problems before they become a safety concern.
4. **Education and Outreach:** UEU coordinates with the City Manager's office to educate the public on the UEU's wildfire prevention activities. Dissemination of information is done through a variety of channels such as UEU's quarterly newsletter, Facebook and the City's website.



CloudFire Inc.
1111 High Street, Suite B
Auburn, CA 95603
530-202-9057

Ukiah Electric Wildfire Risk Quantification Methodology Summary

September 23, 2026

Prepared by:

A handwritten signature in blue ink that reads 'Chris Lautenberger'.

Chris Lautenberger, PhD, PE^(CA)

1. Introduction

CloudFire Inc. (CloudFire) conducted a utility wildfire risk analysis for the City of Ukiah Electric Utility (Ukiah Electric). The analysis included 0.55 miles of 115 kV overhead transmission lines and 47.66 miles of overhead distribution lines, totaling 48.21 miles. A total of 106,518 potential utility-caused ignitions and their consequences were modeled to quantify risk at the line-segment and circuit levels.

Ukiah Electric's 2025 Wildfire Mitigation Plan identifies infrastructure in and adjacent to Tier 2 wildfire threat areas and describes elevated wildfire exposure along the western hills. The analysis applies to Ukiah Electric's overhead assets and the surrounding landscape into which a utility-caused fire could spread.¹

The analysis combined a baseline ignition response function, historical weather data, and fire-spread modeling. Ukiah Electric's georeferenced outage records were unavailable for this analysis, so common baseline probability parameters were applied throughout the modeled network.

¹ Ukiah Electric Utility, 2025 Wildfire Mitigation Plan, pp. 4 and 14.

2. Wildfire Risk Quantification Methodology

The methodology combines ignition likelihood under historical environmental conditions with the consequences of simulated fires. The resulting metrics describe the spatial distribution of wildfire risk across Ukiah Electric’s overhead assets.

2.1 Baseline Outage and Ignition Models

Because georeferenced outage records were unavailable for this analysis, no circuit-specific response functions were developed. The probability component used a baseline wind-dependent outage-rate function as a proxy for ignition likelihood. Fuel bed dryness and temperature were then used to convert the outage-rate proxy to an ignition rate. The baseline outage-rate function is:

$$OR = \max(10^{A \times WG + C}, OR_{\min})$$

Here, OR is the outage-rate proxy, expressed in outages per line mile per hour, and WG is wind gust speed in mph. Table 1 lists the baseline parameters applied to both the transmission and distribution lines. These parameters were not estimated from Ukiah Electric’s outage history and are approximate values determined from previous analysis of outage records from other utilities.

Table 1. Baseline outage-rate model parameters.

Parameter	Model input	Value
A	or_a	0.075
C	or_c	-6.02
OR _{min}	or_min	8.91e-05

Ignition rate IR (ignitions per line mile per hour) is estimated from the outage-rate proxy OR as follows:

$$IR = F \times P_{\text{ign}} \times OR$$

where F is the ignition-to-outage ratio for a receptive fuel bed with negligible moisture content and temperature > 80 °F, and P_{ign} is fuel bed ignition probability² which is in turn a function of fine dead fuel moisture content and temperature (Table 2; percentages are divided by 100 in the ignition-rate equation). Fine dead fuel moisture is taken as equilibrium fuel moisture content as a function of relative humidity and temperature³. An estimated range for F is $10^{-3} \leq F \leq 10^{-2}$, although this parameter is likely utility- and/or circuit-dependent. A value of $F = 0.001$ was used in this analysis.

² Schroeder, M.J., “Ignition probability,” USDA Forest Service. Fort Collins, CO. RMRS unpublished report, 1969.

³ Glass, Samuel V.; Zelinka, Samuel L. 2021. Chapter 4: Moisture relations and physical properties of wood. In: Wood Handbook—Wood as an Engineering Material. General Technical Report FPL-GTR-282. Madison, WI: U.S. Department of Agriculture, Forest Service, Forest Products Laboratory.

Table 2. Fuel bed ignition probability (%)².

Fuel Temp (°F)	Fine Fuel Moisture Content (%)														
	1.5	2.0	2.5	3.0	4.0	5.0	6.0	7-8	9-10	11-12	13-16	17-20	21-25	26-30	>30
30-39	87	80	74	69	59	51	43	34	25	17	10	4	1	0	0
40-49	89	83	77	71	61	53	45	36	26	18	11	5	1	0	0
50-59	92	85	79	73	63	54	47	37	27	20	11	5	2	0	0
60-69	94	88	81	76	65	56	49	39	29	21	12	6	2	0	0
70-79	97	90	84	78	68	59	51	41	30	22	13	6	2	0	0
80-89	100	93	87	81	70	61	53	42	31	23	14	7	2	1	0
90-99	100	96	90	84	73	63	55	44	33	24	15	7	3	1	0
100-109	100	99	93	86	75	66	57	46	35	26	16	8	3	1	0
110-119	100	100	96	89	78	68	59	48	36	27	17	9	3	1	0
120-129	100	100	99	93	81	71	62	51	38	29	18	9	4	1	0
130-139	100	100	100	96	84	74	65	53	40	30	20	10	4	1	0
140-149	100	100	100	99	87	77	67	55	42	32	21	11	5	2	0
150-159	100	100	100	100	90	80	70	58	45	34	22	12	5	2	0

2.2 Ignition Catalog and Consequence Modeling

The analysis modeled a catalog of 106,518 ignition times and locations within a buffer around Ukiah Electric's overhead lines, using the baseline ignition model and a high-resolution gridded hourly climatology for 2011–2025. The overhead network was divided into line segments no longer than 200 m. Each ignition was associated with a line segment for asset-level risk reporting.

For every line segment at every hour in the historical climatology, ignition rate was calculated using the model in Section 2.1. At each time step, weighted random sampling based on conductor length and ignition rate was used to select segments with modeled ignitions. For each selected segment, the ignition location was randomized within a small buffer surrounding the segment.

The ignition catalog represents variation in ignition likelihood with wind and fuel conditions and samples the historical range of wind speeds and directions. With baseline probability parameters, spatial differences in modeled risk reflect environmental conditions, asset locations, and simulated fire consequences. The analysis does not represent differences in circuit performance inferred from outage records or other asset health information.

The consequences of each ignition were modeled using ELMFIRE^{4,5}. In addition to the ignition catalog, model inputs included:

- 1) Historical wind and weather conditions from the Real Time Mesoscale Analysis (RTMA) dataset⁶, which provides hourly weather estimates on a 2.5 km grid for the continental United States. The analysis used data for 2011–2025.

⁴ <https://elmfire.io>

⁵ <http://dx.doi.org/10.1016/j.firesaf.2013.08.014>

⁶ <https://www.nco.ncep.noaa.gov/pmb/products/rtma/>

- 2) Topography, surface fuel, and canopy fuel layers at 30 m resolution from LANDFIRE data selected for the analysis and reviewed against current local conditions⁷.
- 3) A timber mask derived from the LANDFIRE surface and canopy fuel layers.
- 4) Building footprints from Microsoft⁸.
- 5) Watershed importance data from the USDA Forests to Faucets dataset⁹.

Each simulated fire was ignited near an overhead line under historical wind and weather conditions and allowed to spread for 8 hours. This period captures early fire growth, when most structure impacts from wind-driven utility-caused fires occur before effective structure protection can be established. For each of the 106,518 ignitions, the model recorded fire size, acres of timber consumed, the number of structures within the modeled fire perimeter, and watershed impacts. The simulation domain extended beyond the service territory where needed to capture fire spread and consequences.

2.3 Risk Metrics and Normalization

ELMFIRE outputs were processed to calculate risk by summing over modeled ignitions and weighting each ignition by its consequence. Risk was normalized by line-segment length for asset-level reporting and by overhead line length for circuit-level reporting, allowing comparisons on a per-mile basis. Normalized total risk ($\bar{R}$) combines four impact categories: structures, timber, fire size (suppression costs), and watersheds. The weighted sum is:

$$\bar{R} = \sum_{i=1}^4 w_i R_i = w_s R_s + w_t R_t + w_a R_a + w_w R_w = 0.55 R_s + 0.15 R_t + 0.15 R_a + 0.15 R_w$$

Here, R_s is risk to structures, R_t is risk to timber, R_a is risk from fire size (suppression costs), and R_w is risk to watersheds. The calculation assigns a weight of 0.55 to structure impacts and 0.15 to each remaining category. These weights can be adjusted during post-processing to reflect utility priorities.

The impact categories have different units, so their risk scores were normalized before applying the weighted sum. For each category, scores were divided by the 90th-percentile (P90) risk score across all line segments.

⁷ <https://landfire.gov/data>

⁸ <https://github.com/microsoft/GlobalMLBuildingFootprints>

⁹ https://www.fs.usda.gov/ecosystemservices/FS_Efforts/forests2faucets.shtml

3. Fire Risk Model Outputs

The model provides geospatial risk outputs at two scales:

1. Individual line segments (asset level)
2. Circuits or monitoring zones

Circuit zones group Ukiah Electric's overhead line GIS features by feeder or circuit identifier, with distribution and transmission assets grouped separately where applicable. A 120 m buffer around the grouped linework defines the circuit polygons.

Figure 1 presents normalized total risk by line segment. Figure 2 presents the corresponding risk by circuit. Both maps use the impact categories and weighting factors described in Section 2.3.

Underlying GIS data and tabular outputs include asset and circuit identifiers, overhead line length, risk by impact category, and normalized total risk.

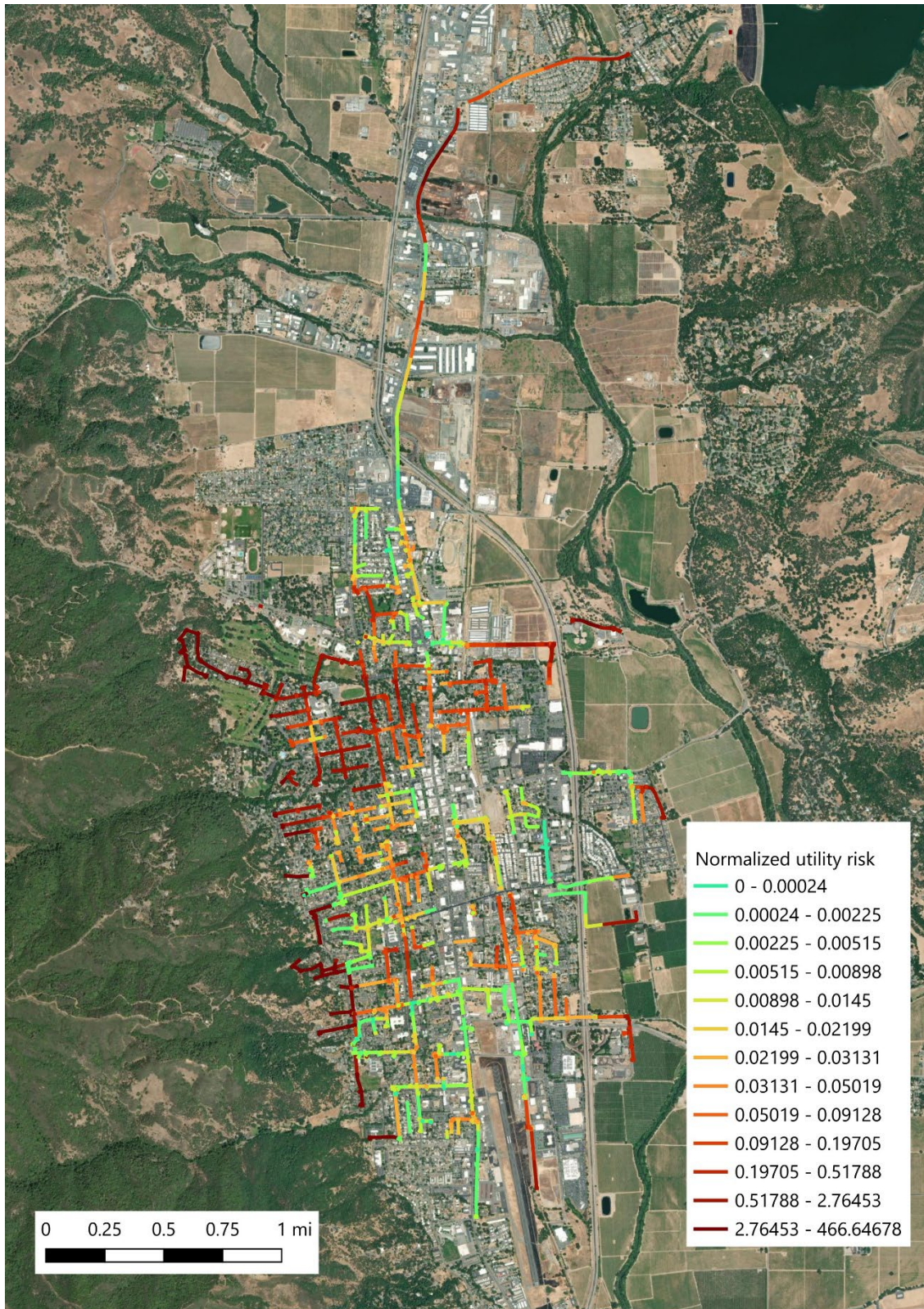


Figure 1. Asset-level view of normalized total risk for Ukiah Electric.

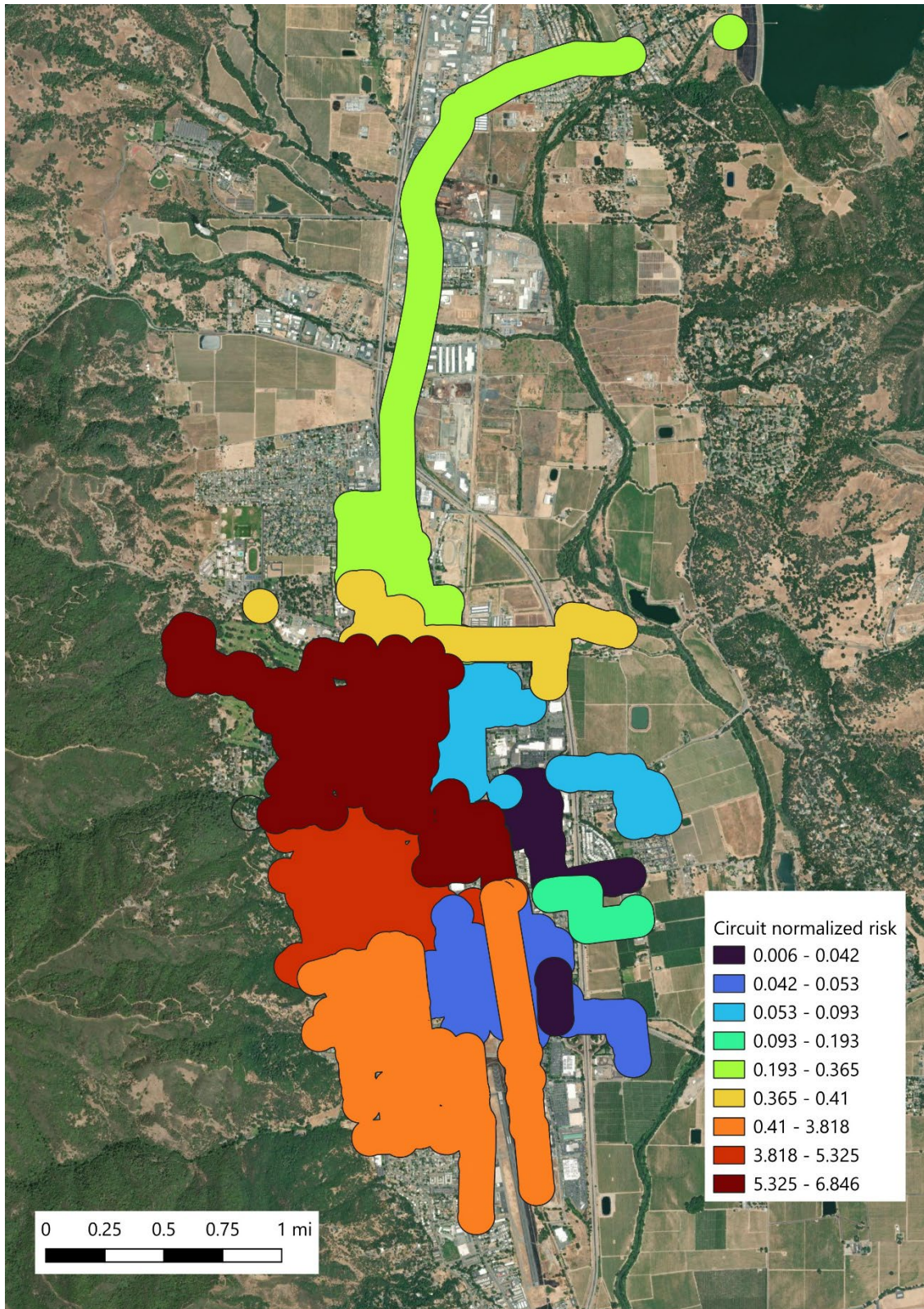


Figure 2. Circuit-level view of normalized total risk for Ukiah Electric, aggregated by circuit.

4. Summary

The analysis quantified wildfire risk across 48.21 miles of Ukiah Electric's overhead network using a baseline ignition response function and fire consequence modeling. The analysis included:

- 0.55 miles of 115 kV overhead transmission lines and 47.66 miles of overhead distribution lines.
- 106,518 potential ignitions modeled under historical wind and weather conditions.
- Baseline outage/ignition probability parameters because georeferenced outage records were unavailable for this analysis.
- Consequences evaluated for structure impacts, fire size, timber impacts, and watershed impacts, with risk summarized by line segment and circuit.

Future updates could use georeferenced outage records and asset condition information to refine the probability model.

Appendix C: Abbreviations and Acronyms

The following are referenced in this WMP:

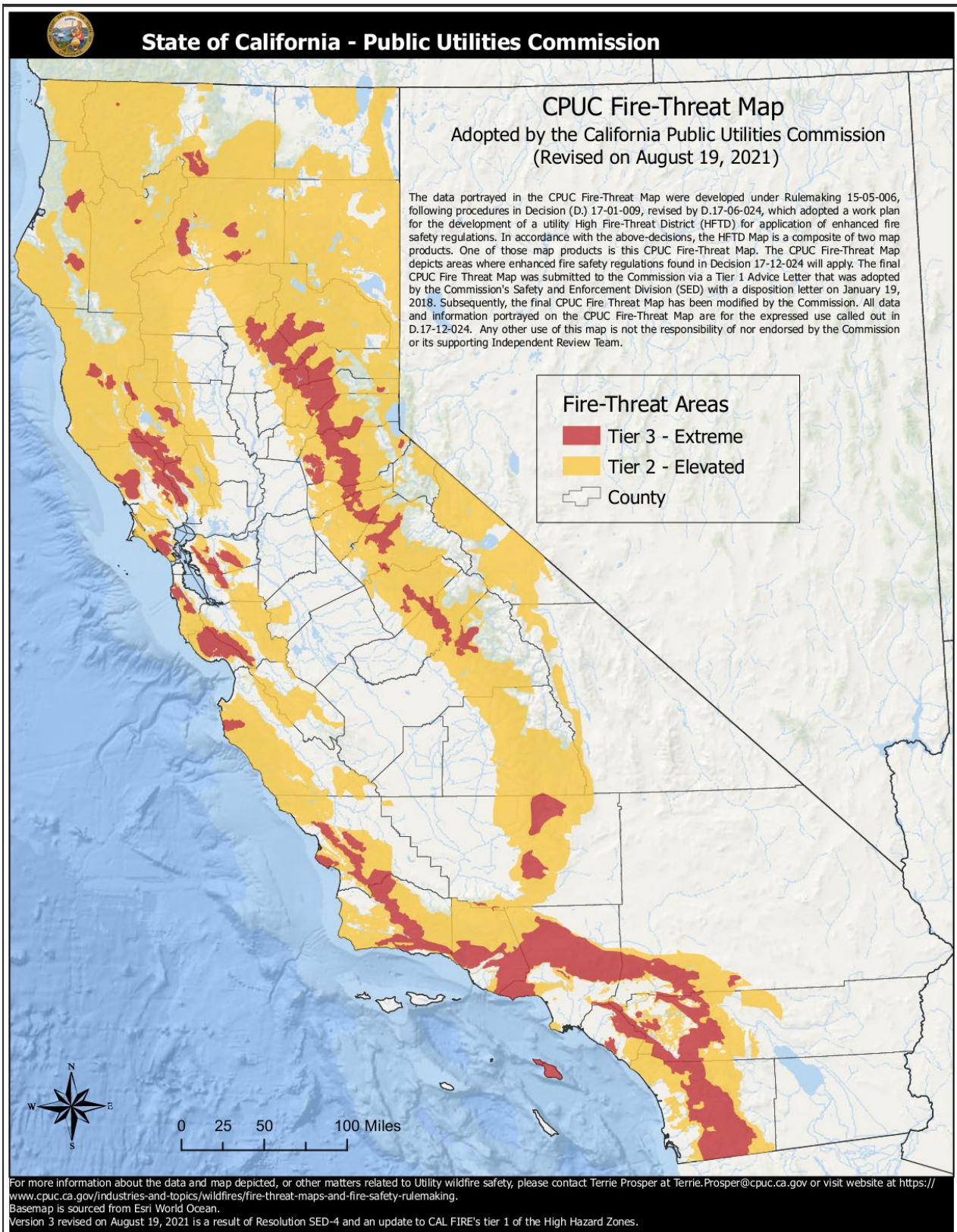
Term	Definition
CAL FIRE	California Department of Forestry and Fire Protection
CIP	Capital Improvement Plan
COU or City	City of Ukiah
CPUC	California Public Utilities Commission is the regulatory agency that regulates investor-owned utilities in California
EOC	Emergency Operations Center
EOP	Emergency Operations Plan is a City Plan, formerly known as the Multi Hazard Emergency Response Plan that establishes communication, facilitates collaboration and ensures compliance with local, state and federal emergency management agencies
GO	General Order of the State of California
ICS	Incident Command System is a standardized approach to the command, control and coordination of emergency response
IR	Infrared technology that uses thermography to recognize hot spots in electrical equipment
HFTD	High Fire Threat District
LIDAR	Light Detection and Ranging is a remote sensing technology that uses light in the form of a pulsed laser to measure distances
MTA	Mendocino Transit Authority
OES	Mendocino County Sheriff's Office of Emergency Services
PG&E	Pacific Gas and Electric
PUC	Public Utilities Code
SCADA	Supervisory Control and Data Acquisition is a computer system for gathering and analyzing real time data
SEMS	Standardized Emergency Management System
UAV	Unmanned Aerial Vehicle
UEU or Utility	Ukiah Electric Utility
UPD	Ukiah Police Department
UVFA	Ukiah Valley Fire Authority
WMP	Wildfire Mitigation Plan as implemented under Public Utilities Code § 8387
WUI	Wildland Urban Interface

Appendix D: Cross-verification to Public Utilities Code section 8387.

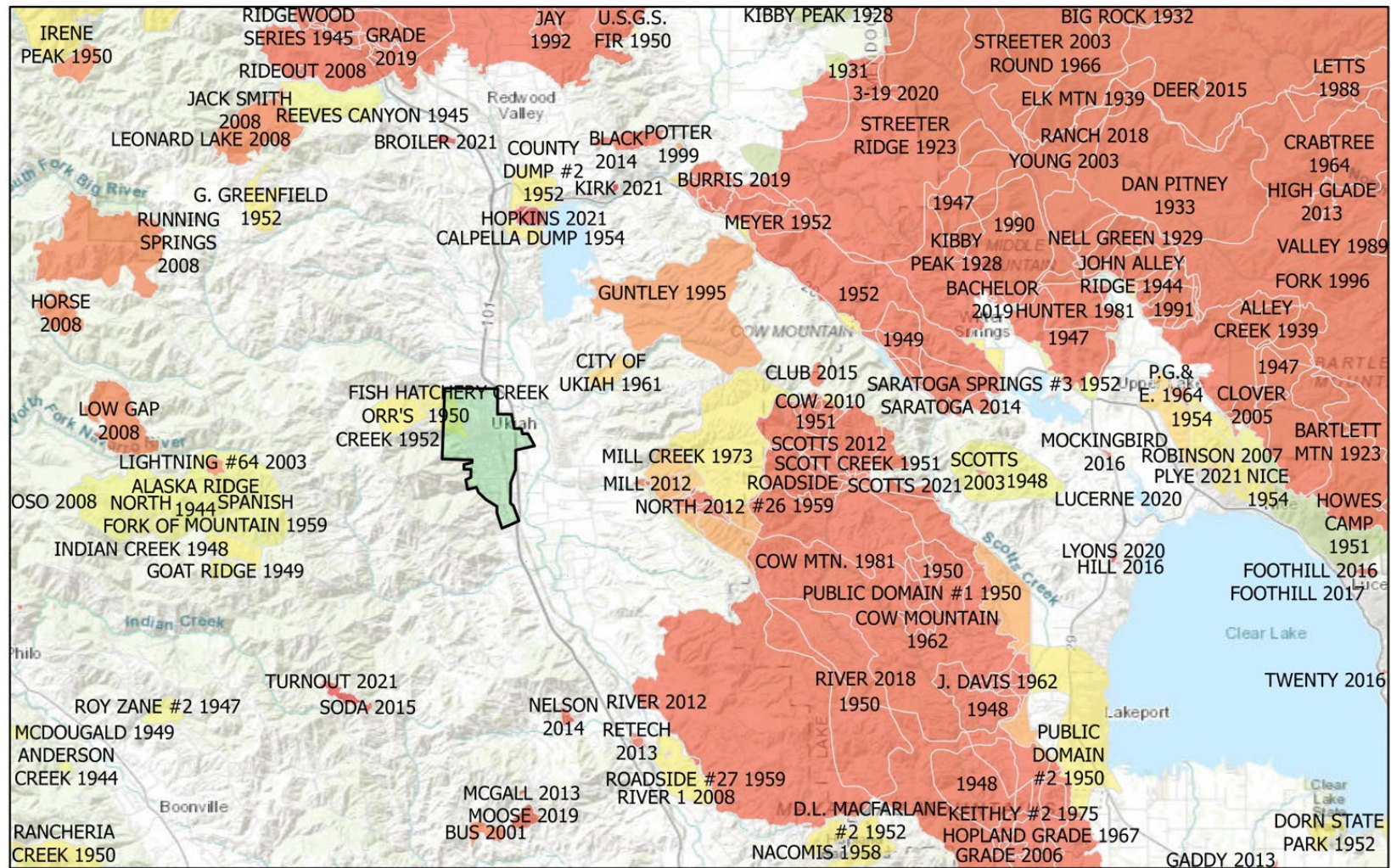
Requirement	Section
A – responsible persons	3
B - objectives	2
C – preventive strategies and programs	5
D – metrics	8.A
E - former metrics	8.A
F – recloser protocols	5.G
G – customer notification for PSPS	5.F
H – Vegetation Management	5.A
I – Inspections	5.B
J – wildfire risks and drivers	4
K – geographic areas at risk of a higher risk	4.B
L – enterprise wide safety risk	4.B
M - service restoration	7
N – procedures to monitor and audit, identify deficiencies, monitor inspections	8. (3 parts)
Independent Auditor	9

Appendix E: Maps

This section contains maps relevant to the City of Ukiah's Wildfire Mitigation Plan and service area.

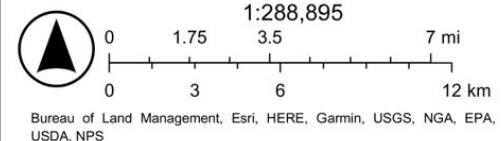
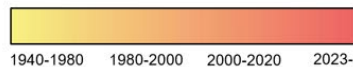


HISTORICAL FIRE DATA



5/9/2023

LEGEND:



City of Ukiah Electric 2023