



CITY OF REDDING REPORT TO THE CITY COUNCIL

MEETING DATE: June 18, 2019 ITEM NO. 9.5(a)	FROM: Daniel Beans, Director of Electric Utility
APPROVED BY	
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SUBJECT: 9.5(a)--Approve 2019 REU Wildfire Mitigation Plan	

Recommendation

Approve the first annual REU Wildfire Mitigation Plan (Plan) in response to Senate Bill 901; and authorize the Electric Utility Director to contract with a third-party vendor to audit this Plan and to provide a report to the City Council before January 1, 2020.

Fiscal Impact

Four programs make up this Plan. The first program (REU Wildfire Prevention & Improved Response Program), approved by the City Council on May 7, 2019, has a cost of \$2 million per year and is already included in the REU biennial budget for Fiscal Years Ending 2020 and 2021.

As the other three programs are developed, the City Council will have the opportunity to review and approve the recommended details and associated budgets and funding sources.

Alternative Action

The City Council could choose not to approve the Plan and provide direction to staff as to any additional actions to comply with Senate Bill (SB) 901.

Background/Analysis

REU has been operating its electric system for almost one-hundred years. System protection for the public and infrastructure safety has been paramount. Given recent, catastrophic wildfires in California, the state passed SB 901 in September 2018. The law requires utilities to prepare wildfire mitigation measures if the utility's overhead electrical lines and equipment are located in an area that has a significant risk of wildfire resulting from those electrical lines and equipment. Redding Electric Utility's (REU) electrical infrastructure is located in and adjacent to both California Public Utilities Commission (CPUC) designated Tier 2 and 3 wildfire threat areas.

This Plan describes the range of activities that REU is taking or considering, to mitigate the threat of power-line ignited wildfires, including its various programs, policies, and procedures. This Plan complies with the requirements of Public Utilities Code section 8387 for publicly owned electric utilities to prepare a wildfire mitigation plan by January 1, 2020, and annually thereafter. The Plan will be iterative, promote continuous improvement year-over-year, and implement industry best practices in a prudent and reasonable manner.

There are eight (8) strategies that REU is using or intends to use to mitigate wildfires including:

1. Vegetation Management
2. Enhanced Inspections
3. Situational Awareness
4. Operational Practices
5. System Hardening
6. Public Safety and Notification
7. Reclosing and De-energization
8. Wildfire Response & Recovery

The strategies will be accomplished through four (4) programs.

- REU Wildfire Prevention & Improved Response Program (Approved May 2019)
- REU Technology Solutions Program (Pending)
- REU Distribution 10-year Capital Improvement Program (Pending)
- REU Emergency Operations Program (Pending)

Council Priority/City Manager Goals

- **Public Safety** – “Work to improve all aspects of public safety to help people feel secure and safe where they live, work, and play in the City of Redding.”

Attachments

REU 2019 Wildfire Mitigation Plan (available online)

REU Wildfire Prevention and Improved Response Program (available online)

CPUC Fire-Threat Map (available online)



Redding Electric Utility

2019 WILDFIRE MITIGATION PLAN

June 18, 2019

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1. OVERVIEW

A. POLICY STATEMENT

REU has been operating its electric system for almost one-hundred years. System protection for both public and asset safety has been paramount. Given recent, catastrophic wildfires in California, the state passed Senate Bill (SB) 901 in September 2018. The law requires utilities to prepare wildfire mitigation measures if the utility's overhead electrical lines and equipment are located in an area that has a significant risk of wildfire resulting from those electrical lines and equipment. The law requires the wildfire mitigation measures to incorporate specified information and procedures and requires the local publicly owned electric utility, before January 1, 2020, and annually thereafter, to prepare a wildfire mitigation plan. Portions of Redding Electric Utility's (REU) electrical infrastructure is located in and adjacent to both California Public Utilities Commission (CPUC) designated Tier 2 and 3 wildfire threat areas.

REU's overarching goal is to provide safe, reliable, and economic electric service to its local community. In order to meet this goal, REU constructs, maintains, and operates its electrical lines and equipment in a manner that minimizes the risk of catastrophic wildfire posed by its electrical lines and equipment.

B. PURPOSE OF THE WILDFIRE MITIGATION PLAN

This Wildfire Mitigation Plan (Plan) describes the range of activities that REU is taking or considering, to mitigate the threat of power-line ignited wildfires, including its various programs, policies, and procedures. This plan complies with the requirements of Public Utilities Code section 8387 for publicly owned electric utilities to prepare a wildfire mitigation plan by January 1, 2020, and annually thereafter. The Plan will be iterative, promote continuous improvement year-over-year, and represent best efforts to implement industry best practices in a prudent and reasonable manner.

REU is a department within the City of Redding. For wildfire prevention and response, REU is subordinate to the City of Redding (COR) Fire Department and COR Police Department.

The City of Redding adopted a Local Hazard Mitigation Plan in 2015. The REU Wildfire Mitigation Plan supports the aspirational goals of that plan in the area of Wildland Fire especially in the wildland urban interface (WUI) described in Section 7.4. The objectives of the Local Hazard Mitigation Plan specifically supported by this REU Wildfire Mitigation Plan are as follows:

1. **City Objective 5.B:** Educate the public about wildland fire dangers and the steps that can be taken to prevent or minimize their effects.
2. **City Objective 5.C:** Reduce the probability of fire ignitions.
3. **City Objective 5.D:** Maintain Emergency Operations Center for coordination of information and resources.

4. **City Objective 5.E:** Reduce the potential for destructive actions of the fire once ignition occurs, utilizing fire pre-plans, ensuring a properly trained, staffed, and equipped emergency response capability, and timely response to prevent the spread of the fire, minimizing risks to humans and property.
 - a. **Action 5.E.1:** Ensure that adequate resources are available to pre-plan for incidents that may occur in the very high fire hazard severity zones within the City of Redding.
 - b. **Action 5.E.4:** Increase staffing of current two-person companies to three-person companies to improve capabilities and initial actions at fire incidences within the community as additional funding becomes available.

C. ORGANIZATION OF THE WILDFIRE MITIGATION PLAN

This Wildfire Mitigation Plan includes the following elements:

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 Plan and identifying areas for improvement;

Section 9 - Independent audit of the Plan.

2. OBJECTIVES OF THE WILDFIRE MITIGATION PLAN

A. MINIMIZING SOURCES OF IGNITION

The primary goal of this Wildfire Mitigation Plan is to minimize the probability that REU's transmission and distribution system may be the origin or contributing source for the ignition of a fire as well as to protect the system from wildfire damage.

REU is in the process of evaluating prudent and cost-effective improvements to its physical assets, operations, and training to help meet this objective. REU will implement those changes consistent with this Plan as staffing and budget allows.

B. RESILIENCY OF THE ELECTRIC GRID

The secondary goal of this Wildfire Mitigation Plan is to improve the resiliency of the electric grid. As part of the development and on-going implementation of this plan, REU will assess new industry practices and technologies that will reduce the likelihood of an interruption (frequency) in service and improve the restoration (duration) of service.

Other resiliency efforts include mitigating fire fuels located in the WUI and greenbelts likely to be a threat to our facilities and equipment. Additionally, improved fire response will improve resiliency and help avoid the need for public safety power shut off protocols during high fire threat weather. Fire fuels reduction and improved fire response are addressed in the *REU Wildfire Prevention and Improved Response Program* described in Section 5.

C. WILDFIRE PREVENTION STRATEGIES & PROGRAMS

1. Strategies

The following strategies are part of this Plan and described in more detail in Section 5.

- **VEGETATION MANAGEMENT**
These strategies help to control vegetation near to REU overhead sub-transmission and distribution lines so they better adhere to clearance specifications. They also include fire fuels mitigation and other work in order to prevent our system from causing a fire and to protect our system from fire.
- **ENHANCED INSPECTIONS**
These strategies consist of assessment and diagnostic activities as well as associated corrective actions. The practices in this category aim to ensure all infrastructure is in working condition and vegetation adheres to defined minimum distance specifications.
- **SITUATIONAL AWARENESS**
These strategies consist of methods to improve system visualization and awareness of environmental conditions. The practices in this category aim to provide tools to improve

the other components of the plan. For example, camera installation will improve system and vegetation inspection and maintenance practices.

- **OPERATIONAL PRACTICES**

These strategies consist of proactive, day-to-day actions taken to mitigate wildfire risks. The practices in this category aim to ensure REU is prepared in high-risk situations, such as dry, windy environmental conditions.

- **SYSTEM HARDENING**

These strategies consist of system, equipment, and structure design and technical upgrades. The practices in this category aim to improve system hardening to prevent contact between infrastructure and fuel sources, such as vegetation and animals. It also includes making the system more resilient to wildfire and other disasters.

- **PUBLIC SAFETY AND NOTIFICATION**

These strategies will focus on ways to engage the community as partners in preventing and identifying wildfire risk. They include improving outage notification and other items in the interest of public safety.

- **RECLOSING AND DEENERGIZATION**

These strategies include discussion of deenergization as well as automatic circuit reclosing.

- **WILDFIRE RESPONSE & RECOVERY**

These strategies consist of procedures to react to wildfire or other related emergency conditions. The practices aim to formalize protocols for these situations, so REU can provide an adequate response and recovery.

2. Programs

The strategies above will , as budgetary constraints and staffing permit, be developed and implemented through the following programs that are either active or are being created and coordinated as part of this Plan and are described in more detail in Section 5.

- REU Wildfire Prevention & Improved Response Program (Approved May 2019)
- REU Technology Solutions Program (Pending)
- REU Distribution 10-year Capital Improvement Program (Pending)
- REU Emergency Operations Program (Pending)

REU Wildfire Prevention Strategies and Program Matrix

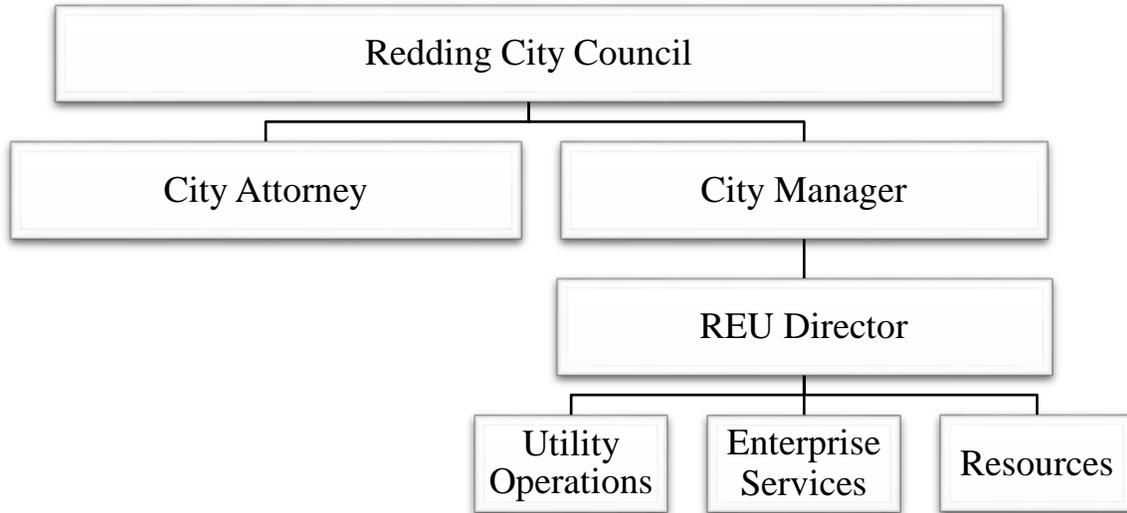
	Wildfire Prevention & Improved Response	Technology Solutions	Distribution 10-year Capital Improvements	REU Emergency Operations
Vegetation Management	x	x		
Enhanced Inspections	x	x	x	
Situational Awareness		x	x	x
Operational Practices		x	x	x
System Hardening		x	x	x
Public Safety & Notification	x	x		x
Reclosing & Deenergization	x	x	x	x
Wildfire Response & Recovery	x	x		x

D. IDENTIFYING UNNECESSARY OR INEFFECTIVE ACTIONS

The final goal for this Wildfire Mitigation Plan is to measure the effectiveness of specific wildfire mitigation strategies. REU will assess the merits of modifications. This plan will also help determine if more cost-effective measures would produce the same or improved results.

3. ROLES AND RESPONSIBILITIES

A. REU GOVERNANCE STRUCTURE



This plan is subject to the direct supervision by the Redding City Council (Council), and will be implemented by the REU Director (“Director”). The City of Redding is operated by a council-manager form of governance. The City Council is the Utility Commission for REU.

B. ROLES AND RESPONSIBILITIES FOR PLAN EXECUTION

Executive Level Responsibility: The Director will oversee implementation and ensure that staff follow procedures and protocols. The Assistant Director over Utility Operations will manage the execution of performance monitoring. This includes providing guidance to staff and leading the development of reports. The staff responsible for each metric area will aggregate relevant metrics at the direction of the Assistant Director – Utility Operations.

1. **Program Owners:** The table below outlines the current assignments and are subject to change.

Program	Owner
REU Wildfire Prevention and Improved Response Program	COR Fire Marshal’s Office and REU Director
REU Technology Solutions Program	REU Assistant Director – Enterprise Services
REU Distribution 10-year Capital Improvement Program	REU Assistant Director - Operations
REU Emergency Operations Program	REU Assistant Director - Resources

2. **Strategy Leads:** The table below outlines the proposed assignments and are subject to change.

Strategy	Lead Personnel	Key Technical Personnel
Vegetation Management	Electric Manager - Line	Supervising Arborist
Enhanced Inspections	Electric Manager - Line	Program Supervisor - Line
Situational Awareness	Director	Program Supervisor - Admin
Operational Practices	E&O Manager	Senior System Operator - Distribution Electric Manager - Line
System Hardening	E&O Manager	Senior Electrical Engineer
Public Safety & Notification	Electric Manager - Customer Service	Program Supervisor - Admin
Reclosing & Deenergization	E&O Manager	Senior System Operators- Distribution
Wildfire Response & Recovery	E&O Manager	COR Fire Chief Electric Manager - Line Senior System Operator - Distribution

C. COORDINATION WITH JOINT POLE INFRASTRUCTURE PROVIDERS

For joint pole fire prevention, REU takes the lead role and informs the subordinate providers when REU identifies any compromised poles due to third-party attachments. REU coordinates with communication and electric infrastructure providers throughout the year when work on our system effects their equipment and identifies safety issues. If REU staff discovers a facility in need of repair owned by an entity, REU may issue a notice to repair to the facility owner and work to ensure that necessary repairs are promptly completed. During emergencies, REU assumes the primary role and informs providers when there is damage or risk to their equipment.

D. COORDINATION WITH CITY OF REDDING DEPARTMENTS

Redding Fire Department

The COR Fire Department is the lead agency in cooperation with REU for implementation of the REU Wildfire Prevention & Improved Response Program. RFD as the City’s lead for emergency operations directs REU regarding public safety priorities.

Redding Police Department

REU coordinates with RPD and is subordinate for emergency and public safety issues. REU will work closely with the RPD for situational awareness and other public safety issue related to this Plan.

Redding Public Works Department

REU is investigating opportunities to harden the electrical system and increase survivability for critical water and wastewater infrastructure. During wildfires and other public safety events, REU works with Public Works to ensure power to water-pumping stations, wastewater plants, and other critical infrastructure. These facilities are not only critical for defending the City from wildfire, but are essential for safe repopulation following any disaster. Additionally, the Redding Area Bus Authority (RABA) is a critical operation for evacuations during emergencies and will be part of the infrastructure considered for reliability improvements.

Redding Community Services Department

REU is partnered with the COR Community Services Department as part of the REU Wildfire Prevention & Improved Response Program for fire fuels mitigation as well as other programs and projects.

Other COR Departments and Administration

REU as a member of the City of Redding Team will work to ensure information regarding warnings, alerts, and widespread outages are shared with other departments. The City Communications Team will be an integral part of getting information out to the media and public and will be coordinated with either and/or both the City's EOC or REU's EOP as well as any Incident Command in place.

E. CAL OES STANDARDIZED EMERGENCY MANAGEMENT SYSTEM

As a utility department of the COR located in Shasta County, REU may participate in various emergency operation centers depending on the situation and lead agency. As a local governmental agency, COR has planning, communication, and coordination obligations pursuant to the California Office of Emergency Services' Standardized Emergency Management System ("SEMS") Regulations, adopted in accordance with Government Code section 8607. The SEMS Regulations specify roles, responsibilities, and structures of communications at five different levels: field response, local government, operational area, regional, and state. The COR (via Redding Fire Department) maintains an All Hazards Emergency Operations Plan that includes REU. The COR works closely with Shasta County to coordinate emergency operations, including the Shasta County Sheriff's Office of Emergency Services (OES).

The Shasta County Sheriff's Office of Emergency Services (OES) coordinates with Federal, State, and local agencies to prepare, respond, and recover from emergencies and natural disasters.

- OES is responsible for maintaining and updating the County Emergency Operation Plan (EOP), which is an all hazards plan for Shasta County.

- OES also coordinates and maintains the county Emergency Operation Center (EOC). The EOC can be used during a major incident to carry out the principles of emergency preparedness and emergency management between multiple agencies.
- The Office of Emergency Services provides technical advice to the Sheriff on local emergency declarations and his direct link to the California Governor's Office of Emergency Services during disasters or any other critical incident. In the event of a major incident OES can work with CAL OES to obtain a Presidential proclamation.
- OES works closely with other local agencies assisting them in preparing emergency plans and in disaster training. OES works as a point of contact for local agencies to the California Governor's Office of Emergency Services.

Pursuant to this structure, REU coordinates and communicates with the relevant local, state and Federal agencies. This includes participating in City & County EOC exercises as well as providing annual safety meetings. Pursuant to the Emergency Operations Program, an REU EOC Liaison will participate in the City or County EOC using the standardized Incident Command System (ICS).

4. WILDFIRE RISK AND RISK DRIVERS

A. BACKGROUND

Redding typically experiences cool, wet winters and hot, dry summers creating extreme fire weather conditions especially from May through September. Daily temperatures during fire seasons (June-October) are usually above 90° Fahrenheit with a relative humidity of less than 30%. Typical vegetation within wildland-urban interface areas includes blue oak, valley oak, gray pine, and annual grasses. Areas of dense brush and annual grasses are common, and result in high fire danger and significant fires especially during north wind events. These conditions combine to create extreme fire danger, with the city facing one of the highest wildfire threats in the state. The risk of catastrophic wildfire in the area rises as the recent trend of drought conditions increases.

While Redding experiences more than 100 fires annually, the summer of 2018 was historically damaging when California's seventh most destructive fire moved into city limits. The Carr Fire of July 2018 resulted in the deaths of eight people and destroyed over 2,000 structures in Shasta County including 270 homes within Redding.

B. ENTERPRISE SAFETY AND WILDFIRE RISK METHODOLOGY

In order to ascertain the level of risk to our system, we looked at our historic outages caused by animals, birds, vegetation, car-pole accidents, and overhead equipment failures as a way to assess wildfire risk. Over the past four years, the combined number of sustained outages from

the above list were down each year. Additionally, we will review historic fire records to see if there are other areas of risk that should be addressed.

C. SYSTEM AND OPERATIONAL RISK

REU's designs and constructs its electric facilities to meet or exceed the relevant federal, state, or industry standard. REU treats CPUC General Order (GO) 95 as a key industry standard for design and construction standards for overhead electrical facilities and, as such, meets or exceeds all applicable standards in GO 95. Additionally, REU monitors and follows as appropriate the National Electric Safety Code.

Risk drivers associated with design, construction, operations, and maintenance, within our 60 square mile service territory include approximately 50% of territory is CPUC Tier 2 and 3 high fire threat areas; including 18,000 acres adjacent to REU equipment and facilities, and 120 miles of overhead power lines.

D. GEOGRAPHICAL & CLIMATE RISK

Within REU's service territory and the surrounding areas, the primary risk drivers associated with geography and climate for wildfire are the following:

- a) Extended drought;
- b) Vegetation type;
- c) Vegetation density (especially the West side and greenbelts)
- d) Weather;
- e) High winds;
- f) Terrain;
- g) Low humidity;
- h) Changing weather patterns
- i) Communities at risk
- j) Fire history

E. CPUC HIGH FIRE THREAT DISTRICTS

REU directly participated in the development of the California Public Utilities Commission's (CPUC) Fire-Threat Map, which designates a High-Fire Threat District. REU will incorporate the High Fire Threat District into its construction, inspection, maintenance, repair, and clearance practices, where applicable.

REU reviews CPUC Fire Threat Map annually to identify needed adjustments to hazard threat levels due to changes in urban development and/or vegetation conditions. When adjustments are identified, REU collaborates with Redding Fire Department and CAL FIRE to update the CPUC Fire Threat Map data and REU's Fire Threat Map accordingly. There have not been any additional recommended areas to be added to the Tier 2 or 3 areas as of May 2019.

5. WILDFIRE PREVENTION STRATEGY AND PROGRAMS

A. STRATEGY – VEGETATION MANAGEMENT

REU meets or exceeds the minimum industry standard vegetation management practices. For transmission-level facilities, REU complies with North American Electric Reliability Corporation (NERC) Standard FAC-003-4, where applicable. For both transmission and distribution level facilities, REU meets: (1) Public Resources Code section 4292; (2) Public Resources Code section 4293; (3) GO 95 Rule 35; and (4) the GO 95 Appendix E Guidelines to Rule 35. These standards require significantly increased clearances in the High Fire Threat District. The recommended time-of-trim guidelines do not establish a mandatory standard, but instead provide useful guidance to utilities. REU will use specific knowledge of growing conditions and tree species to determine the appropriate time of trim clearance in each circumstance. REU performs this work with seven arborists and a contract for tree trimming services as needed.

GO 95, RULE 35, TABLE 1					
Case	Type of Clearance	Trolley Contact, Feeder and Span Wires, 0-5kv	Supply Conductors and Supply Cables, 750 - 22,500 Volts	Supply Conductors and Supply Cables, 22.5 - 300 kV	
13	Radial clearance of bare line conductors from tree branches or foliage	18 inches	18 inches	¼ Pin Spacing	
14	Radial clearance of bare line conductors from vegetation in the Fire-Threat District	18 inches	48 inches	48 inches	

GO 95 APPENDIX E GUIDELINES TO RULE 35
The radial clearances shown below are recommended minimum clearances that should be established, at time of trimming, between the vegetation and the energized conductors and associated live parts where practicable. Reasonable vegetation management practices may make it advantageous for the purposes of public safety or service reliability to obtain greater clearances than those listed below to ensure compliance until the next scheduled maintenance. Each utility may determine and apply additional appropriate clearances beyond clearances listed below, which take into consideration various factors, including: 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 that are applicable to State Responsibility Area lands pursuant to Public Resource Code Sections 4102 and 4293.		
Voltage of Lines	Case 13	Case 14
Radial clearances for any conductor of a line operating at 2,400 or more volts, but less than 72,000 volts	4 feet	12 feet
Radial clearances for any conductor of a line operating at 72,000 or more volts, but less than 110,000 volts	6 feet	20 feet
Radial clearances for any conductor of a line operating at 110,000 or more volts, but less than 300,000 volts	10 feet	30 feet
Radial clearances for any conductor of a line operating at 300,000 or more volts	15 feet	30 feet

In addition to adopting the *REU Wildfire Mitigation & Improved Response Program* described below enhancements to our traditional vegetation management described above are recommended to include:

- No vertical coverage allowed above REU sub-transmission lines;
- Provide vegetation control in a 30-foot perimeter around the Power Plant and substations.
- For public land, greenbelts provide easement clear from ground to sky adjacent to REU facilities;
- Customers not allowing clearing (refusing treatment) must sign form to refuse and that information becomes part of the customer’s file in the customer information system (CIS) database.
- Work with adjacent customers to get approval for wider clearance on their land. This could include tall, diseased, leaning trees that appear to be at risk of falling into our lines. Coordinate with police and fire if necessary clearing is refused (forced trim);
- Perform additional vegetation removal for fuels reduction in the easement on an annual rotation to ensure CPUC recommended clearances are maintained based on the fire hazard zone where each transmission and distribution line is located;
- Use Cap and Trade funding for fire fuels mitigation in accordance with the California Air Resources Board (CARB) guidelines and as approved by City Council.

B. STRATEGY - ENHANCED INSPECTIONS

Inspection plays an important role in wildfire prevention. REU currently patrols its system regularly and plans to increase inspections. REU’s current inspection activities includes several components including annual infrared (IR) patrol of overhead lines and substations, intrusive

inspection of wood poles, 115 KV lines inspected annually by helicopter, and GIS data collection and sharing.

Some of the enhancements we will be exploring include use of unmanned aerial vehicles with IR and possibly LIDAR (light detection and ranging) capability. The frequency of inspections will be increased in the high fire threat areas and when storms or other disasters have significantly impacted our system such as the 2019 50-year snow event.

C. STRATEGY - SITUATIONAL AWARENESS

Presently REU is installing a new automated outage management system that has the ability to track customers affected by circuit outages (not individual customers until Automated Meter Infrastructure is approved in the future) and provide notification through intelligent voice recognition (IVR).

Other efforts will include the following technology in collaboration with RFD and RPD:

- Install strategically located surveillance cameras for early detection of fires, fire weather monitoring, or suspicious activity. These cameras will be a combination of fixed units as well as mobile installed on both RFD and RPD vehicles;
- Expanded use of Automatic Vehicle Locators (AVL) for response and recovery for REU, RFD, RPD, and COR Public Works;
- Use unmanned aerial vehicles during high fire threat days for early detection, infrared inspection of hard to reach areas, and other uses in the interest of public safety;
- Common communication system for REU, RFD, and RPD for wildfire and disaster response and recovery;
- Provide human resources for implementation, operation, and maintenance of technologies.
- Customer reporting tools for safety issues.

Additional projects will include possible partnership with AlertWildFire.org to add cameras canvassing the Redding area to add public safety and general public access to wildfire monitoring cameras. Other enhancement to public notification during high fire threat, actual fire, or other disaster events will be explored.

D. STRATEGY - OPERATIONAL PRACTICES

REU will operate the system in a manner that will minimize potential wildfire risks including taking all reasonable and practicable actions to minimize the risk of a catastrophic wildfire caused by REU electric facilities. REU will take corrective action for deficiencies when the staff witnesses or is notified of improperly install or maintained fire protection measures. In addition to those general principles, several new operational practices will help reduce the risk of wildfire and improve the response time in the event of a fire including:

- During high wildfire, threat periods (red flag warnings) perform only essential work. A protocol will be developed that could include staffing each substation with an electrician

or lineman, posting linemen in various parts of the city where the fire danger is higher, and having other field personnel patrolling the city. All personnel in contact with RFD and RPD reporting anything hazardous. REU Emergency Operations Program (EOP) on standby;

- REU will be performing bi-annual system drills for the REU EOP in conjunction with summer and winter preparation meetings. Summer drills performed no later than May 31 of each year; winter drills performed no later than November 30 of each year;
- Collect and maintain wildfire data necessary for the implementation and evaluation of this Wildfire Mitigation Plan.

E. STRATEGY - SYSTEM HARDENING

REU's electric facilities are designed, constructed, and maintained to meet or exceed the relevant federal, state, or industry standard. REU treats CPUC General Order (GO) 95 as a key industry standard for design and construction standards for overhead electrical facilities. REU meets or exceeds all standards in GO 95. Additionally, REU monitors and follows as appropriate the National Electric Safety Code. In addition to standards, REU will explore and develop a 10-year capital plan that will consider some or all of the following:

- Addition of remote controlled field reclosers with arc detection technology;
- Poles with operating devices are cleared of all vegetation around them with a radius of 10'. Perform this for every wood pole in the system for resiliency;
- Provide additional access roads along power line easements and maintain to appropriate standards;
- As 115KV transmission poles reach end of useful life for Tier 3 and Tier 2 areas, replace with steel poles in kind. Have a stockpile of modular steel poles to replace poles in the event of emergency replacement such as car/pole or localized fire;
- Install steel poles (or convert to underground) feeding Pump Station #1 on the river trail and add a sectionalizer or manual switch for less critical loads beyond.
- Provide a secondary water source to Power Plant under the condition that primary water source is lost (in process);
- Increase stock of air filters for power plant before each summer;
- Engineering – Revise construction standards to implement arc suppression components, raptor framing, squirrel guards, tree wire, lightning arresters, and arc suppression fusing. Create design standards for new equipment for remote controlled reclosers and implement into the SCADA system.
- Convert overhead lines to underground as feasible and economic;
- Alternative Technologies- REU will consider the feasibility of implementing alternative technologies, such as wire-break sensing and arc detection technology, as they become available and cost-effective.

F. STRATEGY - PUBLIC SAFETY AND NOTIFICATION

The following is part of this Plan to communicate with the community during high fire threat periods and disasters.

- Coordinate with RFD and RPD through REU's 24/7 Operations Center;
- Coordinate with RFD and RPD through the REU EOP during emergencies or large scale outages;
- Develop communications protocol with Shasta County Health and Human Services for notifications to vulnerable groups;
- Expand social media using REU's Outage Management System along with the COR Communications Team;
- Provide a web-based map for the public to see current outages and estimated restoration times.

G. STRATEGY - RECLOSING AND DEENERGIZATION

For this first iteration of our Wildfire Mitigation Plan, we intend to make changes to our protection system during fire season so that circuits that are faulted do not attempt to reclose. **We will continue to shut off power when directed to by Redding Fire, Police, Cal Fire, or other emergency responding agencies.** We will not preemptively shut off power during high fire threat periods for the following reasons:

- Our service territory is only 60 square miles and relatively compact and visible with proper technology;
- Turning off the power could put the community at higher risk to wildfire as it could impact water pumping and also create abnormal human activity that could increase opportunity for fire;
- We are investing in our Wildfire Mitigation & Improved Response Program as one way to mitigate power shut offs;
- We plan to have real-time information from staff located in areas identified as at risk of being subject to extreme weather conditions;
- We plan to use system hardening, situational awareness, vegetation management and the other strategies to avoid shutting off power.

H. STRATEGY - WILDFIRE RESPONSE & RECOVERY

- During an high fire threat event, stage fire protection equipment in a ready status and the REU EOP on standby;
- Provide First Responder access to Redding Power Plant. Staff for necessary shift changes during fire events;
- Wildfire Response: Execute the REU Emergency Operations Program;
- Recovery/re-energization will follow priorities set by SOP-28, System Restoration.
- REU is a member of the California Utility Emergency Association, which plays a key role in ensuring communications between utilities during emergencies including mutual aid. REU also participate in the Western Energy Institute's Western Region Mutual

Assistance Agreement, which is a mutual assistance agreement covering utilities across a number of western states.

I. PROGRAM – REU WILDFIRE PREVENTION & IMPROVED RESPONSE

On May 7, 2019, the Council approved the *REU Wildfire Prevention and Improved Response Program (Program)*. The Program provides funding to the Redding Fire Department and the Community Services Department for services rendered to prevent the start of wildfires through fire fuels reduction as well as provide faster response in the event of a wildfire either caused by or threatening the electric utility assets located in and around the City of Redding. The total amount of expenditures for the Program will be eight million dollars (\$8,000,000) through Fiscal Year Ending 2023. The Redding Fire Department provides coordination between REU and other local fire agencies as well as oversight of the Program.

Specifically, this program provides six firefighters to increase staffing for two engines from two-person to three-person crews. This will improve initial fire response. Twelve apprentice firefighters are part of the program. During the first year, the apprentices will spend a majority of their time performing fire fuels mitigation. Once a crew hauler truck and additional training occurs, they will be available for fire response also. An Assistant Fire Marshal will provide oversight of this program along with the existing Fire Marshal. Finally, three public works maintenance workers will perform fire fuels mitigation. In total twenty-two personnel will augment REU’s existing seven arborists and tree contract crews.

J. PROGRAM – REU Technology Solutions (Pending)

K. PROGRAM – REU Distribution 10-year Capital Improvement (Pending)

L. PROGRAM – REU Emergency Operations (Pending)

6. COMMUNITY OUTREACH AND EDUCATION

REU will maintain a proactive outreach and education strategy to create public awareness of fire threats, fire prevention, and available support during a wildfire or large power outages. Prior to an emergency, communication will include regular messages related to wildfire prevention, such as right-of-way management, tree trimming, line inspection, or other relevant topics. Methods of communication will include newsletters, website updates (including City Hub), social media posts, and public service announcements.

During an emergency, the REU Emergency Operations Program, includes an REU Incident Communication Guide that will be utilized to manage both internal and external communication throughout the incident from that initial notification to termination of the incident. Use of these established notification and communication plans will allow REU to coordinate with applicable emergency service personnel (Redding Fire Dept., Cal Fire, Cal OES, Redding Police Dept., etc.) along with maintaining open lines of communication with customers, media and internal City staff.

7. RESTORATION OF SERVICE

In the event of a wildfire or other emergency event, REU will staff up its EOP to coordinate activities to restore service. REU will restore power, following an event, in cooperation with City of Redding Fire, Police, and Public Works Departments and in coordination with Cal Fire, Shasta County, or other named Incident Commander.

REU management will oversee restoration and response activities. In the event that additional staff is needed, REU may leverage mutual aid agencies, other City of Redding staff, and local aid organizations. The utility may also engage contractors on an as-needed basis.

The following describes the steps typically taken to begin the restoration process:

Assessment. REU 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. REU 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.

Planning. After initial assessment, REU supervisors, managers and engineers meet to plan the needed work. The team will work with system operations to prioritize the restoration efforts, targeting the circuits that serve the most critical infrastructure needs.

Mobilize. Based on the size and complexity of the rebuild/restoration efforts, REU will coordinate the crews and material needs internally if possible. Mutual aid and contractors may be used on an “as needed” basis to provide additional support. Though REU maintains a critical material vendor list and has contracts it can draw on for labor and material needs; though in instance of widespread catastrophic damage necessary materials and labor could experience shortages that may delay work.

Rebuild. The rebuild effort lead by REU will commence as soon as areas become safe and accessible. The initial efforts will be to get the lines up and restore the damaged circuits. Depending on the extent of damage, demolition may be performed concurrently or after crews start installing new facilities. REU will incorporate new materials and technologies as indicated and available.

Restore. REU, mutual aid, or contract crews will restore electric services to homes and businesses as soon as possible after the wildfire. Depending on the extent of damages, residential and business customers may have to perform repairs on their facilities and pass inspections by local agencies prior to having full electric service restored.

In most cases, the following restoration priorities will be followed depending on the specific incident and available resources:

- Public safety in the affected areas;
- Worker safety in performing the restoration work;
- Life-support or critical customers;
- Critical infrastructure (Key City & 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.);
- To reduce the total number of customers affected;
- To reduce the length of time customers have been without power.

In directing restoration efforts to best achieve the above priorities, REU Operations Group personnel will generally find it most efficient to dedicate restoration resources to the following types of facilities in the following order of priority to optimally restore electric services:

- Redding Power Plant facilities (RPP);
- Other energy supply resources (to ensure power can be delivered/received via Western Area Power Administration, the COTP, from within BANC, the CAISO, etc.);
- Sub-transmission circuits (115 kV);
- Substations;
- Distribution circuits (12 kV);
- Distribution feeders;
- Distribution transformers;
- Service lines.

8. EVALUATION OF THE PLAN

A. METRICS FOR MEASURING PLAN PERFORMANCE

REU will track two metrics to measure the performance of this Wildfire Mitigation Plan: (1) number of fire ignitions; and (2) wires down within the service territory.

Metric 1: Fire Ignitions

For purposes of this metric, a fire ignition is defined as follows:

- a) REU facility was associated with the fire;
- b) The fire was self-propagating and of a material other than electrical and/or communication facilities;
- c) The resulting fire traveled greater than one linear meter from the ignition point; and
- d) REU has knowledge that the fire occurred.

In future Wildfire Mitigation Plans, REU will provide the number of fires that occurred that were less than 1 acres in size. Any fires greater than 1 acres will be individually described.

Metric 2: Wires Down

The second metric is the number of distribution and transmission wires downed within REU's service territory. For purposes of this metric, a wires down event includes any instance where an electric transmission or primary distribution conductor falls to the ground or onto a foreign object. REU will divide the wires down metric between wires down inside and outside of the High Fire Threat District. REU will not normalize this metric by excluding unusual events, such as severe storms. Instead, REU will supplement this metric with a qualitative description of any such unusual events.

B. IMPACT OF METRICS ON PLAN

In the initial years, REU anticipates that there will be relatively limited data gathered through these metrics. However, as the data collection history becomes more robust, REU will be able to identify areas of its operations and service territory that are disproportionately impacted. REU will then evaluate potential improvements to the plan.

C. MONITORING AND AUDITING THE PLAN

Review of this Plan will occur annually and any lessons learned will have the highest priority for improving steps in the plan, any reference programs, and the process for implementation. REU will present this plan to the Redding City Council on an annual basis. Additionally, a qualified independent evaluator will present a report on this plan to the Redding City Council.

D. IDENTIFYING AND CORRECTING DEFICIENCIES IN THE PLAN

REU staff and qualified external stakeholders are encouraged to identify Wildfire Mitigation Plan deficiencies or potential deficiencies to the Assistant Director of Utility Operations as soon as possible when observed. The Assistant Director of Utility Operations shall evaluate each reported deficiency and, if the deficiency is determined to be a valid plan deficiency, it shall be entered into a log with the following information:

- Date the deficiency was discovered;
- Description of the deficiency;
- Source identifying the deficiency (e.g., Internal Audit);
- Priority based on deficiency severity;
- Assigned corrective action including the date when it must be completed by;
- Assigned staff responsible for completing the corrective action;
- Date corrective action completed.

The Assistant Director of Utility Operations will go over the log at regularly scheduled Leadership and Supervisor Meetings.

E. MONITORING THE EFFECTIVENESS OF INSPECTIONS

REU will perform inspections on either a 5-year, 10 year, or annual cycle, based on GO 95 or fire mitigation recommendations. Any areas found that need Improvement or appear hazardous will be documented with a work order, given a priority, and the work order will be tracked. When completed the work order will have a close date.

The Assistant Director of Utility Operations will assign qualified internal staff or engage 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. The assigned auditor will:

- Review records for the inspection programs;
- Interview staff performing inspections to assess their knowledge of the inspection programs;
- Monitor staff performing inspection activities;
- Review deficiencies noted in the programs;
- Identify systemic issues or problems;
- Note the timeliness of corrective actions;
- Pick a random sample of some completed corrective actions and verify the effectiveness of the corrective actions; and
- Issue a written report of findings.

The Assistant Director of Utility Operations will review the audit findings and assign corrective action as applicable. A copy of the audit report will be routed to the Director.

9. INDEPENDENT AUDITOR

Public Utilities Code section 8387(c) requires REU 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.

REU will have the Plan reviewed using a contract through the Northern California Power Agency following the initial approval of the City Council.

The report from the independent evaluator will be available on REU's website. The auditor will present the report and findings to the Redding City Council at a public meeting.

Exhibit A

REU Wildfire Prevention and Improved Response Program

1. Introduction

A. Purpose

The purpose of the REU Wildfire Prevention and Improved Response Program 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 Redding Electric Utility Wildfire Mitigation Plan required by SB901. The Program aims to prevent the start of wildfires from utility operations as well as provide faster response in the event of a wildfire either caused by or threatening its electric utility assets located in and around the City of Redding.

B. Goals

- Prevent electric utility-caused wildfire.
- Reduce the time for the Redding Fire Department to respond to, and engage in fires that threaten grid infrastructure and the other REU facilities.
- Increase staffing to respond to emergencies reasonably likely to impact REU facilities.
- Increase available personnel for debris removal after extreme weather events.
- Create community awareness for utility wildfire prevention.

C. Objectives

The Program's primary objectives are to:

- Identify hazards that pose a potential threat of damaging wildfires that may reasonably be likely to affect REU facilities.
- Prioritize prevention efforts.
- Implement measures targeting fuel reduction to minimize the probability of utility-caused fires or wildfire impacts to REU facilities.
- Coordinate with fuel reduction efforts of other department and agencies.
- Increase community education, outreach, and dialog.

2. Strategy/Scope of Work

A. Redding Fire Department Initial Hazard Identification and Risk Assessment

REU personnel will coordinate with Redding Fire and other City departments to identify and prioritize areas for risk reduction activities using the following resources:

- REU - CPUC Fire Threat Map

Exhibit A

REU Wildfire Prevention and Improved Response Program

- CALFIRE Shasta Trinity Unit 2018 Strategic Fire Plan
- Redding Area Community Wildfire Protection Plans
- Shasta County Fire Safe Council – A collaborative composed of Western Shasta Resource Conservation District (WSRCD), federal and state land management agencies, and others and having a mission of being a framework for coordination, communication, and support to decrease catastrophic wildfire throughout Shasta County.
- Community Planning Assistance for Wildfire (CPAW) recommendations as approved by the Redding City Council
- City of Redding Hazard Mitigation Plan
- Redding Police Department

B. Redding Fire Department Personnel Assistance

Redding Fire Department to provide staff, equipment and materials for on-the-ground vegetation fuels reduction.

1. Wildfire Prevention – Apprentice Firefighter, 12 personnel
 - a. Vegetation Management within easements as prioritized
 - b. Soil sterilization
 - c. Fuel mitigation
 - d. Fuel breaks
 - e. Roadway breaks
 - f. Wildfire incident response
2. Incident Response – Firefighters, 6 personnel
 - a. Provide third person for rapid fire engagement upon arrival
 - b. Two Engine Companies, three shifts
3. Supervision – Assistant Fire Marshal
 - a. Inspection and Tracking
 - Project Tracking and Reporting Matrix
 - b. Reporting
 - Redding Fire Monthly Reports to REU
 - REU Director Annual Report to City Council
 - c. On-going Adaptive Management
 - Update Hazard and Risk Assessment
 - Revise Work Plans as Appropriate

C. Redding Community Services Personnel Assistance

Exhibit A
REU Wildfire Prevention and Improved Response Program

Redding Community Services to provide staff, equipment and materials for on-the-ground vegetation fuels reduction.

1. Wildfire Prevention – Public Works Maintenance Worker, 3 personnel
 - a. Vegetation Management within easements as prioritized
 - b. Soil sterilization
 - c. Fuel mitigation
 - d. Fuel breaks
 - e. Roadway breaks

Exhibit A

REU Wildfire Prevention and Improved Response Program

C. Project Tracking and Reporting

Ref #	Program Element	Actions	Performance Measure
1	Hazard identification, Risk assessment and Project Prioritization – Assistant Fire Marshal and Fire Chief	<ul style="list-style-type: none"> • Collaborate w/ REU • Collaborate with RPD/Parks/PW • Other duties per the REU Wildfire Mitigation Plan 	<ul style="list-style-type: none"> • Produce detailed work plan in collaboration with REU • Attend public workshops or other stakeholder meetings
2	Prevention – Apprentices and 3 Public Works Maintenance Workers	<ul style="list-style-type: none"> • Fuels reduction • Soil sterilization • Emergency debris removal • Other duties per the REU Wildfire Mitigation Plan 	<ul style="list-style-type: none"> • Acres mitigated • Circuit miles mitigated • Poles mitigated • Fuel volume mitigated
3	Rapid Incident Response and Engagement – Firefighters (also Apprentices)	<ul style="list-style-type: none"> • Provide priority response to wildfire or utility fires • Maintain heightened alert/availability during high threat periods • Other duties per the REU Wildfire Mitigation Plan 	<ul style="list-style-type: none"> • Wildfire and utility fire incidents are prioritized and responded to quickly
4	Supervision – Assistant Fire Marshal	<ul style="list-style-type: none"> • Attend monthly status meetings w/ REU staff • Inspect crew work • Reporting • Manage public complaints for fuels hazard on public and private land • Other duties per the REU Wildfire Mitigation Plan 	<ul style="list-style-type: none"> • Attends meetings • Detailed reports are provided demonstrating the prevention accomplishments • Public complaints are handled and coordinated with REU and RFD

Exhibit B
REU Wildfire Prevention and Improved Response Program Cost Estimates

	FY2019	FY2020	FY2021	FY2022	FY2023
6 Firefighters ⁽¹⁾	\$70,000	\$565,000	\$595,000	\$615,000	\$640,000
12 Apprentices ⁽¹⁾	\$70,000	\$685,000	\$735,000	\$775,000	\$820,000
1 Assistant Fire Marshal ⁽¹⁾	\$15,000	\$155,000	\$160,000	\$160,000	\$160,000
3 PW Maint. Worker ⁽¹⁾	\$25,000	\$235,000	\$240,000	\$240,000	\$240,000
PPE ⁽²⁾ , Tools, and Supplies	\$85,000	\$85,000	\$25,000	\$25,000	\$25,000
Fleet		\$300,000	\$10,000	\$10,000	\$10,000
TOTAL	\$265,000	\$2,025,000	\$1,765,000	\$1,825,000	\$1,895,000

1) Based on current salary schedules. Subject to change with salary schedule adjustments.

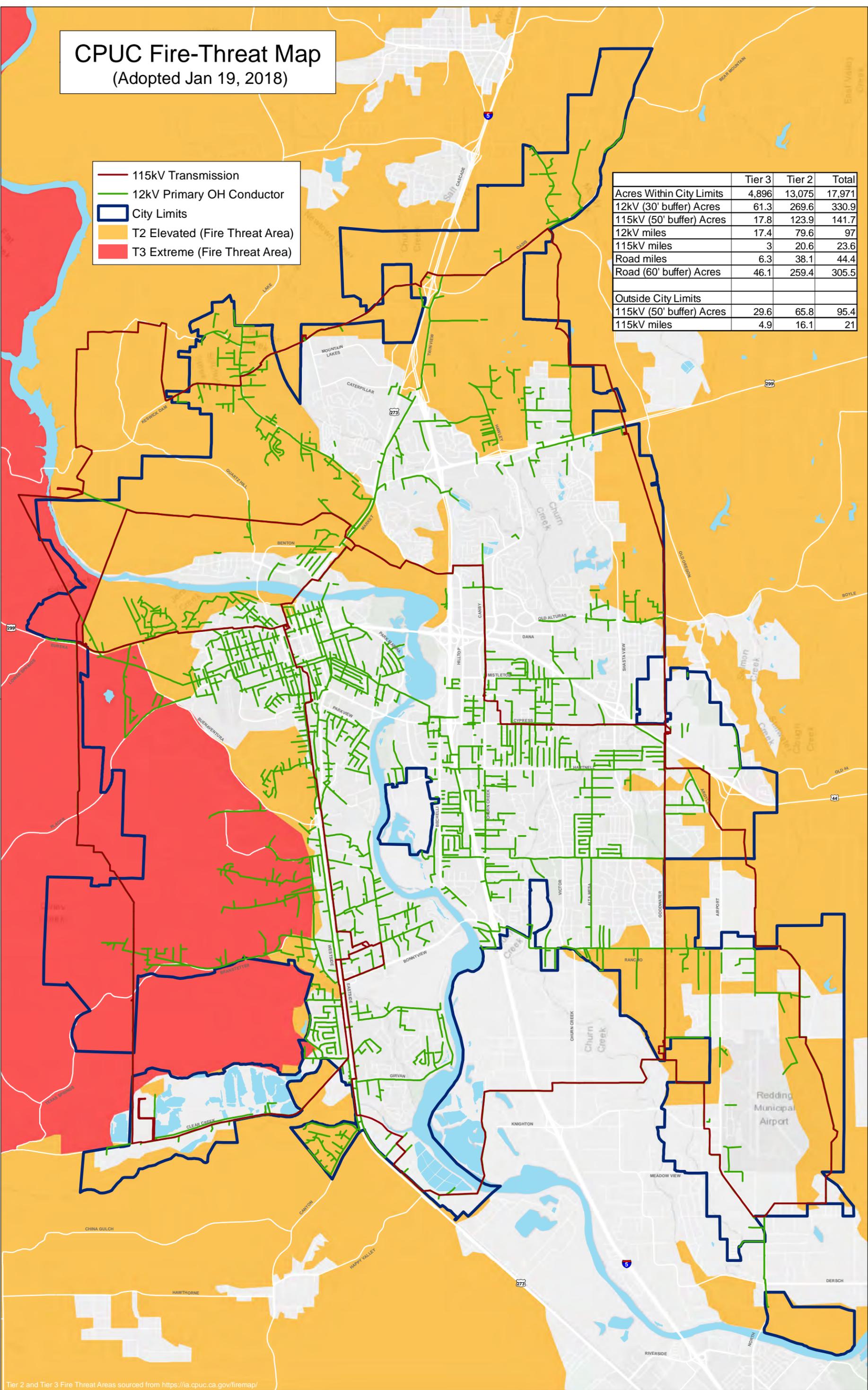
2) PPE = Personal Protective Equipment.

CPUC Fire-Threat Map

(Adopted Jan 19, 2018)

- 115kV Transmission
- 12kV Primary OH Conductor
- City Limits
- T2 Elevated (Fire Threat Area)
- T3 Extreme (Fire Threat Area)

	Tier 3	Tier 2	Total
Acres Within City Limits	4,896	13,075	17,971
12kV (30' buffer) Acres	61.3	269.6	330.9
115kV (50' buffer) Acres	17.8	123.9	141.7
12kV miles	17.4	79.6	97
115kV miles	3	20.6	23.6
Road miles	6.3	38.1	44.4
Road (60' buffer) Acres	46.1	259.4	305.5
Outside City Limits			
115kV (50' buffer) Acres	29.6	65.8	95.4
115kV miles	4.9	16.1	21



Tier 2 and Tier 3 Fire Threat Areas sourced from <https://ia.cpuc.ca.gov/firemap/>