Redding Electric Utility

WILDFIRE MITIGATION PLAN

Revised
May 1, 2023

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1. OVERVIEW

A. POLICY STATEMENT

REU has been operating its electric system for over one-hundred years. System protection for both public and asset safety has been paramount. Given the recent increase of 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. The Plan is iterative, promotes continuous improvement year-over-year, and represents our best efforts to implement industry best practices in a prudent and reasonable manner in conjunction with various industry associations Table 1 below summarizes the plan compliance with corresponding sections referenced.

Table 1: Cross References to Statutory Requirements

Requirement	Statutory Language	Location in REU's WMP
Persons Responsible	**PUC § 8387(b)(2)(A):** An accounting of the **responsibilities of persons** responsible for executing the plan.	Section: 3 Pages: 11-12
Objectives of the Plan	**PUC § 8387(b)(2)(B):** The **objectives** of the wildfire mitigation plan.	Section: 2 Page: 8
Preventive Strategies	**PUC § 8387(b)(2)(C):** A description of the **preventive strategies and programs to be adopted by the local publicly owned electric utility** or electrical cooperative to minimize the risk of its electrical lines and equipment causing catastrophic wildfires, including consideration of dynamic climate change risks.	Section: 2 Pages: 9-10
Evaluation Metrics	**PUC § 8387(b)(2)(D):** A description of the **metrics the local publicly owned electric utility or electrical cooperative plans to use to evaluate the wildfire mitigation plan's performance** and the assumptions that underlie the use of those metrics.	Section: 8 Pages: 30
Impact of Metrics	**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.	Section: 8 Pages: 30
Deenergization Protocols	**PUC § 8387(b)(2)(F): Protocols for disabling reclosers and deenergizing portions of the electrical distribution system** that consider the associated impacts on public safety, as well as protocols related to mitigating the public safety impacts of those protocols, including impacts on critical first responders and on health and communication infrastructure.	Section: 5 Page: 24
Customer Notification Procedures	**PUC § 8387(b)(2)(G):** Appropriate and feasible **procedures for notifying a customer** who may be impacted by the deenergizing of electrical lines. The procedures shall consider the need to notify, as a priority, critical first responders, health care facilities, and operators of telecommunications infrastructure.	Section: 5 Pages: 23
Vegetation Management	**PUC § 8387(b)(2)(H):** Plans for vegetation management.	Section: 5 Pages: 19-21
Inspections	**PUC § 8387(b)(2)(I): Plans for inspections** of the local publicly owned electric utility's or electrical cooperative's electrical infrastructure.	Section: 5 Page: 21
Prioritization of Wildfire Risks	**PUC § 8387(b)(2)(J):** A list that **identifies, describes, and prioritizes all wildfire risks, and drivers for those risks, throughout the local publicly owned electric utility's or electrical cooperative's service territory**. The list shall include, but not be limited to, both of the following:	Section: 4 Pages: 17-18

	(i) Risks and risk drivers associated with design, construction, operation, and maintenance of the local publicly owned electric utility's or electrical cooperative's equipment and facilities. **(ii)** Particular risks and **risk drivers** associated with topographic and climatological risk factors throughout the different parts of the local publicly owned electric utility's or electrical cooperative's service territory.	
CPUC Fire Threat Map Adjustments	**PUC § 8387(b)(2)(K):** Identification of any **geographic area in the local publicly owned electric utility's or electrical cooperative's service territory** that is a higher wildfire threat than is identified in a commission fire threat map, and identification of where the commission should expand a high fire threat district based on new information or changes to the environment.	Section: 4 Page: 18
Enterprise wide Risks	**PUC § 8387(b)(2)(L):** A methodology for identifying and presenting **enterprise wide** safety risk and wildfire-related risk.	Section: 4 Page: 17
Restoration of Service	**PUC § 8387(b)(2)(M):** A statement of how the local publicly owned electric utility or electrical cooperative will **restore service after a wildfire**.	Section:7 Pages: 28-29
Monitor and Audit	**PUC § 8387(b)(2)(N):** A description of the processes and procedures the local publicly owned electric utility or electrical cooperative shall use to do all of the following (i) **Monitor and audit** the implementation of the wildfire mitigation plan. (ii) **Identify any deficiencies** in the wildfire mitigation plan or its implementation, and correct those deficiencies. (iii) Monitor and audit the effectiveness of electrical line and equipment inspections, including inspections performed by contractors, that are carried out under the plan, other applicable statutes, or commission rules.	Section: 8 Pages: 31
Qualified Independent Evaluator	**PUC § 8387(c):** The local publicly owned electric utility or electrical cooperative shall contract with a qualified independent evaluator with experience in assessing the safe operation of electrical infrastructure to review and assess the comprehensiveness of its wildfire mitigation plan. The independent evaluator shall issue a report that shall be made available on the Internet Web site of the local publicly owned electric utility or electrical cooperative, and shall present the report at a public meeting of the local publicly owned electric utility's or electrical cooperative's governing board.	Section: 9 Page: 32

As further required by Public Utilities Code 8387 local publicly owned electric utilities or electrical cooperatives shall prepare a wildfire mitigation plan annually and shall submit the plan to the California Wildfire Safety Advisory Board (WSAB) on or before July 1 of that calendar year. Each local publicly owned electric utility and electrical cooperative shall update its plan annually and submit the update to the California WSAB by July 1 of each year. At least once every three years, the submission shall be a comprehensive revision of the plan.

Table 2: Wildfire Safety Advisory Board Recommendations

WSAB Recommendation	Description	Section Number
#1 – Context Setting Information	Provide context-setting information about the POU and provide a simple guide to where the statutory requirements are addressed within the WMP.	1
#2 – WMP Public Review and Approval Process	Provide a short description of the POU's public review and approval (if required) for the WMP. This description may also include a brief explanation of the funding mechanisms for wildfire mitigation efforts.	3 - A
#3 – Independent Evaluation (IE) Reporting and Posting	Identify where the POU has posted the most recent Independent Evaluator (IE) Report and if your POU plans to enhance future IE reports, please summarize in what ways.	9
#4 – Develop Guidelines for Future WMPs	Develop, in collaboration with POU industry associations, WMP guidelines for future WMPs, understanding that it may take multiple cycles for POUs to integrate these recommendations into the WMPs.	1
#5 – Customer Impact from IOU PSPS Events	Describe the potential impact investor-owned utilities (IOU) public safety power shutoff (PSPS) events could have on POU customers and how the POU manages these impacts. For POUs that are also balancing authorities, describe the criteria for wildfire-related de-energizations. Responses shall only provide aggregated information that does not provide customer-specific information or other potentially sensitive data.	5-G
#6 – Customer Communication Plans for Wildfire and PSPS Events	Describe the utility customer communication plans with respect to wildfires and PSPS, and in particular describe the methods, content, and timing used to communicate with the most vulnerable customers, such as Access and Functional Needs (AFN) customers, medical baseline customers, non-English speakers, and those at risk of losing water or telecommunications service.	6

#7 – System Hardening and Grid Design Programs	Provide details on each POU's system hardening and grid design programs, including: (1) the goals of the programs and the risk any particular program is designed to mitigate; (2) approach to PSPS mitigation and prevention; and (3) identify any resource shortages.	5-E, F-K Appendix D
#8 – System Patrols and Inspections	Describe annual visual patrols on potentially impacted circuits and the risks the POU is inspecting for. Describe whether and how system inspections lead to system improvements. Describe line patrols before, during, and/or after a critical fire weather event, such as a Red Flag Warning with strong winds, or following a fire that burned in areas where electric facilities are or could have been impacted.	5-B, 5-D
#9 – Identifying Risks	Describe options considered by the POU (including through the joint efforts of the POU associations) to identify previously unidentified risks that could lead to catastrophic wildfires.	3-D, 3-E
#10 - Wildfire Risks Associated with System Design and Construction	Describe the particular wildfire risks associated with system design and construction such as topography and location near the HFTD areas of another utility's service territory. Describe any G.O. 95 exempt assets and possible updates to G.O. 95 that could facilitate more resilient utility transmission and distribution assets.	4, 5-A, 5-E
#11 – Use of Situational Awareness Technology	Provide context-setting information about the prevailing wind directions and speeds, differentiated by season, along with average weather conditions by season. Describe how and why situational awareness technology is installed, and where on the system. Describe the decision-making process regarding the installation of situational awareness technology, including constraints such as budgets, availability of equipment, knowledge to effectively deploy, or qualified personnel to install and monitor effectively. Identify any other agencies, utilities, or fire professionals that the data from these devices is shared with.	5-C, 5-J, Appendix E
#12 – Vegetation Management Requirements	Describe treatment plans for all types of vegetation associated with utility infrastructure, from the ground to the sky, which includes vegetation above and below electrical lines.	5-A
#13 – Qualifications of Vegetation	List the qualifications of any experts relied upon, such as scientific experts in ecology, fire ecology, fire behavior, geology, and meteorology. Specify the level of expertise of the POU staff that manages the contractors performing vegetation management.	5-H, 5-I

Management Personnel	Describe measures each POU takes to ensure that POU staff and contractors comply with or verify compliance with Cal/OSHA standards on Minimum Approach Distances (MAD).	
#14 - Innovative Approaches to Vegetation Management	Describe whether the REU has considered innovative and alternative approaches to vegetation management.	5-I, Appendix B

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.

The City of Redding has been working with the non-profit organization, Community Planning Assistance for Wildfire (CPAW) on a land use planning solution to better manage the City's wildland-urban interface (WUI) and enhance the City of Redding's resiliency to wildfire. The Redding Electric Utility Wildfire Mitigation Plan will assist in linking the recommendations from CPAW and reducing the impacts of wildfires to our community.

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;
Section 10 - Plan revision history.

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 AND PROGRAMS

The third goal for the Wildfire Mitigation Plan is to minimize the spread of wildfire within and near REU assets.

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 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 AND 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 as part of this Plan and are described in more detail in Section 5.

- REU Wildfire Prevention and Improved Response Program
- REU Technology Solutions Program
- REU Distribution 10-year Capital Improvement Program
- REU Emergency Operations Program

REU Wildfire Prevention Strategies and Program Matrix

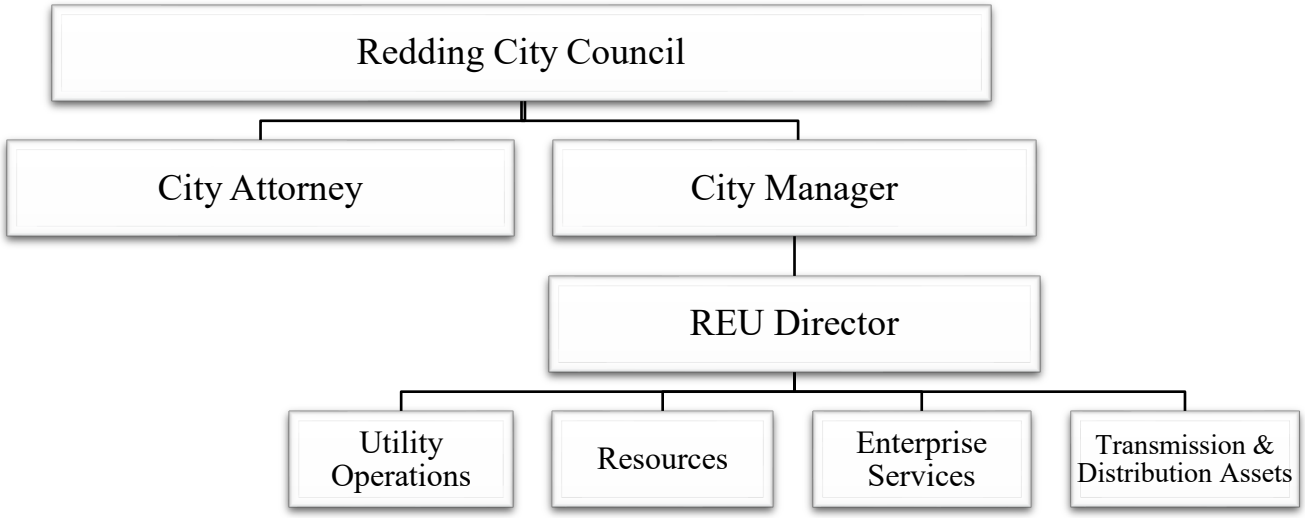
	Wildfire Prevention & Improved Response	Technology Solutions	Distribution 10-year Capital Improvements	REU Emergency Operations
Vegetation Management	x	x		
Enhanced Inspections	x	x	x	
Situational Awareness		x	x	x
Operational Practices	x	x	x	x
System Hardening	x	x	x	x
Public Safety & Notification	x	x		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. The Redding Electric Utility Wildfire Mitigation Plan is presented and adopted annually by the elected Redding City Council during regularly scheduled meetings open to the public. All citizens are allowed, by law, to engage in public comment during the open council meeting.

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 - T & D Assets
REU Emergency Operations Program	REU Assistant Director - Operations

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	Program Supervisor - Arborist
Enhanced Inspections	Assistant Director – T&D Assets	Program Supervisor - Line
Situational Awareness	Director	Program Supervisor - Admin
Operational Practices	Assistant Director - Operations	• Electric Program Supervisor – T & D Assets • Electric Manager - Line
System Hardening	Assistant Director – T&D Assets	Senior Electrical Engineer
Public Safety & Notification	Electric Manager - Customer Service	Program Supervisor - Admin
Reclosing & Deenergization	Assistant Director – Operations	Senior System Operator-Distribution
Wildfire Response & Recovery	Assistant Director - Operations	• 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 and 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 issues 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 and 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 coordinate with either and/or both the City's EOC or REU's DOC 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 Sherriff'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 incidents. 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 and 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

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

B. ENTERPRISE SAFETY AND WILDFIRE RISK METHODOLOGY

In order to ascertain the level of risk to our system, REU 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, REU will review historic fire records to see if there are other areas of risk that should be addressed.

REU has conducted multiple operational risk inventories to determine the appropriate methodology when assessing risk. The following criteria were identified when assessing risk; severity; probability of occurrence; mitigation to be done; and speed of onset. Framework for an Operational Risk Committee was developed as a result of the analysis with the primary goal of managing all operational risks. This includes identifying, analyzing and prioritizing risks associated with catastrophic events, such as wildfires. The Operational Risk Committee identified key REU assets of which can be found in the 10-year Capital Improvement Program. Nearly 50% of the capital improvements have been implemented as of December, 2022.

C. SYSTEM AND OPERATIONAL RISK

REU 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 that 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 AND CLIMATE RISK

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.

Table 3: Attributes of Redding Electric Utility

Utility Name	Redding Electric Utility	
Service Territory Size	61 square miles	
Owned Assets	X Transmission X Distribution X Generation	
Number of Customers Served	44,358 customer accounts	
Population Within Service Territory	92,000 people	
Customer Class Makeup	*Number of Accounts*	*Share of Total Load (MWh)*
	86 % Residential; 2 % Government; - % Agricultural; - % Small/Medium Business; 12 % Commercial/Industrial	52 % Residential; 8.4 % Government; - % Agricultural; - % Small/Medium Business; 39.6 % Commercial/Industrial
Service Territory Location/Topography	- % Agriculture 9.43 % Barren/Other - % Conifer Forest - % Conifer Woodland - % Desert - % Hardwood Forest - % Hardwood Woodland - % Herbaceous - % Shrub 75.4% Urban 2.6% Water	
Service Territory Wildland Urban Interface[1] (based on total area)	38% Wildland Urban Interface; 24% Wildland Urban Intermix	
Percent of Service Territory in CPUC High Fire Threat Districts (based on total area)	Tier 2: 33.5% Tier 3: 12.5% The CPUC High Fire Threat Map is included in Appendix A of REU's Wildfire Mitigation Plan.	
Prevailing Wind Directions & Speeds by Season	Prevailing winds were taken from the Shasta Trinity Strategic Fire Plan Battalion 4 Map. The City of Redding is located within this Fire Plan area.	

[1] This data shall be based on the definitions and maps maintained by the United States Department of Agriculture, as most recently assembled in *The 2010 Wildland-Urban Interface of the Conterminous United States*, *available at* https://www.fs.fed.us/nrs/pubs/rmap/rmap_nrs8.pdf.

	The Plan states the following: gradient winds are generally out of the south/southwest at 5 to 12 mph. Occasional light east winds occur in the morning then shift to more south/southwest flow in the afternoon and can reach speeds of 15 to 20 mph, generally up slope and up canyon. North wind events occur periodically throughout the fire season and can reach in the 10 to 30 mph range with associated higher gusts. These winds frequently switch to the northeast and strengthen after dark, maintaining low relative humidity, often in the single digits throughout a 24-hour period.
Miles of Owned Lines Underground and/or Overhead	Overhead Dist.: 527.1 miles within service territory/ 27.6 miles outside of service territory Overhead Trans.: 50.9 miles within service territory/ 20.7 miles outside of territory Underground Dist.: 1,051.21 miles Underground Trans.: N/A * Miles of owned lines reported above are lines miles.
Percent of Owned Lines in CPUC High Fire Threat Districts	*Overhead Distribution Lines as % of Total Distribution System (Inside and Outside Service Territory)*
	Tier 2: 24.55% Tier 3: 7.25%
	Overhead Transmission Lines as % of Total Transmission System (Inside and Outside Service Territory)
	Tier 2: 44.8% Tier 3: 10.95%
Customers have ever lost service due to an IOU PSPS event?	☐ Yes ☒ No
Customers have ever been notified of a potential loss of service to due to a forecasted IOU PSPS event?	☐ Yes ☒ No
Has developed protocols to pre-emptively shut off electricity in response to elevated wildfire risks?	☒ Yes ☐ No
Has previously pre-emptively shut off electricity in response to elevated wildfire risk?	☐ Yes ☒ No If yes, then provide the following data for calendar year 2020: *Number of shut-off events*: N/A *Customer Accounts that lost service for >10 minutes:* N/A *For prior response, average duration before service restored:* N/A

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.

Redding Electric Utility recognizes the impacts to our forestry and the increased wildfires due to climate change throughout California and the Northwest. As such REU reviews the data portraying climate change in California and specifically in Redding through the Cal-Adapt.org collaboration of state funding programs along with university and private peer reviewed researchers. REU understands that temperatures are projected to rise in California during the 21st century which will potentially increase fire seasons due to the extended extreme heat. One of our key programs within the WFMP is our Wildfire Prevention and Response which takes into consideration these external climate factors. By partnering with key stakeholders within the City of Redding, such as the Parks, and Fire Department, we are focusing on reducing vegetation near distribution lines and substations, as well as decreasing response time by first responders for fires caused by or near REU infrastructure.

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 December 2020.

5. WILDFIRE PREVENTION STRATEGIES 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 treats both native and non-native trees in our service area. The following trees are vigorous in growth and are treated regularly: oak, ailanthus altissima, and poison oak. REU performs this work with nine arborists.

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

REU funds staff and equipment for vegetation management at the Redding Fire Department and Redding Parks Department to clear brush and trees away from poles, substations, REU's powerplant, and various high fire threat areas in the Redding community. Additionally, the Parks staff conducts weed abatement around power poles in high threat areas. Power poles in high risk areas were treated with fire retardant material during the 2021 fire season. New technology was developed and REU started wrapping power poles in high-risk areas with a fire-retardant webbing, allowing for longer protection of the poles. Over 500 poles were wrapped in 2022 and will continue throughout the calendar year of 2023. REU utilizes goats in areas near power lines that are often difficult for personnel to reach. REU works directly with private property owners on vegetation management in high fire threat zones to lower fire risks. For a comprehensive list of prevention efforts conducted during the 2022 calendar year see Appendix G-2022 Wildfire Mitigation Plan Monitoring and Auditing Report.

The City of Redding Parks Department and REU Arborists perform the work listed below annually prior to the north state fire season each year. In addition to adopting the *REU Wildfire Mitigation and Improved Response Program* described below, enhancements to our traditional vegetation management described above include:

- No vertical coverage allowed above REU 115kVtransmission lines;
- Provide vegetation control in a 30-foot perimeter around the Power Plant and substations as property lines and easements allow. All vegetation within the designated perimeter have been removed within four inches of earth and vegetation maintenance is performed annually at each location.
- Public land and greenbelts throughout the City of Redding are located in all three Tier levels and REU clears from ground to sky adjacent to REU facilities.
- REU prioritizes vegetation management around all utility infrastructure in these areas. In conjunction with various City Departments, REU focuses on mitigating potential fire threats associated with illegal outdoor camps in greenbelt areas.
- 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.

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, foot patrol, or unmanned potentially aerial vehicles (UAVs) with IR, aerial LIDAR (light detection and ranging), and GIS data collection and sharing.

The frequency of inspections has increased in the high fire threat areas with all Tiers being formally inspected by REU Operations personnel and specialized contractors. The equipment and labor needed for enhanced inspections has been augmented by contract inspection personnel as well as the improvement noted in the REU Technology Program. REU does not change the inspection frequency during Red Flag Warnings or other high fire danger periods. For a comprehensive list of enhanced inspection efforts conducted during the 2022 calendar year see Appendix G -2022 Wildfire Mitigation Plan Monitoring and Auditing Report.

C. STRATEGY - SITUATIONAL AWARENESS

Presently REU is working to install 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 customer notification through outage mapping and interactive voice response (IVR).

Other efforts include the following technology in collaboration with RFD, RPD, and the City's Information Technology (IT) Department:

- Installed strategically located surveillance cameras for early detection of fires, fire weather monitoring, or suspicious activity; This is also part of REU's SB699 Physical Security Plan;
- Expanded use of Automatic Vehicle Locators (AVL) for response and recovery for REU, RFD, and RPD;
- Use unmanned aerial vehicles during high fire threat days for early detection, and other uses in the interest of public safety;
- Implemented a common Motorola radio communication system for REU, RFD, and RPD for wildfire and disaster response and recovery;
- Provided human resources for implementation, operation, and maintenance of technologies:
- Customer reporting tools for safety issues;
- Installed the IQ FireWatch System providing early fire detection with advanced smoke analytics and artificial intelligence;
- Completed a state-of-the-art Department Operations Center to integrate and disseminate situational data.

Other enhancement to public notification during high fire threat, actual fire, or other disaster events can be found in Appendix G-2022 Wildfire Mitigation Plan Monitoring and Auditing Report.

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 discover 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 work as described in SOP-35. All personnel in contact with RFD and RPD reporting anything hazardous. REU Emergency Operations Program (EOP) on Level 1 status;
- REU performs 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. If an actual alert level is experienced due to Red Flag warning or other activity, the drill may not be necessary;
- 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 consider some or all of the following as described in the 10-year Capital Improvement Program:

- Addition of remote-controlled field reclosers with arc detection technology;
- Poles with operating devices are cleared of all vegetation around them with a minimum radius of 10'. Perform this for every applicable 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;
- 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, lightening 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 economical;
- 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.

For a comprehensive list of system hardening projects conducted by REU in 2022 see Appendix G-2022 Wildfire Mitigation Plan Monitoring and Auditing Report.

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 Power Control Center (PCC);
- Coordinate with RFD and RPD through the REU EOP during emergencies or large-scale outages;
- Coordinate with RFD and RPD in conjunction with the joint dispatch agency, Shasta Area Communication Agency (SHASCOM) for notification to areas that require power shutoffs as directed by public safety during emergencies;
- Developed communications protocol with Shasta County Health and Human Services for notifications to vulnerable groups;
- REU utilizes social media such as Facebook, Twitter, and Instagram along with the COR Communications Team to proactively communicate with the customers in the City of Redding during Red Flag Warnings, fires and other utility related emergencies;
- A publicly facing map provides information for the public to view current outages and estimated restoration times;
- Use public service messages on local radio and television media related to wildfire safety.

G. STRATEGY - RECLOSING AND DEENERGIZATION

As part of this Wildfire Mitigation Plan, REU disables automatic reclosing on circuits that traverse tier 2 or 3 areas during periods in which the National Weather Service issues a Red Flag Warning or at REU Management discretion for safety purposes. This procedure is documented in SOP-35 (Appendix F). **REU will continue to shut off power when directed to by Redding Fire, Police, Cal Fire, or other emergency responding agencies.** REU 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;

- Approximately fifty percent (50%) of the City's eight hundred (800) miles of distribution lines are located below ground;
- The City has eight (8) Redding Fire Stations positioned strategically throughout the City and with the additional fifteen (15) Firefighters hired through the Wildfire Mitigation Plan, the response time by fire personnel, should a fire occur, will be reduced significantly;
- All identified law enforcement, fire and hospital facilities are within the Tier 1 boundaries
- Five (5) of the REU substations are located within the Tier 2/3 boundaries.
- CalFire Northern Operations Division and CalFire Shasta Trinity Unit headquarters are located within the City of Redding limits along with CalFire's Air Attack Unit and multiple CalFire Substations are located in and around the City limits ensuring timely mutual aid response;
- The City hired fifteen (15) Firefighters, eight (8) Public Works Maintenance employees and is proactively mitigating Tier 2 and Tier 3 fire zone areas by removing brush and trees near Redding Electric equipment and lines;
- 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. During October 2019 such a fire was started just outside the city limits due to a Pacific Gas and Electric PSPS;
- REU is investing in our Wildfire Mitigation and Improved Response Program as one way to mitigate power shut offs;
- REU plans to have real-time information from staff located in areas identified as at risk of being subject to extreme weather conditions;
- REU makes use of social media and the REU website to communicate relevant and timely notifications as well as a public outage portal map.
- REU plans to use system hardening, situational awareness, vegetation management and the other strategies to avoid shutting off power.

H. STRATEGY - WILDFIRE RESPONSE AND RECOVERY

- During a high fire threat event (specifically Red Flag Warning periods issued by the National Weather Service), RFD will attempt to up staff and stage fire protection equipment in a ready status and the REU EOP will go to a Level 1 (SOP-35);
- First Responders shall provide access to the Redding Power Plant staff for necessary shift changes during fire events;
- Wildfire Response: Execute the REU Emergency Operations Program (SOP-200);
- 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 participates 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 AND IMPROVED RESPONSE

On May 7, 2019, the Council approved the REU Wildfire Prevention and Improved Response Program (Appendix B). 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 Redding Fire Department provides coordination between REU and other local fire agencies as well as oversight of the Program.

Specifically, this program provides fifteen Firefighters to increase staffing for two engines from two-person to three-person crews. This will improve initial fire response. Finally, seven Public Works vegetation crew workers perform fire fuels mitigation. In total twenty-two personnel continue to augment REU's existing nine arborists.

J. PROGRAM – REU TECHNOLOGY SOLUTIONS

Through the application of technology, REU will be able to more effectively protect and reduce threats to the electric utility infrastructure and the customers who rely upon it. The following technologies will greatly enhance REU's ability to minimize sources of ignition, manage vegetation within the City's electric grid, enhance productivity of utility staff, harden systems, more effectively protect and notify the public if an issue arises, as well as shorten the response and recovery time in the event REU equipment contributes to starting a wildfire.

Technology also helps to heighten situational awareness and enhances public safety response time, allowing first responders to react in an appropriate and effective manner before, during and after a wildfire. The Program provides funding to the Redding Police Department (RPD) and the City Information Technology (IT) Department for services rendered to help prevent REU caused wildfires through aerial surveys of REU's overhead electric lines, video monitoring of facilities, a common communication platform, and a GPS based vehicle tracking platform. The memorandums of understanding (MOUs) are attached in Appendix E.

Specifically, this program provides for an estimated total of forty (40) cameras; a common radio platform, including base stations, handhelds and vehicle mounted radios for REU personal as well as radio equipment for Redding Police and Fire command Staff; and Automatic Vehicle Location (AVL) tracking devices on all Electric Utility vehicles and necessary upgrades for first responder vehicles. The common communication and GPS vehicle tracking platforms will be expandable and be designed to allow easy adoption by other City Departments at a small incremental cost. The Program also funds the IQ FireWatch system and Department Operations Center where all of the technology will integrate creating enhanced situational awareness during high fire threat days, system outages, and emergencies.

K. PROGRAM – REU DISTRIBUTION 10-YEAR CAPITAL IMPROVEMENT

The objective of the 10-Year Capital Improvement Program (Appendix D) is to enhance the distribution system to replace specific components used on the electrical distribution system to

reduce the probability that the system itself will initiate a fire as well as harden the electrical distribution system to better survive a fire initiated by other sources. The program specifics are being designed and will be completed by mid-2021.

These objectives will be achieved using the following five strategies:

- Enhanced inspections and tracking of assets;
- System hardening of key subsystems;
- Improved situational awareness;
- System improvements providing better operational practices;
- The addition of switching to provide precision de-energization.

L. PROGRAM – REU EMERGENCY OPERATIONS

The Redding Electric Utility Emergency Operations Program (REU-EOP) (Appendix C) is an all-hazards EOP that used a system operating procedure format to ensure compatibility with current practices as well as a utility wide application. The REU-EOP was designed using the same format as the City of Redding Emergency Operations Plan (City EOP) and includes the use of the Incident Command System (ICS). The main REU-EOP elements include Standard Operating Procedure (SOP) 200, an Incident Communication Guide, and the Emergency Operations Contact Information.

Upon review of the City's EOP (adopted in 2014), the utility is responsible for several restoration and incident management objectives during an emergency. The REU-EOP recognizes this responsibility and connects the existing City-wide emergency operations responsibilities to the responsibilities dictated by the REU-EOP in order to support an efficient and effective emergency response to any hazard.

REU maintains multiple electric system operating procedures designed to mitigate, communicate, and restore abnormal system conditions to normal status. As evident from the 2018 Carr Fire and the February 2019 snow storm event, the utility could greatly benefit from the implementation of a utility-wide EOP that utilizes the Incident Command System (ICS) structure along with the established electric system operating procedures. Fortunately, REU is organizationally structured to easily fit into the ICS unit system with appropriate roles and responsibilities between incident command (Executive Team) and section chiefs (Leadership Team). Therefore, the implementation of SOP-200 fits well within the roles and responsibilities segmented appropriately.

As required, the REU-EOP establishes a Department Operations Center (DOC) at the REU Headquarters Building at Avtech Parkway during emergency conditions. This DOC will work in collaboration with the PCC (Redding Power Plant) where both facilities will have video conferencing capability to ensure ease of communication during events. Having the DOC remote from the PCC will allow it to be used as an EOC for the City.

The Incident Communication Guide was drafted to support the REU Public Information Officer (PIO) and staff with both internal and external communications during an emergency.

As required in the City's EOP, an Emergency Operations Contact Information document has been created with a listing of key REU emergency response personnel, a conference bridge, and emergency contact email and phone information.

The REU-EOP has been transferred to Utility Operations as of August 31, 2019 for ongoing administration, training, and upkeep.

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.

Communications will be coordinated as appropriate with the City Communications Team.

7. RESTORATION OF SERVICE

In the event of a wildfire or other emergency event, REU will staff up its DOC 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 another 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:

Declaration of Emergency. The City of Redding may declare an emergency depending on the scope of the disaster.

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. REU maintains a critical material vendor list and has contracts it can draw on for labor and material needs. In an 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 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);
- 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.);
- Transmission circuits (115 kV) subject to NERC requirements;
- Substations;
- Distribution circuits (12 kV);
- Distribution feeders;
- Distribution transformers;
- Service lines.

8. EVALUATION OF THE PLAN

A. METRICS FOR MEASURING PLAN PERFORMANCE

REU tracks two metrics to measure the performance of this Wildfire Mitigation Plan: (1) number of fire ignitions caused by REU facilities or operations; and (2) wires down within the service territory.

Metric 1: Fire Ignitions

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

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

For information related to the number of fires caused by REU facilities see Appendix G-WFMP Annual Monitoring and Auditing Report.

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 divides the wires down metric between wires down inside and outside of the High Fire Threat District. REU does not normalize this metric by excluding unusual events, such as severe storms. Instead, REU supplements this metric with a qualitative description of any such unusual events (including car vs. pole incidents).

B. IMPACT OF METRICS ON PLAN

Appendix G – Wildfire Monitoring and Auditing Report provides the impact on the metrics of the plan. REU will continue to identify areas of its operations and service territory that are disproportionately impacted and evaluate potential improvements to the plan. REU staff has

collected data for the past two years and continues to update the WFMP annually. Notable changes include the implementation of a workforce management program, contracting with vendors for vegetation and equipment inspection, and upgrades to the internal inspection process improving the overall auditing and reporting of utility caused fires. REU has improved the collection process along with monitoring and reporting of events.

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 at a regularly scheduled City of Redding Council Meeting on the Regular Calendar allowing public comment on the elements of the plan.

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. WILDFIRE MITIGATION PLAN ADOPTION

A. CITY COUNCIL MEETINGS

Meetings of the Redding City Council are held on the first and third Tuesday of each month at 6:00 p.m. City Council meetings are open to the public, with the exception of closed sessions, as allowed by law. Members of the public can attend Council Meetings in person or livestream the meeting. Online videos of the Council meetings are posted on the City's website the same week, following the meeting

City Council agendas are available online, at the City Clerk's Office, or may be viewed in the display case in front of the Council Chambers, beginning at 4:00 p.m. on the Thursday preceding the Council meeting.

B. PRESENTATION

The Wildfire Mitigation Plan is presented to City Council during the general session and is open for public comment during that time period. Changes to the Plan and acceptance of the annual report are contingent on approval from the City Council.

C. INDEPENDENT EVALUATION

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 REU's Wildfire Mitigation Plan.

REU's first Plan was reviewed by Navigant Consulting and they presented their report and findings to the Redding City Council on December 3, 2019.

REU's three-year review was conducted by Dudek in January of 2023.

The Redding Electric Utility Wildfire Mitigation Plan and the report from the independent evaluator can be located on the City of Redding website at: https://www.cityofredding.org/departments/redding-electric-utility/reu-pages/wildfireplan.

10. REVISION HISTORY

Version Number	Revision Date	Summary of Changes
1.0	6/18/19	Initial
2.0	12/3/19	Added the following: REU Emergency Operations Program, REU 10-Year Capital Improvement Program, and REU Technology Solutions Program. Updated all sections with administrative changes to reflect new programs and current practices.
3.0	12/1/2020	Made minor changes to reflect current status of programs. Updated Appendix C. Detailed information regarding steps taken during the 2020 calendar year are described in a separate annual report.
4.0	5/18/2021	Added Appendix G: REU's Response to the Wildfire Safety Advisory Board's 2021 Guidance Advisory Opinion.
5.0	12/7/2021	Minor changes to reflect current status of programs and updated Appendices. Detailed information regarding steps taken during the 2021 calendar year are described in a separate annual report.
6.0	1/06/2023	Updated the WFMP to meet the recommendations of the Wildfire Safety Advisory Board reflected from the 2022 Plan and 3-year audit review by independent auditor.

APPENDIX A

CPUC FIRE THREAT MAP

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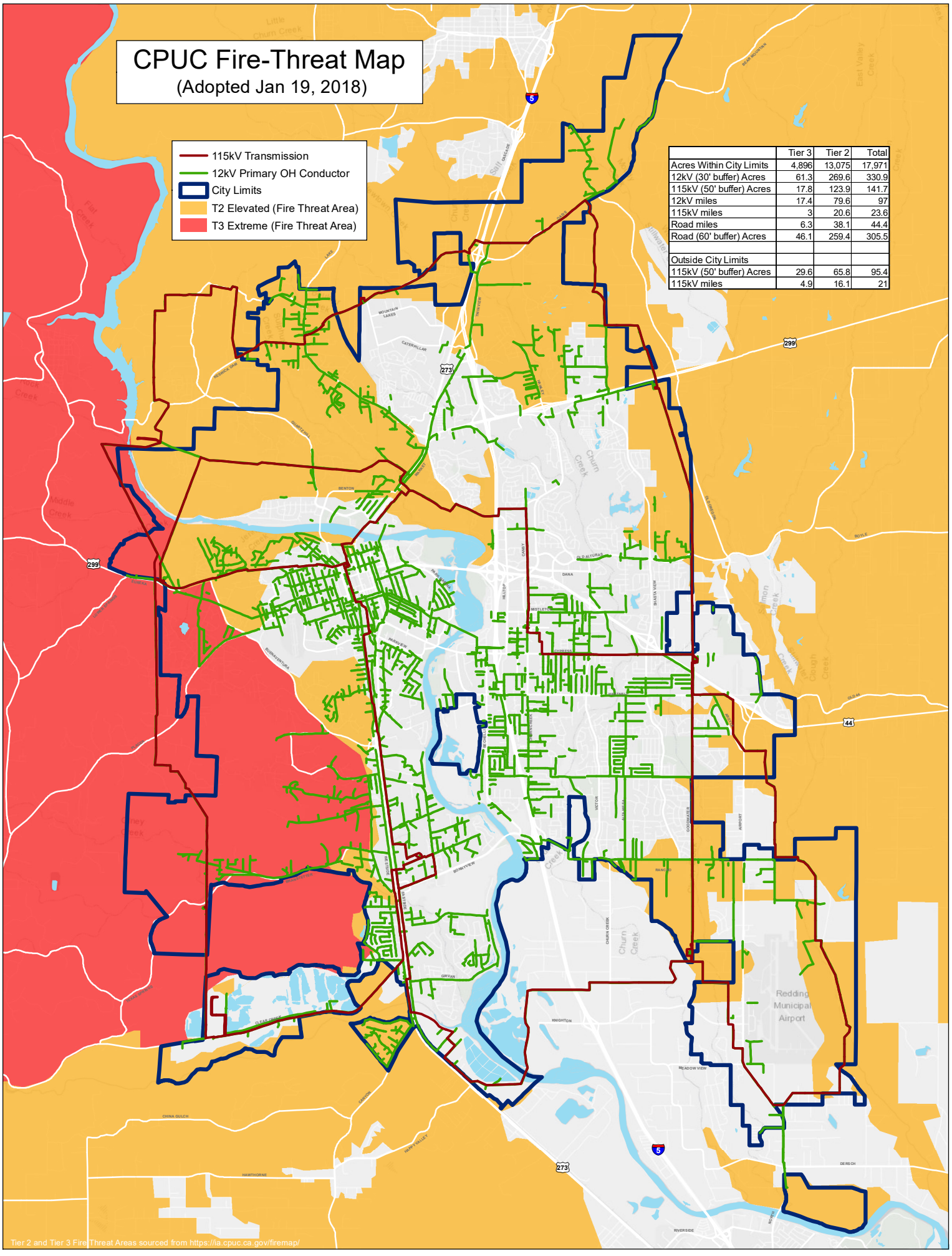

	Tier 3	Tier 2	Total
Acres Within City Limits	4,896	13,075	17,971
12kV (30' buffer) Acres	61.3	269.6	330.9
115kV (50' buffer) Acres	17.8	123.9	141.7
12kV miles	17.4	79.6	97
115kV miles	3	20.6	23.6
Road miles	6.3	38.1	44.4
Road (60' buffer) Acres	46.1	259.4	305.5
Outside City Limits			
115kV (50' buffer)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

APPENDIX B

REU WILDFIRE PREVENTION AND IMPROVED RESPONSE PROGRAM

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CITY OF REDDING
MEMORANDUM OF UNDERSTANDING

THIS MEMORANDUM OF UNDERSTANDING (MOU) is made at Redding, California, by and between Redding Electric Utility (REU), an enterprise business unit of the City of Redding (City) a municipal corporation, Redding Fire Department (RFD) and Redding Community Services (RCS), general fund business units of the City, for the purpose of wildfire prevention and improved response services.

WHEREAS, SB 901 was adopted by Governor Brown on September 21, 2018; and REU does not have sufficient personnel to perform the services required herein thereby necessitating this MOU for RFD and RCS services.

WHEREAS, SB 901 requires the REU to draft and implement a Wildfire Mitigation Plan for the purpose of preventing the start of wildfires resulting from utility operations as well as to undertake vegetation management efforts to reduce the catastrophic impacts which may be caused by REU facilities or operations.

WHEREAS, the City Council approved a program providing for RFD and RCS to support REU in implementation of a Wildfire Mitigation Plan as more fully defined herein, and authorized the City Manager to execute this MOU between the parties.

NOW, THEREFORE, the Parties covenant and agree, for good consideration hereby acknowledged, as follows:

SECTION 1. RFD AND RCS SERVICES

Subject to the terms and conditions set forth in this MOU, RFD and RCS shall provide to REU the services described in Exhibit A - REU Wildfire Prevention and Improved Response Program, attached and incorporated herein. RFD and RCS shall provide the services at the time, place, and in the manner specified in Exhibit A.

SECTION 2. COMPENSATION AND REIMBURSEMENT OF COSTS

A. REU shall reimburse RFD and RCS for services rendered pursuant to this MOU through the City Budgeting process and as described in Exhibit B. Exhibit B is attached and incorporated herein, in a total amount not to exceed eight million dollars ($8,000,000) for augmentation of engine company personnel to improve response time and apprentice and Public Works maintenance workers for brush clearing and related activities to execute the REU Wildfire Prevention and Improved Response Program. This sum is further limited in each fiscal year as shown in Exhibit B. REU reserves the right to increase these amounts with City Council approval using current funding mechanisms such as the Director's Contingency Fund.

B. RFD and RCS shall submit semi-annual time, materials, and expense reports to REU along with status for work completed to the date of the report. All reports shall be itemized to reflect the employees performing the requested tasks, the billing rate for each employee and the hours worked.

SECTION 3. TERM AND TERMINATION

A. RFD and RCS shall commence work on or about June 1, 2019, and provide services through June 30, 2023. This MOU may be extended every two years by City Council approval with mutual agreement of existing or modified terms by RFD, RCS, and REU.

B. RFD and RCS hereby acknowledge and agree that the obligation of REU to pay under this MOU is contingent upon the availability of City's funds which are appropriated or allocated by the City Council. Should the funding for the project and/or work set forth herein not be appropriated or allocated by the City Council, this MOU shall terminate when the funding is exhausted.

C. In the event that City Council terminates the program, RFD and RCS shall provide to REU any and all finished and unfinished reports, charts or other work product prepared by RFD and RCS pursuant to this MOU.

D. In the event the City Council terminates the program, REU shall pay RFD and RCS the reasonable value of services rendered by RFD pursuant to this MOU. RFD and RCS shall, not later than thirty (30) calendar days after termination of this MOU, furnish to REU such financial information as in the judgment of the REU's representative is necessary to determine the reasonable value of the services rendered by RFD and RCS.

SECTION 4. MISCELLANEOUS TERMS AND CONDITIONS OF MOU

A. No portion of the work or services to be performed under this MOU shall be assigned, transferred, conveyed or subcontracted without prior written approval of REU, the City Manager or the City Council.

B. RFD and RCS, at such times and in such form as REU may require, shall furnish REU with such periodic reports as it may request pertaining to the work or services undertaken pursuant to this MOU. This information includes data for public viewing on City Hub and other information as needed by REU for compliance obligations.

C. RFD and RCS shall maintain accounts and records, including personnel, property and financial records, adequate to identify and account for all costs pertaining to this MOU and such other records as may be deemed necessary by REU to assure proper accounting for all project funds. These records shall be made available for audit

purposes to state and federal authorities, or any authorized representative of City. RFD and RCS shall retain such records for three (3) years after the expiration of this MOU, unless prior permission to destroy them is granted by REU.

SECTION 5. MOU INTERPRETATION, AMENDMENT AND WAIVER

A. This document, including all exhibits, contains the entire agreement between the parties and supersedes whatever oral or written understanding each may have had prior to the execution of this MOU. This MOU shall not be altered, amended or modified except by a writing signed by REU, RFD, and RCS and duly authorized by the City Manager. No verbal agreement or conversation with any official, officer, agent or employee of City, either before, during or after the execution of this MOU, shall affect or modify any of the terms or conditions contained in this MOU.

B. No covenant or condition to be performed by RFD or RCS under this MOU can be waived except by the written consent of REU. Forbearance or indulgence by REU in any regard whatsoever shall not constitute a waiver of the covenant or condition in question.

C. In the event of a conflict between the term and conditions of the body of this MOU and those of any exhibit or attachment hereto, the terms and conditions set forth in the body of this MOU proper shall prevail. In the event of a conflict between the terms and conditions of any two or more exhibits or attachments hereto, those prepared by REU shall prevail over those prepared by RFD and RCS.

SECTION 6. SURVIVAL

The provisions set forth in Sections 3 through 5, inclusive, of this MOU shall survive termination of the MOU.

SECTION 7. COMPLIANCE WITH LAWS

RFD and RCS shall comply with all applicable laws, ordinances and codes of federal, state and local governments.

SECTION 8. REPRESENTATIVES

A. REU's representative for this MOU is the Redding Electric Director, currently Daniel Beans, telephone number (530) 339-7350. All of RFD's and RCS's questions pertaining to this MOU shall be referred to the above-named person, or to the representative's designee.

B. RFD's representative for this MOU is Cullen Kreider, telephone number (530) 225-4141.

C. RCS's representative for this MOU is Kimberly Niemer, telephone number (530) 225-4085.

D. The representatives set forth herein shall have authority to give all notices required herein.

SECTION 9. DATE OF MOU

The date of this MOU shall be the date it is signed by REU.

IN WITNESS WHEREOF, REU and RFD have executed this MOU on the days and year set forth below:

CITY OF REDDING,
A Division of a Municipal Corporation

Dated: _____, 2019

_____
By: Daniel Beans, Electric Utility Director

ATTEST:

APPROVED AS TO FORM:

BARRY E. DeWALT
City Attorney

_____
PAMELA MIZE, City Clerk

_____
By:

Redding Fire Department

Dated: _____, 2019

_____
By: Cullen Kreider, Fire Chief

Redding Community Services

Dated: _____, 2019

_____
By: Kimberly Niemer, Director of Community Services

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	• Collaborate w/ REU • Collaborate with RPD/Parks/PW • Other duties per the REU Wildfire Mitigation Plan	• Produce detailed work plan in collaboration with REU • Attend public workshops or other stakeholder meetings
2	Prevention – Apprentices and 3 Public Works Maintenance Workers	• Fuels reduction • Soil sterilization • Emergency debris removal • Other duties per the REU Wildfire Mitigation Plan	• Acres mitigated • Circuit miles mitigated • Poles mitigated • Fuel volume mitigated
3	Rapid Incident Response and Engagement – Firefighters (also Apprentices)	• Provide priority response to wildfire or utility fires • Maintain heightened alert/availability during high threat periods • Other duties per the REU Wildfire Mitigation Plan	• Wildfire and utility fire incidents are prioritized and responded to quickly
4	Supervision – Assistant Fire Marshal	• 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	• 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.

APPENDIX C

REU EMERGENCY OPERATIONS PROGRAM (EOP)

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CONTENTS

1. Purpose

The Emergency Operations Program (EOP) is intended to provide structured guidance for REU staff to effectively manage emergency situations from an all-hazards approach. The all-hazards approach is based on the idea that while the causes and types of emergencies can vary widely with little predictability, the basic functions needed to respond are relatively similar from one event to the next. Using a structured EOP based on the Incident Command System (ICS), this procedure provides instruction on the basic functions to be performed as well as providing decision-making processes to keep everyone that is involved on the same page with incident status, objectives, and resource requirements.

This EOP is intended to be both consistent with the ICS and to provide a scalable response from frontline REU employees to the Electric Director, and up to the City Manager, as well as the City Council. This EOP is also structured to follow the City of Redding (COR) Emergency Operations Plan and is a primary program element for REU's Wildfire Mitigation Plan.

2. Scope

This procedure will focus on effectively managing emergencies that are either (1) impacting REU's electrical facilities, equipment, staff, or (2) have a high potential of causing an emergency situation for REU in a similar fashion as above. The current operational risk environment requires REU to maintain an EOP with an ongoing planning and assessment lifecycle to incorporate best practices and lessons learned from past events.

For purposes of planning, the EOP will focus on these key functions for emergency management:

- Incident Command – Responsible for overall management of an incident at the REU Department Operations Center (DOC). The Incident Commander, Public Information Officer, Safety Officer, and the Liaison Officers will serve primary roles with the response units.
- Operations – Actively seeks to preserve REU's assets while restoring the system to normal conditions.
- Planning – Manages the planning process, tracks resources, develops status reports, and supports the production of the incident action plans.
- Logistics – Orders resources, anticipates supporting resources, and develops solutions to support Operations and Incident Command.
- Finance – Tracks costs, manages contracts, and administers the procurement process.

The scope of the EOP is concentrated from an REU centric approach with outreach on both a COR departmental and county wide geographic footprint. Geographic coordination may include (but is not limited to) other utilities, City, County, State and Federal agencies, California Office of Emergency Services and the Federal Emergency Management Agency. During Alert Level 3 conditions, REU will

activate a Department Operations Center at the Redding Power Control Center to coordinate emergency situations as they may arise. The DOC will serve as the central point of command for REU staff, and will subordinate to any Emergency Operations Center activation by any local, state or federal authority.

3. Emergency Operations

The following section will provide the concept of emergency operations to be used as a general guide. Not all emergencies will require the same level of action, nor will each emergency fall neatly within the lines of this EOP. By referencing this EOP and using these sections as an action guide REU should be positioned to manage emergency situations stemming from all-hazards.

3.1. Pre-Planning

If sufficient warning exists for the pre-planning of an emergency, an REU Leadership Team meeting will immediately be called to order by the Director or his designee to identify the hazard and begin the process of mobilization and activation of the EOP Alert process. Pre-planning, as discussed in Section 3.2, is to be considered an Alert 1 condition.

3.2. Initial Notification

Initial notification of an emergency can come from any source (internal or external). The primary sources of initial notification will typically be:

(1) An email alert to the REU Emergency Operations group email sent by the impacted Division Manager or Assistant Director, or
(2) The Power Control Center (PCC) Notice Generator (text alert).

Any REU staff member with information regarding a possible emergency shall immediately inform their manager or supervisor of the condition. The receiving manager or supervisor will immediately send an email to the REU Emergency Operations group email for distribution to all registered REU staff.

For emergency notifications originating from the activation of System Operating Procedure-24 REU Notification Plan (Attached), the Assistant Director of Utility Operations (or his designee) will immediately send an email to the REU Emergency Operations group.

The Director (or designee) will decide the appropriate Alert Level (see Section 3.3) after reviewing as much information regarding the emergency condition as possible. Example factors to be considered include the root cause, risk to staff and public, impact level (slight, moderate, high, severe), duration (short, medium, long, extensive) and mobilization requirements.

3.3. Alert Levels

Emergency Operations will be divided into 3 distinct categories of response:

(1) Alert 1 – Possible Emergency
(2) Alert 2 – Very High Likelihood of Emergency
(3) Alert 3 – Active emergency
(4) Alert 0 – Resume Normal Operating Conditions

For all Alert Levels, the following notification protocol shall be used to assume command of the emergency:

- The Incident Commander (IC) will assume command. The Director will typically be the IC, however, in the event the Director is unavailable for any reason the Assistant Directors will meet and confer on the appropriate IC for the emergency condition.
- An evaluation and response assessment shall be prepared by the IC documenting the conditions that warrant issuance of an Emergency Operations Alert.
- A statement will be sent via email alert from the Public Information Officer (PIO) to the all REU employee email group and to the REU Emergency Operations group using the following format:
    - Subject: "NOTICE: REU Emergency Operations Alert Level _ Activated "
    - Body Message: "This Alert Level # has been issued due to ____. Please refer to your EOP Guide to ensure you take the proper actions for this event. This Alert Level will be updated as the situation changes."
    - Supplemental SOP reference: "This Alert Level # will activate SOP-XX requiring special action as defined within the procedure."

3.3.1. Level 1 – Possible Emergency

The following actions shall take place in the event of an Alert Level 1 activation:

- An emergency planning meeting shall be immediately assembled by the IC and include all Incident Command personnel as available.
    - The IC will schedule the meeting including the conference bridge.
    - The meeting conference call number is [redacted], Access Code [redacted] to ensure attendance no matter the location of staff.
    - Incident planning shall assume the emergency will escalate to Alert Level 2.
    - Activation of any required PCC System Operating Procedures as necessary.
    - Assessment of Operations, Planning, Logistics, and Finance/Admin requirements.
    - Upon gathering input, the IC will draft an Incident Action Plan for dissemination by the PIO.
        - The Incident Action Plan will identify the priorities and objectives for emergency response in the event the possible emergency elevates to Level 2.
        - Planning will include possible coordination, support and recovery requirements.

- The PIO will send an email alert to the REU Emergency Operations group including the Incident Action Plan and the next steps from the IC in the event of emergency escalation.

3.3.2. Level 2 – Very High Likelihood of an Emergency

The following actions shall take place in the event of an Alert Level 2 activation:

- An emergency planning meeting shall be immediately assembled by the IC and include all Incident Command personnel as available.
    - The IC will hold the meeting (including conference call), call to order and work through the agenda.
    - The meeting conference call number is [redacted], Access Code [redacted] to ensure attendance no matter the location of staff.
    - Next steps/planning activity shall assume the emergency will escalate to Alert Level 3 including activation of the Department Operations Center.
    - Activation of any required PCC System Operating Procedures as necessary.
    - Assessment of Operations, Communications, Planning, Logistics, and Finance/Admin requirements.
    - Upon gathering input, the IC will draft an Incident Action Plan for dissemination by the PIO.
        - The Incident Action Plan will identify the priorities and objectives for emergency response in the event the possible emergency elevates to Level 3.

      Planning will include possible coordination, support and recovery requirements.
- The PIO will send an email alert to the REU Emergency Operations group including the following:
    - The Incident Action Plan from the IC.
    - The next steps from the IC in the event of emergency escalation.

- The PIO will send an email to the all REU employee email group with the following message:
    - An Emergency Mandatory Preparedness statement to all staff:
        - Subject: “Emergency Preparedness – Alert Level 2”
        - Body: “Due to the ___ situation an Alert Level 2 has been issued. The issuance of an Alert 3 is very likely if this situation escalates to an active emergency. All REU staff responsible for emergency operations shall be prepared to report to duty immediately if required. Please monitor your email and texts for updates to this situation”.
- The PIO shall post a message to REU customers on Facebook and Twitter. The message will indicate that REU’s Incident Response Team is assessing the situation and preparing for any emergency that may arise. Additional information will be posted as the situation changes.

3.3.3. Level 3 – Active Emergency

The following actions shall take place in the event of an Alert Level 3 activation:

- Activation of the REU Incident Command System (see Section 4.0)
    - Develop Incident Objectives including strategy, command emphasis/priorities and safety considerations.
    - Incident Objectives will use the SMART principles of Specific, Measureable, Achievable, Realistic and Timely.
- Activation of the Department Operations Center (see Section 4)
- Activation of the REU Communication Incident Response Guide (Attached)
- The PIO will send an email to the REU Emergency Operations group with an Incident Update (attached) at intervals decided by the IC.
- The PIO will send an email to the all REU employee email group with the following message:
    - An Emergency Condition statement to all staff:
        - Subject: "Active Emergency – Alert Level 3"
        - Body: "Due to the ___ emergency an Alert Level 3 has been issued. The Department Operations Center has been activated at the Redding Power Plant Conference Room A. All REU staff responsible for emergency operations shall report immediately to their respective locations and wait for further instruction from the REU Incident Command team. Please monitor your email and text for updates to this situation".
- The PIO will post an initial message to REU customers on Facebook and Twitter to inform of the emergency situation. Additional messaging will be managed as outlined in the Communication Incident Response Guide.

3.3.4. Level 0 – Resume Normal Operating Routine

The following actions shall take place in the event of an Alert Level 0 activation:

- Demobilization of the Department Operations Center (if activated).
- A debriefing meeting shall be scheduled by the IC including all relevant Incident Command Officers and Subject Matter Expert (SME) personnel, as available.
- The outcome of the debriefing meeting is to develop two reports within 10 business days:
    - (1) A public REU emergency incident report for the Redding City Council that includes the following basic elements:
        - Root Cause and Damage Assessment
        - Safety (i.e. injuries, loss of life)
        - Reliability (i.e. outage duration, Redding Power Plant operation, total customer counts, etc.)

- Mutual Aid assistance.
- Financial impact including efforts for cost recovery from outside agencies.
- Interaction with mutual aid, outside agencies and departments.
- Lessons learned.

- (2) An internal REU emergency response report to be used for record keeping and continual process improvement of the emergency operations plan process.
  - Incorporate the REU emergency incident report.
  - Review of the IC structure and lessons learned.
  - Identification of EOP improvements and assignments with due dates for accountability.

- The PIO will send an email to the all REU employee email group with the following message:
  - An Emergency Condition statement to all staff:
    - Subject: "Active Emergency – Alert Level 0"
    - Body: "The ____ emergency situation has ended. Alert Level 0 has been issued. All REU staff responsible for emergency operations shall resume normal duties. As part of REU's Emergency Operations Plan, you may be asked for feedback regarding this emergency to assist the Leadership Team with the development of an emergency response report".
- Post Alert Level 3 emergency activation, Management will conduct Critical Incident Debriefing with all employees impacted. Additionally, each Division will work with Personnel to provide Employee Assistance through the City of Redding Employee Assistance Program and other available resources.

4. Incident Command System (ICS) Structure

The commonly accepted National Incident Management System (NIMS), Incident Command System will be utilized by REU during emergency situations. The following roles, responsibilities and main focus will be assigned by position and may be delegated under an assumption of command approach. It is not feasible that every staff member will be available during an emergency to respond, therefore it is expected that REU staff will take delegation and command as appropriate.

Department Operations Center - In the event of an Alert Level 3 condition, a 24 hour per day Department Operations Center (DOC) will be mobilized at the Redding Power Plant Administration Building in Conference Room A. A Liaison Officer is responsible for the following items:

- Notification of activation to the City Manager's Office (Emergency Services Director)
- Coordination with any City, County or other agency Emergency Operations Center.
- Preparation of RPP Conference Room A for DOC Activation.
- Coordination with Logistics for necessary supplies.
- Coordination with Operations for necessary information technology.

- Coordination with RPP security for ingress/egress from the site.
- Coordination with outside agencies for liaison participation at the DOC (i.e. police, fire, admin).

REU Leadership Roles & Responsibilities – In order for the ICS to be successful, each individual listed in Section 4.0 is responsible to understand their role and responsibility during an emergency situation. This includes, but is not limited to items such as:

- Development, maintenance and administration of ICS Section Emergency Action Plans (i.e. Operations, Planning & Intelligence, Logistics, Finance)
- Develop management and restoration objectives.
- Staff training and resource identification for optimal emergency response.
- Maintaining current System Operating Procedures to ensure effective implementation during an emergency event.

It is not practical to assume this EOP will cover all areas of each work-unit and individual contributor effort during an emergency. This responsibility is held by the REU staff identified in this EOP. If you do not understand your role or responsibility or would like more clarification, please see your Manager or Assistant Director.

4.1. Incident Command Staff

Role	Responsibility	Focus
Incident Commander (IC) or DOC Director	Overall management responsibility for the incident.	Total incident prevention, protection, mitigation, response and recovery.
Public Information Officer (PIO)	Communication of incident to internal and external stakeholders using the REU Communication Incident Response Guide	Multiple communication channels, clear and concise messaging, continual updates and information streaming.
Safety Officer (SO)	Protection of employees and customers from hazards, injury and loss of life.	Maintain safe operational practices, stand-down unsafe conditions, preserve safe work environment during emergency conditions.
Liaison Officer(s) (LO)	Coordination with internal divisions and external agencies/stakeholders for continuity, efficiency and maximum effectiveness.	Customer focus, internal division administration, situational dependent agencies, anticipate outreach.

The following positions are identified as serving ICS roles during an emergency. Delegation is the responsibility of the staff member currently serving in this position. It is the responsibility of each staff member to assign an alternate or replacement prior to the event and notify the Logistics Section Chief. If delegation is not possible, the IC will delegate as needed.

Incident Command Officer Identification						
Name	**REU Role(s)**	**Office Phone**	**Cell Phone**	**Office Email**	**ICS Role**	**Alert Level 3 Location**
	Director				Incident Commander or DOC Director	DOC
	Program Supervisor-Admin				Public Information Officer	DOC
	Safety/Enviro. Coordinator				Safety Officer	DOC
	Assist. Director - Resources				Liaison Officer	DOC or Field
	Assist. Director – Enterprise Services				Liaison Officer	DOC or Field
	Assist. Director – Operations				Liaison Officer	DOC or Field

4.2. Operations Section

The Operations section is comprised of various workgroups that are directly responsible for the success of maintaining REU system assets during an emergency. This mostly includes field operations and the prioritization of restoration efforts along with management of power supply resources.

Role	Responsibility	Focus
Power Control Center - Dispatch	Distribution system load preservation and restoration.	Safety first, adherence to System Operating Procedures, coordination with DOC and PIO for timely updates.
Power Control Center – Energy Management	Real-time energy supply reliability.	Coordination with WAPA/BANC entities, anticipation of future power supply disruptions or situational changes.
Line & Substation	Distribution system asset preservation and restoration including use of Mutual Aid.	Safety first, adherence to System Operating Procedures, coordination with Dispatch and DOC personnel, Mutual Aid management.
Customer Services – Field Services	Metering asset preservation and restoration.	Safety first, coordination with DOC and Liaisons, supplemental crew support for field operations.
Customer Services – Call Center, Walk-in, Back Office	Emergency customer service and business continuity during emergencies.	Receive and deliver customer information, coordinate messaging with PIO and DOC Liaison, provide for normal business operations during emergency situations for non-affected customers.
Power Plant	Provide reliable power supply as directed by Energy Management	Anticipate and remedy abnormal operating conditions, communication with Energy Management and DOC.

Operational Technology Group	Maintain REU OTE systems	Remedy OTE issues, coordinate with DOC for priority, and coordinate with City of Redding IT for troubleshooting and problem solving.

The individual positions identified as serving lead Operations roles during an emergency are listed in SOP-200.1 (Operations Section Unit) for further reference. Delegation is the responsibility of the staff member currently serving in this position. If delegation is not possible, the IC will delegate as needed.

4.3. Planning and Intelligence Section

The Planning & Intelligence section is comprised of various workgroups that are directly responsible for the success of supporting REU work units during an emergency. The Planning and Intelligence units include Engineering, GIS/Mapping support, Planning/Drafting, and Compliance efforts.

Role	Responsibility	Focus
Engineering	Review of System Capability and support of Dispatch operations.	System configurations, loading capabilities, system studies
GIS/Mapping	Administer GIS projects and programs and prepare a variety of equipment, operational, statistical, and administrative reports related to GIS functions and services as appropriate.	Analyze and interpret GIS generated data to facilitate workflow needs with internal and external customers.
Planning/Drafting	Preparation of electric transmission and distribution (T&D) designs required to harden or upgrade the electric utility system and to serve new development.	Coordinate the development of T&D standards, T&D construction and reconstruction projects, and work order systems.
Compliance	Ensure compliance process is adhered to during emergency.	Monitor for compliance violations, track and report compliance status to ERC.

The individual positions identified as serving lead Planning and Intelligence roles during an emergency are listed in SOP-200.2 (Planning & Intelligence Unit) for further reference. Delegation is the responsibility of the staff member currently serving in this position. If delegation is not possible, the IC will delegate as needed.

4.4. Logistics Section

The Logistics section is comprised of various workgroups that are directly responsible for the success of supporting REU during an emergency. This mostly includes staff available for direct emergency support.

Role	Responsibility	Focus
Resources (Avtech staff)	Provide support for travel, purchasing, fleet vehicles, food/water, and customer specific engagement. Ensure business continuity during emergency.	Coordinate with DOC Liaison for priority, adhere to purchasing standards, and relieve Operations units from logistical duties.
Executive Assistants	Emergency meeting scheduling, minutes and document drafting support, purchasing and REU staff support.	Coordinate with IC for meeting requirements. Ensure REU staff are aware of meetings and conference calls. Coordinate with other Logistics units for response and support.

The individual positions identified as serving lead Logistics roles during an emergency are listed in SOP-200.3 (Logistics Unit) for further reference. Delegation is the responsibility of the staff member currently serving in this position. If delegation is not possible, the IC will delegate as needed.

4.5. Finance

The Finance section is comprised of the normal REU Finance division that is directly responsible for the financial management of REU's funds during an emergency. This includes all staff available for direct financial support.

Role	Responsibility	Focus
REU Finance	Track costs and expenses, labor time, equipment time, cost estimates, develop emergency contracts/PO's, coordinate with City Finance for procurement and purchasing standards, disseminate an Emergency Purchasing procedure to Operations, Planning and Logistics leads.	Adhere to City (or external agency) purchase requirements, manage costs and project expenses, prepare for future City Council action as necessary.

The individual positions identified as serving lead Logistics roles during an emergency are listed in SOP-200.4 (Finance Unit) for further reference. Delegation is the responsibility of the staff member currently serving in this position. If delegation is not possible, the IC will delegate as needed.

5. Supporting Documentation

The following supporting documents are included by reference. These documents can be updated separate from the Review requirement in Section 6.0. At a minimum, this supporting documentation will be reviewed and updated as necessary as stated in the review requirement in Section 6.0.

TITLE	INTENT	OWNER	LOCATION
REU Incident Response Communication Guide	Main source for REU communication process during emergency incident.	Public Information Officer	
SOP-200.1 Operations Unit	Supplemental info specific to Operations unit	Operations Section Chief	
SOP-200.2 Planning & Intelligence Unit	Supplemental info specific to Planning & Intelligence unit	P&I Section Chief	
SOP-200.3 Logistics Unit	Supplemental info specific to Logistics unit	Logistics Section Chief	
SOP-200.4 Finance Unit	Supplemental info specific to Finance unit	Finance Section Chief	
ICS Forms	Documentation during incidents.	FEMA	https://training.fema.gov/icsresource/icsforms.aspx

6. Update, Review and Training Requirements

This procedure can be updated at any time to ensure relevancy and completeness for the Emergency Operations Program. This SOP shall be reviewed at least twice per year during normal summer and winter preparation training meetings. All training attendance records shall be retained for a minimum period of 5 years.

APPENDIX D

REU 10-YEAR CAPITAL IMPROVEMENT PROGRAM

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Objective

The objective of the 10-Year Capital Improvement Program is to enhance the distribution system in two ways:

- Selectively replace the components used on the electrical distribution system to reduce the probability that the system itself will initiate a fire.
- Harden the electrical distribution system to better survive a fire.

These objectives will be achieved using the following five strategies:

- Enhanced inspections and tracking of assets;
- System hardening of key subsystems;
- Improved situational awareness;
- System improvements providing better operational practices;
- The addition of switching to provide precision de-energization.

System Improvements Description

The suggested system improvements are proposed to be as described below:

1) Field Verify / T2 / T3 Boundary: The present CPUC maps defining the Tier 1, 2, and 3 boundaries were created as statewide maps that lack the detail necessary to accurately define the operation of the utility assets within the City of Redding (COR). An assessment will be performed to provide clarity of what the actual fire hazards are at critical locations on the REU distribution system. Mitigation shall be performed for certain circuits to allow the recloser operation to be reinstated and removed from the list shown in Attachment 2.
2) Perform necessary tree trimming and removal in priority areas.
3) Reconfigure specific Circuits to feed only Tier 1.
4) Install non-arcing arrestors, fuses, and squirrel guards and add covered wire jumpers.
5) Create 30-foot sterilized perimeter for T2 and T3 substations.
6) Apply fire retardant to poles for T2 and T3.
7) Install fault indicators in order to locate issues faster.
8) Install Mesh Network to retrieve fault and outage data.
9) Connect Line Fault Indicator data to SCADA.
10) Provide secondary water source to Power Plant.
11) Install additional 12KV switches at T1 boundary.
12) Install fast reclosers/sectionalizers at T1 boundary.
13) Convert overhead to underground for critical COR water plants.
14) Improve existing and add additional access roads to critical sections of the distribution system.
15) Replace existing 115KV poles with steel pole in T2 and T3 areas.
16) Convert overhead to underground where it is deemed cost effective.
17) Convert Keswick River Crossing from wood to steel.

System Improvements Timeline

Priority will be given to the improvements that can be deployed the earliest, with the largest estimated return in meeting the Program objectives. Improvements which require larger efforts such as city-wide studies and design consultant efforts will be implemented as they are completed.

	Calendar Year	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
	WMP Year #	1	2	3	4	5	6	7	8	9	10	
Item #	Fiscal Year	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	
1	Field verify and revise Tier 2 and Tier 3 boundary	Complete										
2	Perform necessary tree trimming and vegetation removal in priority areas	Complete										
3	Reconfigure specific distribution circuits to feed only Tier 1 areas	Complete										
4	Install non-arcing arrestors, fuses, and bird/squirrel guards, covered jumpers in T2/T3	X	X	X	X	X						
5	Create 30-foot sterilized perimeter for substations in T2 and T3 areas	Complete										
6	Apply fire retardant or fire wrap to wood poles for T2 and T3 areas	X	X	X	X	X	X					
7	Install fault indicators for faster location of distribution outages		X	X	X							
8	Install mesh network to retrieve outage data from Remote Metering Project	Complete										
9	Connect line fault indicator data to SCADA	Complete										
10	Integrate remote meter data and fault indicator data with Outage Management System		X	X	X							
11	Provide secondary water source to Power Plant	Complete										
12	Install additional 12KV switches at T1 boundary	Complete										
13	Install fast reclosers/sectionalizers at T1 boundary			X	X	X						
14	Convert overhead to underground for critical COR water facilities					X	X					
15	Improve existing access roads and add additional to critical sections of the system			X	X	X	X	X				
16	Replace 115KV wood poles with Steel or Laminate in T2 and T3 areas			X	X	X	X	X	X	X	X	
17	Convert overhead circuits to underground where practical in T2 and T3 areas.					X	X	X	X	X	X	
18	Convert Keswick River crossing from wood to steel									X	X	
19	Upgrade 12KV Breaker Protect Relay to better coordinate with circuit fusing		X	X	X	X						

Revised December 2022

Budgetary Cost Estimate

All improvement items will first be evaluated for their cost/benefit in meeting the objectives of the Program, as well as compared to the overall budget available prior to implementation. Items identified for installation in the early years are easily justified as an available technology that is quickly becoming industry standard or best practice.

The initial budgetary costs have either been completed or have been rolled into REU's expanded 10-Year Capital Improvement Plan (CIP). A summary portion of the 10-Year CIP is below to provide additional detail of the projected level of effort required to implement these remaining wildfire mitigation tasks, as well as additional distribution improvement tasks.

This table shows the estimated cost of each project over the 10-Year Capital Improvement Plan along with associated hours estimated to complete the project.

Project	Estimated Total Cost	Estimated Individual Labor	Estimated Engineering/SCADA Hours
Fire Mitigation			
Circuit Hardening	$1,994,000	5840	0
Install switches at T1 boundary/Feeder Reconfiguration to T1 only	$378,000	540	100
Install Fast reclosers/sectionalizers at T1 boundary	$206,000	234	60
Overhead			
1-Phase Cutout Mounted Recloser Deployment	$200,500	135	50
Aging Asset - Pole Replacements	$14,360,000	46,500	0
Switch Replacement Program	$1,370,000	4275	0
LED Streetlight Conversion	$4,050,000	1500	0
Underground			
Aging Asset - Underground Cable Replacements	$24,600,000	67,500	0
Strategic Undergrounding	$6,500,000	12,600	0
Substation			
Fiber Optic Backbone	$4,500,000	10,800	1,000
High Impedance Fault Detection	$1,745,000	0	1360
Substation Security Improvements	$850,000	1080	40
Substation Aging Asset Replacement (Budget Reserve Only)	$5,300,000	0	0
Substation Fence Upgrade (Canby)	$110,000	0	0

Operational Efficiency and Reliability Improvements			
Faulted Circuit Indicator continuation (200 OH/300 UG)	$490,000	540	N/A
Line Sensors Deployment (SEL FLT/FLR)	$150,000	90	60
Line Capacity Upgrades and Volt-Var Optimization	$1,053,500	8,775	0
ADMS and Device Deployment for ADMS	$5,855,500	1,510	1,500
RMI to AMI Conversion	$2,428,000	1,125	0
BESS Installation Pilot	$280,000	0	80
Other			
Electric System Model (Windmil) Completion*	$139,500	0	700
Engineering Studies - Fuse Coordination, DER Impact, Switching Contingency*	$93,000	0	465
Update Standards*	$96,000	0	465
Fault Location Isolation and Service Restoration (FLISR) Study*	$40,000	0	200
Facilities Field Verification - Phase Identification	$575,000	2,475	0
Totals	$77,364,000	165,519	6,095

APPENDIX E

REU TECHNOLGY SOLUTIONS PROGRAM

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Overview

Through the application of technology, REU will be able to more effectively protect and reduce threats to the electric utility infrastructure and the customers who rely upon it. The following technologies will greatly enhance REU's ability to minimize sources of ignition, manage vegetation within the City's electric grid, enhance productivity of utility staff, harden systems, more effectively protect and notify the public if an issue arises, as well as shorten the response and recovery time in the event REU equipment contributes to starting a wildfire.

Technology also helps to heighten situational awareness and enhances public safety response time, allowing first responders to react in an appropriate and effective manner before, during and after a wildfire. The Program provides funding to the Redding Police Department (RPD) and the City Information Technology (IT) Department for services rendered to help prevent REU caused wildfires through aerial surveys of REU's overhead electric lines, video monitoring of facilities, a common communication platform, and a GPS based vehicle tracking platform. The memorandums of understanding (MOUs) are attached.

Specifically, this program provides for an estimated total of forty (40) cameras; a common radio platform, including base stations, handhelds and vehicle mounted radios for REU personal as well as radio equipment for Redding Police and Fire command Staff; and Automatic Vehicle Location (AVL) tracking devices on all Electric Utility vehicles and necessary upgrades for first responder vehicles. The common communication and GPS vehicle tracking platforms will be expandable and be designed to allow easy adoption by other City Departments at a small incremental cost.

Cameras for Utility Operations, Fire Detection and Mitigation

Situational awareness is instrumental in combating fires in and around our community. Camera technology is a vital element in the early detection and intrusion of wildland fires into the City of Redding. In addition, cameras provide critical information related to any REU equipment that may be a contributory cause to a fire. The installation of cameras in areas surrounding REU's critical infrastructure will greatly enhance first responder's ability to identify, locate, and mitigate fire threats.

Live feed cameras mounted throughout REU's service territory will assist with the early detection of fires caused by the electric system. Strategically placed cameras in the proximity of REU's transmission lines, especially in the Tier 2 and Tier 3 fire areas, will also aid in risk assessments during designated Red Flag warning days or a fire weather event in which an Emergency Operations Center is activated. Early assessment and detection allows REU to quickly react and prevent the system from inflicting harm on the surrounding areas.

Mobile cameras will also be used in a variety of preventative ways through the use of Unmanned Aerial Vehicles (UAVs). This includes the identification of potential right-of-way hazards as well as the location and isolation of hot spots in REU distribution lines using Forward Looking Infrared Radar (FLIR) technologies.

In the event a fire is seen or reported, fixed cameras and UAVs can quickly discover and identify hot spots in the area, help determine the potential for the fire to spread, and give first responders specific intelligence related to scaling fire resources up or down appropriately. In addition, strategically placed fixed cameras assist first responders in determining the best evacuation routes through enhanced situational awareness. Fixed and UAV cameras allow firefighters and first responders to more effectively manage firefighting operations. Speakers mounted on UAVs greatly enhance the ability to communicate with first responders in the danger area and with citizen evacuations.

HD video streaming from the UAVs to the Department Operation Center (DOC) or command staff on computers/cell phones will allow those in control of fire operations to see a live, real-time video feed of the fire. This will streamline firefighting capabilities and enable command center personnel to make quick decisions based on real-time information, rather than using information that has been relayed through multiple parties or having to wait until first responders are in place. Command center personnel will be able to see the direction a fire is spreading, providing the ability to move resources to the most effective positions.

Implementation of an artificial intelligence overwatch camera and software system will assist in the early detection of fires. Fire watch systems are specifically manufactured for early wildfire detection and can be calibrated for any region, vegetation, and type of weather. This technology includes a triple optical sensing unit, control and detection software that performs self-diagnostics, and smoke detection. While this technology is recommended to be used with a detection radius of ten (10) miles, it has proven itself capable of locating smoke plumes up to forty (40) miles away during clear weather days. When smoke is detected by the system it alerts users so that first responders can react quickly and efficiently before flames reach the tree tops. Early detection using the system allows first responders to launch a direct attack using minimal resources and results in both physical and monetary savings.

City-wide issues and concern can begin long before the cause of a fire is known due to lack of certainty. By determining the cause, or origin, of a fire quickly, we can not only save life and properties, we can mitigate the risk of uncertainty.

Aerial Imagery

The city-wide aerial orthophotography is a core data set for the GIS Division. Aerial imagery or orthophotography provides the picture from which many GIS data layers are created and maintained. For example, our parcels, roads, water system, wastewater system, and storm drain system GIS layers are all created and maintained using high-resolution orthophotography. Also, high-resolution imagery is a powerful visual tool when represented on maps and exhibits. It is important that the imagery be kept up-to-date. The most recent aerial imagery was flown prior to the Carr fire, and is therefore not a true representation of our community's current landscape. New imagery would allow fire crews to be able to identify current overgrown areas, as well as those areas at a higher risk of fires. Ensuring the imagery is kept up to date on a more frequent basis will play a critical role in ensuring fire crews are able to maintain a clearer/safer landscape as vegetation regrows. Newer imagery would allow for accurate GIS data, which in turn, would

further enhance the City's Fire Department in their fire mitigation efforts. This imagery will be performed every two years.

City-Wide Communications Platform

Immediate and reliable communication is vital during an emergency such as a wildfire, or major storm event. The current City of Redding radio systems have reached their end of useful life and are requiring replacement. RPD is currently in the process of upgrading their existing radio system and REU is proposing to expand upon this project to include additional features that will meet Redding Electric Utility's need while also creating a unified platform across City Departments. By implementing a unified stationary and mobile communication platform, City of Redding personnel will have the ability to communicate across Departments during emergency situations quickly and efficiently. This platform will provide immediate connection to all parties, free of cross-channel interference, allowing each Department to work simultaneously and in support of one another. In addition to purchasing the communications platform, REU will provide radios for Electric Utility employees and Redding Police and Fire command staff to ensure reliable communication between first responders and REU to ensure the preservation of life and property. *Initial costs associated with the communications platform will be paid by REU. The Redding Police Department will be responsible for a partial repayment for handheld and vehicle radios through an interdepartmental lease process.

This radio system will allow first responders to immediately report downed electric lines to REU or report a fire that has been started due to a downed line. This will lead to faster response times and better fire management. Direct radio communication between Redding Fire Department personnel to Police personnel will provide safe direction to high risk areas during evacuations as well as allow first responders to request specific power shutoffs from REU's DOC during an emergency.

*In accordance with Wildfire Mitigation legislation.

Automatic Vehicle Location (AVL)

AVL will assist each Department with the identification and tracking of first responder and emergency vehicles. During a wildfire event, it is critical for the Department Operations Center (DOC) to be able to determine the location of each vehicle so that resources can be dispatched and/or redirected in the most effective manner, and to identify where a vehicle is located so assistance may be provided if an employee is in danger. AVL aids in the identification of employee location during emergencies and allows dispatchers to warn personnel who are in the vicinity of an at-risk area.

AVL will allow REU to track the progress of employees while patrolling equipment during a Red Flag outage. By doing so, REU can ensure that outages are handled quickly and efficiently, and that employees are not at risk. If an emergency situation is identified, AVL will provide REU with the ability to quickly report a vehicle's location and allow dispatchers to send first responders directly to the vehicle and employee(s).

REU Wildfire Technology Matrix

	Cameras for Detection & Mitigation	Aerial Imagery	Citywide Communications Platform	Automatic Vehicle Location (AVL)
Vegetation Management	x	x		
Enhanced Inspections	x	x		x
Situational Awareness	x	x	x	x
Operational Practices	x		x	x
System Hardening	x	x	x	x
Public Safety & Notification	x		x	x
Reclosing & Deenergization	x		x	x
Wildfire Response & Recovery	x		x	x

REU Technology Strategies Matrix

	Cameras for Detection & Mitigation	Aerial Imagery	Citywide Communications Platform	Automatic Vehicle Location (AVL)
Wildfire Prevention & Improved Response	x	x	x	x
Technology Solutions	x	x	x	x
Distribution 10-year Capital Improvements	x		x	x
REU Emergency Operations	x	x	x	x

Budgetary Cost Estimate

Item #	Item Description	Total Cost
1	Cameras for Utility Operation, Fire Detection and Mitigation	$2,989,000
2	Aerial Imagery	$50,000
3	City-Wide Communication Platform	$8,820,000
4	Automatic Vehicle Location (AVL)	$60,000
	Total	**$11,919,000**

CITY OF REDDING
MEMORANDUM OF UNDERSTANDING
RPD – WMP - 1

THIS MEMORANDUM OF UNDERSTANDING (MOU) is made at Redding, California, by and between Redding Electric Utility (REU), an enterprise business unit of the City of Redding (City) a municipal corporation, and Redding Police Department (RPD), a general fund business unit of the City, for the purpose of wildfire prevention and improved technology.

WHEREAS, SB 901 was adopted by Governor Brown on September 21, 2018; and REU does not have sufficient personnel to perform the services required herein thereby necessitating this MOU for RPD services.

WHEREAS, SB 901 requires the REU to draft and implement a Wildfire Mitigation Plan for the purpose of preventing the start of wildfires resulting from utility operations as well as to expand technology in order to reduce the catastrophic impacts which may be caused by or inflicted upon REU facilities or operations.

WHEREAS, the City Council approved a program providing for RPD to support REU in implementation of a Wildfire Mitigation Plan as more fully defined herein, and authorized the City Manager to execute this MOU between the parties.

NOW, THEREFORE, the Parties covenant and agree, for good consideration hereby acknowledged, as follows:

SECTION 1. RPD SERVICES

Subject to the terms and conditions set forth in this MOU, RPD shall provide to REU the services described in Exhibit A - REU Technology Solutions Program, attached and incorporated herein. RPD shall provide the services at the time, place, and in the manner specified in Exhibit A.

SECTION 2. COMPENSATION AND REIMBURSEMENT OF COSTS

A. REU shall reimburse RPD for services rendered pursuant to this MOU through the City Budgeting process and as described in Exhibit B. Exhibit B is attached and incorporated herein, in a total amount not to exceed one million five hundred ninety-nine thousand dollars ($1,189,000) for the purchase and implementation of technology, as well as the training of staff members. This sum is further limited in each technology category as shown in Exhibit B.

SECTION 3. TERM AND TERMINATION

A. RPD shall commence work on or about the date of this agreement and continue or be terminated with mutual agreement of existing or modified terms by REU and RPD.

B. RPD hereby acknowledges and agrees that the obligation of REU to pay under this MOU is contingent upon the availability of City's funds which are appropriated or allocated by the City Council. Should the funding for the project and/or work set forth herein not be appropriated or allocated by the City Council, this MOU shall terminate when the funding is exhausted.

C. In the event that City Council terminates the program, RPD shall provide to REU any and all finished and unfinished reports, charts or other work product prepared by RPD pursuant to this MOU.

D. In the event the City Council terminates the program, REU shall pay RPD the reasonable value of services rendered by RPD pursuant to this MOU. RPD shall, not later than thirty (30) calendar days after termination of this MOU, furnish to REU such financial information as in the judgment of the REU's representative is necessary to determine the reasonable value of the services rendered by RPD.

SECTION 4. MISCELLANEOUS TERMS AND CONDITIONS OF MOU

A. No portion of the work or services to be performed under this MOU shall be assigned, transferred, conveyed or subcontracted without prior written approval of REU, the City Manager or the City Council.

B. RPD, at such times and in such form as REU may require, shall furnish REU with such periodic reports as it may request pertaining to the work or services undertaken pursuant to this MOU.

C. RPD shall maintain accounts and records, including personnel, property and financial records, adequate to identify and account for all costs pertaining to this MOU and such other records as may be deemed necessary by REU to assure proper accounting for all project funds. These records shall be made available for audit purposes to state and federal authorities, or any authorized representative of City. RPD shall retain such records for three (3) years after the expiration of this MOU, unless prior permission to destroy them is granted by REU.

SECTION 5. MOU INTERPRETATION, AMENDMENT AND WAIVER

A. This document, including all exhibits, contains the entire agreement between the parties and supersedes whatever oral or written understanding each may have had prior to the execution of this MOU. This MOU shall not be altered, amended or

modified except by a writing signed by REU and RPD and duly authorized by the City Manager. No verbal agreement or conversation with any official, officer, agent or employee of City, either before, during or after the execution of this MOU, shall affect or modify any of the terms or conditions contained in this MOU.

B. No covenant or condition to be performed by RPD under this MOU can be waived except by the written consent of REU. Forbearance or indulgence by REU in any regard whatsoever shall not constitute a waiver of the covenant or condition in question.

C. In the event of a conflict between the term and conditions of the body of this MOU and those of any exhibit or attachment hereto, the terms and conditions set forth in the body of this MOU proper shall prevail. In the event of a conflict between the terms and conditions of any two or more exhibits or attachments hereto, those prepared by REU shall prevail over those prepared by RPD.

SECTION 6. SURVIVAL

The provisions set forth in Sections 3 through 5, inclusive, of this MOU shall survive termination of the MOU.

SECTION 7. COMPLIANCE WITH LAWS

RPD shall comply with all applicable laws, ordinances and codes of federal, state and local governments.

SECTION 8. REPRESENTATIVES

A. REU's representative for this MOU is the Redding Electric Director Daniel Beans, telephone number (530) 339-7350. All of RPD's questions pertaining to this MOU shall be referred to the above-named person, or to the representative's designee.

B. RPD's representative for this MOU is Redding Police Chief William Schueller, telephone number (530) 225-4284.

C. The representatives set forth herein shall have authority to give all notices required herein.

SECTION 9. DATE OF MOU

The date of this MOU shall be the date it is signed by REU.

IN WITNESS WHEREOF, REU and RPD have executed this MOU on the days and year set forth below:

CITY OF REDDING,
A Division of a Municipal Corporation

Dated: _____, 2019

_____
By: Daniel Beans, Electric Utility Director

ATTEST:

APPROVED AS TO FORM:

BARRY E. DeWALT
City Attorney

_____
PAMELA MIZE, City Clerk

_____
By:

Redding Police Department

Dated: _____, 2019

_____
By: William Schueller, Chief of Police

Exhibit A
REU Technology Solutions Program

1. Introduction

A. Purpose

The purpose of the Redding Electric Utility (REU) Technology Solutions 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 wildfires.
- Reduce the time for the Redding Police Department (RPD) to report, respond to, and engage in emergencies that threaten grid infrastructure and other REU facilities.
- Increase technology use and reliability in order to promote interdepartmental coordination.

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 interdepartmental communication through radios.
- Quickly identify possible fire risks and choreograph proper response routes.
- Decrease recovery time after a fire occurs.
- Increase accuracy of fire investigation results.
- Utilize cameras to identify possible threats that are naturally occurring or human caused.
- Track progress and location of employees to ensure the safety and effectiveness of positioning.

2. Strategy/Scope of Work

A. REU will coordinate with RPD to fund the following technology:

- Unmanned Aerial Vehicle (UAV)
- Cameras for Surveillance, Fire Detection, and Investigation

Exhibit A
REU Technology Solutions Program

B. Redding Police Department to procure technology deemed necessary as well as provide staff and requisite training to operate the following technology:

- UAV units: RPD will assist REU in the aerial patrol of overhead lines using UAVs equipped with Forward Looking Infrared Radar (FLIR). This service will be provided on an as needed basis but at a minimum of once yearly as required by California Public Utilities Commission General Order 165. This process aids in ensuring the stability of REU's overhead lines and assists in the location and mitigation of potential fire hazard risks.
- UAV units: RPD will assist RFD in the monitoring of fires using UAVs equipped with FLIR technology. This service will be provided on an as needed basis.
- Cameras for Surveillance, Fire Detection, and Investigation: RPD will assist REU in the detection as well as investigation of fire origination and cause of ignition through the use of fixed and/or mobile cameras.
- Radio System: RPD will report all Utility related fire hazards to REU personnel through the unified communication platform.

Exhibit B
REU Technology Solutions Program
Cost Estimates

1. UAVs
    - Four (4) UAVs equipped with FLIR capabilities
    - Two (2) UAVs without FLIR capabilities
    - One (1) Insight RT System with Road Case
    - Yearly Inspection of Power Lines
        - Total cost is not to exceed $230,000

2. Cameras
    - Forty (40) fixed cameras
    - Intelligence Led Policing (ILP)
    - 3D Laser Scanner and Equipment
    - Added equipment and warranties
        - Total cost is not to exceed $959,000

CITY OF REDDING
MEMORANDUM OF UNDERSTANDING
IT-WMP-1

THIS MEMORANDUM OF UNDERSTANDING (MOU) is made at Redding, California, by and between Redding Electric Utility (REU), an enterprise business unit of the City of Redding (City) a municipal corporation, and Information Technology Department (IT), a general fund business unit of the City, for the purpose of wildfire prevention and improved technology.

WHEREAS, SB 901 was adopted by Governor Brown on September 21, 2018; and REU does not have sufficient personnel to perform the services required herein thereby necessitating this MOU for IT services.

WHEREAS, SB 901 requires the REU to draft and implement a Wildfire Mitigation Plan for the purpose of preventing the start of wildfires resulting from utility operations as well as to undertake vegetation management efforts to reduce the catastrophic impacts which may be caused by REU facilities or operations.

WHEREAS, the City Council approved a program providing for IT to support REU in implementation of a Wildfire Mitigation Plan as more fully defined herein, and authorized the City Manager to execute this MOU between the parties.

NOW, THEREFORE, the Parties covenant and agree, for good consideration hereby acknowledged, as follows:

SECTION 1. IT SERVICES

Subject to the terms and conditions set forth in this MOU, IT shall provide to REU the services described in Exhibit A - REU Technology Solutions Program, attached and incorporated herein. IT shall provide the services at the time, place, and in the manner specified in Exhibit A.

SECTION 2. COMPENSATION AND REIMBURSEMENT OF COSTS

A. REU shall reimburse IT for services rendered pursuant to this MOU through the City Budgeting process and as described in Exhibit B. Exhibit B is attached and incorporated herein, in a total amount not to exceed eight million eight hundred eighty-one thousand dollars ($10,730,000) for the purchase and implementation of technology, as well as the training of staff members. This sum is further limited in each technology category as shown in Exhibit B.

SECTION 3. TERM AND TERMINATION

A. IT shall commence work on or about the date of this agreement and continue or be terminated with mutual agreement of existing or modified terms by REU and IT.

B. IT hereby acknowledges and agrees that the obligation of REU to pay under this MOU is contingent upon the availability of City's funds which are appropriated or allocated by the City Council. Should the funding for the project and/or work set forth herein not be appropriated or allocated by the City Council, this MOU shall terminate when the funding is exhausted.

C. In the event that City Council terminates the program, IT shall provide to REU any and all finished and unfinished reports, charts or other work product prepared by IT pursuant to this MOU.

D. In the event the City Council terminates the program, REU shall pay IT the reasonable value of services rendered by IT pursuant to this MOU. IT shall, not later than thirty (30) calendar days after termination of this MOU, furnish to REU such financial information as in the judgment of the REU's representative is necessary to determine the reasonable value of the services rendered by IT.

SECTION 4. MISCELLANEOUS TERMS AND CONDITIONS OF MOU

A. No portion of the work or services to be performed under this MOU shall be assigned, transferred, conveyed or subcontracted without prior written approval of REU, the City Manager or the City Council.

B. IT, at such times and in such form as REU may require, shall furnish REU with such periodic reports as it may request pertaining to the work or services undertaken pursuant to this MOU.

C. IT shall maintain accounts and records, including personnel, property and financial records, adequate to identify and account for all costs pertaining to this MOU and such other records as may be deemed necessary by REU to assure proper accounting for all project funds. These records shall be made available for audit purposes to state and federal authorities, or any authorized representative of City. IT shall retain such records for three (3) years after the expiration of this MOU, unless prior permission to destroy them is granted by REU.

SECTION 5. MOU INTERPRETATION, AMENDMENT AND WAIVER

A. This document, including all exhibits, contains the entire agreement between the parties and supersedes whatever oral or written understanding each may have had prior to the execution of this MOU. This MOU shall not be altered, amended or

modified except by a writing signed by REU and IT and duly authorized by the City Manager. No verbal agreement or conversation with any official, officer, agent or employee of City, either before, during or after the execution of this MOU, shall affect or modify any of the terms or conditions contained in this MOU.

B. No covenant or condition to be performed by IT under this MOU can be waived except by the written consent of REU. Forbearance or indulgence by REU in any regard whatsoever shall not constitute a waiver of the covenant or condition in question.

C. In the event of a conflict between the term and conditions of the body of this MOU and those of any exhibit or attachment hereto, the terms and conditions set forth in the body of this MOU proper shall prevail. In the event of a conflict between the terms and conditions of any two or more exhibits or attachments hereto, those prepared by REU shall prevail over those prepared by IT.

SECTION 6. SURVIVAL

The provisions set forth in Sections 3 through 5, inclusive, of this MOU shall survive termination of the MOU.

SECTION 7. COMPLIANCE WITH LAWS

IT shall comply with all applicable laws, ordinances and codes of federal, state and local governments.

SECTION 8. REPRESENTATIVES

A. REU's representative for this MOU is the Redding Electric Director Daniel Beans, telephone number (530) 339-7350. All of IT's questions pertaining to this MOU shall be referred to the above-named person, or to the representative's designee.

D. IT's representative for this MOU is Redding Information Technology Director Anthony Van Boekel, telephone number (530) 225-4070.

E. The representatives set forth herein shall have authority to give all notices required herein.

SECTION 9. DATE OF MOU

The date of this MOU shall be the date it is signed by REU.

IN WITNESS WHEREOF, REU and IT have executed this MOU on the days and year set forth below:

CITY OF REDDING,
A Division of a Municipal Corporation

Dated: _____, 2019

_____
By: Daniel Beans, Electric Utility Director

ATTEST:

APPROVED AS TO FORM:

BARRY E. DeWALT
City Attorney

_____
PAMELA MIZE, City Clerk

_____
By:

Information Technology Department

Dated: _____, 2019

_____
By: Anthony Van Boekel, Information Technology Director

Exhibit A
REU Technology Solutions Program

1. Introduction

A. Purpose

The purpose of the Redding Electric Utility (REU) Technology Solutions 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 wildfires.
- Reduce the time for first responders to report, respond to, and engage in emergencies that threaten grid infrastructure and other REU facilities.
- Increase technology use and reliability in order to promote interdepartmental coordination.

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 interdepartmental communication through radios.
- Quickly identify possible fire risks and choreograph proper response routes.
- Decrease recovery time after a fire occurs.
- Increase accuracy of fire investigation results.
- Utilize cameras to identify possible threats that are naturally occurring or human caused.
- Track progress and location of employees to ensure the safety and effectiveness of positioning.

2. Strategy/Scope of Work

A. REU will coordinate with COR Information Technology (IT) Department to fund the purchase and maintenance of the following technology:

- Fixed and Mobile Communication Platform
- Automatic Vehicle Location (AVL)
- IQ FireWatch
- Aerial Imagery

Exhibit A
REU Technology Solutions Program

B. City of Redding IT Department to procure and implement technology deemed necessary as well as provide staff and requisite training to operate the following technology:

- Radio System: The City IT Department will design, purchase, and implement the infrastructure and equipment necessary to create a stable radio system based within City Limits. This system will have the capacity to expand to all City Divisions that express a need for radio use.
- Radios: The City IT Department will determine the appropriate design and functionality of radios and order the amount necessary to outfit REU, RPD, and RFD.
- AVL: The City IT Department will design, implement, and maintain the necessary programs and technology to expand AVL services to all vehicles in REU.
- IQ FireWatch: The City IT Department will purchase, implement, and maintain the technology and equipment required to utilize the IQ FireWatch system.
- Aerial Imagery: The City IT Department will aid in the city-wide aerial orthophotography every two (2) years and assist in its inclusion in the City's GIS maps.

Exhibit B
REU Technology Solutions Program
Cost Estimates

1. Fixed and Mobile Communication Platform
    - Master Site Controller
    - Two RF sites
    - Backhaul Network
    - SHASCOM Console site
    - Subscribers (Radios) for RFD, RPD, REU and the EOC
    - External Services
    - Radio Management
    - Key Management Facilities
    - Technical Training
    - Mobile Command Center Unit
        - Total cost is not to exceed $8,820,000

2. Automatic Vehicle Location (AVL)
    - AVL coverage for all vehicles in REU
        - Total cost is not to exceed $60,000

3. IQ FireWatch
    - Triple Optical sensing unit
    - Pan/tilt with weather housing
    - Switchbox and cabling to head unit
    - Control unit with remote control and Watchdog function
    - Ethernet switch
    - Power supply with urge protection and EMI filter
    - Control and detection software including self-diagnostics
    - Detection units
    - Construction of additional viewing towers
    - Integration/Connection to Public Services/Emergency Responders (Fire and Forestry Service)
    - Training and calibration labor
    - Permitting fees
        - Total cost is not to exceed $1,800,000

4. Aerial Imagery
    - Provides orthophotography to the GIS division for mapping
    - High-resolution imagery
        - Total cost is not to exceed $50,000 every two (2) years

TECHNOLOGY	TOTAL COST	GENERAL FUND COST	REU COST
Unmanned Aerial Vehicles			
UAV (Matrice 210)	$ 175,000		$ 175,000
UAV (Mavic 2 Dual)	$ 15,000		$ 15,000
Annual ongoing maintenance and training	$ 20,000		
Insight RT System w/Road Case	$ 15,000		$ 15,000
Yearly Power Line Inspection	$ 5,000		
**RPD will provide assitance to REU and RFD*	**$ 230,000**		**$ 205,000**
Cameras			
Fixed Cameras (40) with Live Feed	$ 800,000		$ 800,000
Laser Scanner	$ 85,500		$ 85,500
Scanner Equipment and Warranties	$ 27,500		$ 27,500
Fuji File Mirrorless Camera Forensic Bundle	$ 5,000		$ 5,000
Ultralight ALS Complete Turbo Kit	$ 6,000		$ 6,000
Intelligence Led Policing	$ 35,000		
IQ FireWatch	$ 500,000		
**For use by REU, RFD, and RPD*	**$ 1,459,000**		**$ 924,000**
Fixed and Mobile Communication Platform			
Master Site Controller	$ 8,220,000	$ 3,407,000	$ 4,813,000
- Two RF Sites			
- IP Based Backhaul Network			
- SHASCOM Console Site			
- Subscribers (Radios) for RFD, RPD, REU, and EOC			
- External Services			
- Radio Management			
- Key Management Facilities			
- Technical Training			
- Contingency Funding			
- Backup Subcribers for Major Events (20)			
Mobile Command Center Unit	$ 550,000		$ 550,000
- Maintenance Performed by IT	$ 50,000		
**Subscribers provided to REU, RFD, and RPD*	**$ 8,820,000**	**$ 3,407,000**	**$ 5,363,000**
Automatic Vehicle Location (AVL)			
Additional module to ESRI Contract	$ 7,000		
Profesional Services for Installation	$ 20,000		$ 20,000
Computer Hardware/Storage	$ 23,000		$ 23,000
Contingency Funding	$ 10,000		$ 10,000
**Installed on REU, RFD, and RPD vehicles*	**$ 60,000**		**$ 53,000**
TOTALS	**$ 10,569,000**	**$ 3,407,000**	**$ 6,545,000**

Ongoing costs for all technologies of approximately $120,000 will be primarily funded by the City's IT Department. Staff anticipates this to be partially offset by reduced maintenance due to the replacement of aging infrastructure.

APPENDIX F

SYSTEM OPERATING PROCEDURE SOP-35 OPERATING DURING HIGH FIRE THREAT CONDITIONS (PUBLIC VERSION)

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Procedure No:	Version:	Approval Date:	System Operating Procedure (Public Version)
SOP-35	**5**	**8/23/2021**	
Effective Date: **08/27/2021**	Reviewed On: **08/27/2021**		
Document Owner: **Electric Manager - Engineering & Operations**			

REDDING ELECTRIC UTILITY

Power Operations Division

System Operating Procedure SOP-35 Operating During High Fire Threat Conditions

City of Redding Electric Utility

Reviewed By:
Senior System Operator - Transmission & Distribution,
Assistant Director - Utility Operations

Approved By: **Electric Manager - Engineering & Operations**

TABLE OF CONTENTS

1. Purpose

The purpose of this procedure is to formalize and provide applicable REU employees with the information necessary to understand which procedures will be applied and what work may be accomplished during **high fire threat conditions**. These periods would include Fire Weather Watches and Red Flag Warnings as issued by the National Weather Service.

2. Applicability

All REU Electric Utility System Operators-Transmission & Distribution (EUSO-T&D), Electric Utility Assistant System Operators-Transmission & Distribution (EUASO-T&D), Electric Manager-Line, Electric Program Supervisors-Line, Electric Manager-Generation, Electric Program Supervisors-Generation, and all Qualified Electrical Workers.

3. Definitions

3.1. Fire Weather Watch (FWW): A FWW is typically issued to alert fire and land management agencies to the possibility that RFW conditions may generally exist within the next 12 to 48 hours in advance of the expected conditions, but can be issued up to 72 hours in advance if the NWS agency is reasonably confident. That watch then remains in effect until it expires, is canceled, or upgraded to a RFW.

3.2. Red Flag Warning (RFW): A RFW means warm temperatures, very low humidity, and stronger winds are expected to combine to produce an increased risk of fire danger. This informs affected parties and agencies that conditions are ideal for wildland fire combustion, and rapid spread. To the public, a RFW means high fire danger with increased probability of a quickly spreading vegetation fire in the area generally within the next 24 hours.

3.3. Automatic Circuit Reclosers (ACR): ACR's, or reclosers, in electric power distribution, are a class of switchgear which is designed for use on overhead electricity distribution networks to detect and interrupt momentary faults. If a line or circuit trips because of an event, the automatic recloser opens, deenergizing the line or circuit. After a preset time, the device closes again, which reenergizes the line or circuit. If the condition that caused the event is still present, the device opens again. This sequence is repeated a predetermined number of times until the condition has cleared or the device locks out.

3.4. Tier 1: Tier 1of the CPUC Fire-Threat Map delineates the designation of the U.S. Forest Service and CALFIRE joint map of Tree Mortality High Hazard Zones

3.5. Tier 2: Tier 2 of the CPUC Fire-Threat Map delineates where there is an elevated risk for utility-associated wildfires

3.6. Tier 3: Tier 3 of the CPUC Fire-Threat Map delineates where there is an extreme risk for utility associated wildfires

3.7. Incident Command Structure (ICS): The ICS will be utilized by REU during emergency situations to delineate and delegate the various roles, responsibilities and main focus by employee position under an assumption of command approach.

3.8. Power Control Center (PCC): The PCC is the location of the E/U Distribution System Operators and shall serve as REU's Department Operations Center during an Alert Level 3 event.

4. Communication

4.1. All communication associated with Red Flag Warning events shall be in accordance with SOP-024 "REU Notification Plan"

4.2. Refer to SOP-24 for the Notice Generator Contact List for RFW events.

5. National Weather Service Alert Issuances

5.1. When the NWS issues a weather alert, a corresponding email is sent to the PCC's email inbox ([redacted]). The EUSO-T&D on duty shall then note the type, time, and details of the issuance in the Distribution Log and then notify the Fire Weather Group (Ref SOP-24 "REU Notification Plan") of the alert via that group's selection in the PCC Notice Generator. Should the NWS issuance later be cancelled or modified in any way of time, date, or severity, this shall also be noted in the Distribution Log and a subsequent notice shall be sent to the Fire Weather Group.

6. Reclosers

6.1. During periods in which the NWS has issued a RFW or at REU Management Discretion, the EUSO-T&D shall disable (cut-out) the reclosers (ACRs) for the circuits designated on the Tier 2/Tier 3 Affected Circuit List (see Attachment 2). The reclosers shall be cut-out at a time commensurate with the start time of the RFW issuance and shall be re-enable (cut-in) at the termination of the RFW event.

6.1.1. The EUSO-T&D shall disable the reclosers via SCADA by the following steps: The SCADA has a page option (list it) that contains the 12kV and 115kV circuits that need to have reclosing disabled when a RFW is issued. To access the page, use the "Red Flag" shortcut at the bottom of the "Circuits" page. When using the group command you use the "Execute" command, regardless if you are disabling or enabling reclosers; the command script toggles the position of all reclosers on that page. Once pressed, the Execute command turns on the script to complete the command which takes 60 to 90 seconds to execute. Please be patient, it should start about 10 seconds after the top of the minute.

6.1.2. If you place a control inhibit tag on a recloser that is on the list, the script will not operate that recloser. It is Distribution's practice to place control inhibit tags on reclosers where a non-test has been issued. If you are switching, be aware of the potential impacts of transitioning out of RFW issuance procedure, you may need to add additional control inhibit tags to prevent unintended operations

6.1.3. The EUSO-T&D shall re-enable the reclosers, via SCADA, following the termination/cancellation of a RFW issuance by repeating the steps above, including reviewing the circuit reclosers for any applicable control inhibit tags.

6.1.4. Refer to SOP-21 *Circuit Switching Guidelines* for the general steps in Operating Under a Red Flag Warning.

7. Allowable Work Designations

7.1. Allowable work to be accomplished during a FWW or RFW event is dependent upon the Tier level (Tiers 1-3) the affected circuit, device, or equipment resides in. Each work type, Tier level, NWS issuance, and affected work group has allowable work that they may or may not perform during these events along with any type of additional restriction that may be placed upon that work as designated by the Allowable Work Matrix for NWS Alerts (Attachment 3).

7.2. The Redding Electric Scheduled Power Outage form (Attachment 4) allows for work in Tier 2 and Tier 3 areas, while under RFW issuances, **provided** that an exception is written by the requestor of the outage and the exception is signed (pre-approved) by either the Assistant Director of Utility Operations or the Line Manager for safety (this is work that can then be done regardless of weather conditions). An example of this might be a pole replacement in a Tier 3 zone but which is in an area, like a parking lot, that is completely void of vegetation and not subject to fire threat conditions.

8. SOP-200 Alert Level

8.1. Whenever an RFW event is announced for the Redding area, an SOP-200 Alert Level 1 shall be implemented by the REU Public Information Officer.

8.2. During an RFW where reclosers have been disabled the restoration process is usually more involved and takes considerably longer to identify the cause. Under the following conditions, a qualified representative from Operations management, typically the Line Manager or Supervisors, shall travel to the field and assist the assessment & restoration process by coordinating Troublemen, crew needs, and communication updates. This management representative shall be designated as the on-scene Incident Commander.

8.2.1. Full circuit outage, after business hours, where recloser logic has been disabled.

8.2.2. Multiple partial circuit outages, after business hours, where one troubleman is on duty.

8.2.3. A fire has been identified near the city limits threatening REU infrastructure.

8.2.4. A major Power Plant Outage has occurred.

8.2.5. A Restraint has been placed on the REU transmission system.

8.3. Upon assessment and confirmation of events listed in Section 7.2 (or similar events) the REU Public Information Officer shall issue an SOP-200 Alert Level 2 or 3 as determined by the Incident Commander.

8.3.1. The Incident Commander shall brief the REU Emergency Operations Team and request additional assistance as required.

8.3.2. Should the media be at the scene, the Incident Commander should brief the media when an official statement is requested from REU.

9. Review and Updating Requirements

This procedure will be reviewed annually and may be updated, as necessary, at any time.

10. Training

10.1. This document shall be reviewed at least annually by all applicable REU personnel.

10.2. This subject will be covered in annual Emergency Operation Procedural training and will be referenced in both the REU Wildfire Mitigation Plan as well as SOP-200 Emergency Operations Program.

11. Revision History

Removed for Public Version.

12. Attachments:

ATTACHMENT 1: TIER 2/TIER 3 AFFECTED CIRCUIT LIST

During Red Flag Warnings or at REU Management Discretion, disable reclosing capabilities on the following 12kV circuits. Also disable the 115kV reclosers on lines that cross Tier 2 & 3 areas where the below 12kV reclosers are cut-out.

Substation	Tier 2 or 3 Circuit
Airport	1301
Airport	1302
Airport	1303
Airport	2701
Airport	2702
Airport	2703
Airport	2704
Beltline	1101
Beltline	1102
Beltline	1103
Beltline	1104
College View	2901
College View	2902
East Redding	1501
East Redding	1504
Eureka Way	1001
Eureka Way	1002
Eureka Way	1003
Eureka Way	1004
Moore	1602
Moore	2603
Moore	2604
Oregon	2201
Sulphur Creek	2301
Sulphur Creek	2302
Sulphur Creek	2303
Sulphur Creek	2304
Sulphur Creek	2801
Sulphur Creek	2802
Sulphur Creek	2803
Sulphur Creek	2804
Texas Springs	1401
Texas Springs	1402
Texas Springs	1403
Texas Springs	1404
Waldon	2102
Waldon	2104
Revision Date	08/23/2021

ATTACHMENT 2: ALLOWABLE WORK MATRIX FOR NWS ALERTS

		NWS Issued Conditions		
Crew Work To Be Accomplished in Tiers I, 2, 3	**Normal**	**Fire Weather Watch (FWW)**	**Red Flag Warning (RFW)**	**Comment**
Corresponding Alert Level (Per SOP-200)	**0**	**1**	**2**	1
Fire crew clearing work T2/T3	Yes	Yes w/ water tank	Modified	2
Emergency repair work T1	Yes	Yes	Yes w/ water tank	
Emergency repair work T2/T3	Yes	Yes w/ water tank	Yes w/ water tank	
Normal scheduled work T1	Yes	Yes	Yes w/ water tank	
Normal scheduled work (Energized OH) T2/T3	Yes	Yes w/ water tank	No	
Normal scheduled work (Energized UG) T2/T3	Yes	Yes w/ water tank	No	
Normal scheduled work (De-energized OH) T2/T3	Yes	Yes w/ water tank	No	3
Normal scheduled (De-energized UG) T2/T3	Yes	Yes w/ water tank	No	3
Scheduled OT work T1	Yes	Yes	Yes w/ water tank	
Scheduled OT work T2/T3	Yes	Yes w/ water tank	No	3
Inspections/Patrols T1-3	Yes	Yes	Yes	3
RPP Generation/DOT Pipeline Work	Yes	Time Dependent	No Touch	
Tree Crew Work T1	Yes	Yes	Yes w/ water tank	
Tree Crew Work T2/T3	Yes	Yes w/ water tank	No	
RPP Generation/DOT Pipeline Work	Yes	Time Dependent	No Touch	
Active Reclosers on all 115kV circuits	Yes	Yes	No (Reclosers Cut Out)	
Active Reclosers on T2/T3 12kV circuits	Yes	Yes	No (Reclosers Cut Out)	
Active Reclosers on T1 12kV circuits	Yes	Yes	Yes	
Back-Up Troubleman **on notice**	No	Yes	Yes	
Troubleman staffing 12pm-5am	No	No	No	4
Comments				
1-For Alert Level 3 (Active Emergency) Crews would be responding to work as directed through the ICS				
2-Modified may include shifting hours, tool maintenance, brush dragging, patrol for new prioritizing, etc.				
3-Work may be done w/ water tank if the RFW exception is **pre-approved** by the Assistant Director of Utility Operations or the Line Manager for safety (work that can be done regardless of weather conditions). Requests for approval to be submitted on the Redding Electric Utility Scheduled Overtime Work Form				
4-*FUTURE POSSIBILITY:* If no Troubleman is available a crew may be brought in during RFW conditions to help patrol & inspect as needed				

ATTACHMENT 3 – Redding Electric Utility Scheduled Overtime Work Form

Removed for Public Version.

APPENDIX G

REU MONITORING AND AUDITING REPORT FOR CALENDAR YEAR 2022

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1. Scope

In conjunction with California Senate Bill (SB) 901, the City Council approved the Redding Electric Utility (REU) Wildfire Mitigation Plan (Plan) on December 3, 2019. The goals and objectives of the Plan included close monitoring and internal audits to reduce potential wildfire risks caused by or encroaching on Redding's electric equipment and infrastructure. These goals are directly related to REU's overarching objective of providing safe, reliable, and economical electric service to the Redding community. The Wildfire Mitigation Plan states, "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." Subject Matter experts within REU are responsible for the monitoring and auditing, which consisted of reviewing key elements within the Plan to document progress, identify deficiencies, improve both internal and external communications, and ensure REU continues to operate its electrical lines and equipment in a manner that minimizes the risk of catastrophic wildfire posed by its infrastructure.

2. Key Contributors

Implementation of the Wildfire Mitigation Plan is a collaborative effort with numerous City of Redding Departments working together in the areas of prevention and response, technology solutions, emergency operations, and the 10-year capital improvement plan. Information and data have been tracked throughout the 2022 calendar year to measure performance, deficiencies, and to make improvements to the Plan for upcoming years. Key City of Redding partners in the Plan include: Redding Electric Utility, Redding Police Department (RPD), Redding Fire Department (RFD), Information Technology, Parks, and Geographic Information Systems.

3. Participants in Monitoring and Auditing Plan

Contributors:	Subject Matter Experts:	Compliance:
Nick Zettel, *Electric Utility Director* Ted Miller, *Assistant Director – Utility Operations* Shawn Avery, *Electric Program Supervisor* Nathan Aronson, *Assistant Director – Transmission and Distribution Assets*	Josh Scott, *Electric Manager, T & D Asset Management* Paul Johnson, *Electric Manager - Line* Jeremy Ross, *Electric Program Supervisor Line* Kris Weber, *Electric Utility Engineer*	Holly Johnson, *Electric Manager - Compliance*

4. Process

As designated within the approved REU Wildfire Mitigation Plan, the monitoring and audit process focuses on the four key programs and eight strategies listed below to measure the effectiveness of the implementation as well as identify areas to improve upon within the Plan. Numerous tracking and

reporting tools have been put into place to accurately measure the results of the Plan within the listed areas.

Programs

1. REU Wildfire Prevention & Improved Response Program
2. REU Technology Solutions Program
3. REU Emergency Operations Program
4. REU Distribution 10-Year Capital Improvement Program

Strategies

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

A. REU Wildfire Prevention & Improved Response Program

The purpose of the Wildfire Prevention & Improved Response Program within the Plan is to establish a framework for the electric utility to conduct an effective, coordinated program to prevent catastrophic impact on REU's infrastructure from wildfire. During the 2022 calendar year, a number of goals and objectives were met as outlined within the Plan.

1. Goals
   - Prevent electric utility-caused wildfire.
   - Reduce the time for the Redding Fire Department to respond to and engage fires that threaten grid infrastructure and 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.

2. Actions Taken
   - Added six (3) additional Firefighters for a total of 15 Firefighters for improved response to wildfires impacting the Redding community. One (1) Parks Superintendent, two (2) Arborist Lead Workers, and four (4) Public Works Maintenance Workers are also funded under the Wildfire Mitigation Plan. Continued to purchase all necessary tools and equipment for prevention and response during the calendar year 2022.

- Identified all high-risk vegetation clearance zones surrounding REU infrastructure, including the Redding Power Plant, substations, and transmission and distribution lines throughout REU's service territory.
- Conducted the annual 115kV Line Inspections in high-risk Tier 2 and Tier 3 areas by September 30, 2022.
- Completed the annual patrol and visual inspection for vegetation of all remaining Tier 2 & Tier 3 12kV lines by September 30, 2022.
- The Operations Division posted a Vegetation RFP in early 2022 and the vendor, EDM was chosen. EDM is currently drafting the Utility Vegetation Plan with a targeted completion for the first quarter of 2023. Successfully cleared 20 unmanaged high-risk locations of vegetation and performed maintenance to 29 previously managed sites in an effort to reduce the risk of electric utility-caused fires or damage to REU's infrastructure from wildfires. Parks Division vegetation crews mitigated approximately 209 acres of dense, high-risk vegetation.
- Parks Division vegetation crews created a 30-foot perimeter around 9 substations, and the Redding Power Plant, clearing approximately 70 acres in Tier 1, Tier 2, & Tier 3 Zones.
- REU Arborists inspected, patrolled, and cleared 314.74 of 315.1 acres of 115kV transmission lines in high-risk Tier 2 & Tier 3 areas to comply with California Public Utilities Commission (CPUC) and CAL FIRE requirements.
- REU arborists inspected, patrolled, and cleared 225.71 of 230.27 acres of 12kV distribution lines in high-risk Tier 2 & Tier 3 areas to comply with CPUC and CAL FIRE requirements.
- REU Arborists trimmed 3,281 trees and removed another 703 trees directly impacting transmission and distribution power lines to reduce the threat of potential fire.
- Wrapped 397 critical power poles located within high-risk areas with fire retardant material and cleared a 30-foot radius of vegetation around each pole during the fire season.
- Utilized an outside agency for goat vegetation management to clear approximately 147 acres of 21 high-risk and difficult-to-access green belt locations throughout the community.
- Provided information to the community related to all 11 Red Flag Warnings issued by the National Weather Service through social media accounts and REU web pages.
- Through the efforts of REU Staff, the City of Redding successfully applied for a 2021-22 CAL FIRE Fire Prevention Grant. The City was awarded $520,083.00 for developing a City of Redding Community Fire Risk Reduction Program (Program). The Program is a comprehensive approach to engage the community in collaborative long-term wildfire risk reduction and associated greenhouse gas emission avoidance. The program dovetails planning, outreach, and on-the-ground fuel reduction activities so as to maximize community engagement and expedite risk reduction.

B. REU Technology Solutions Program

The purpose of the REU Technology Solutions Program is to protect and reduce threats to the electric utility infrastructure and the customers who rely upon it through the application of technology. The following technologies have been identified to minimize sources of ignition, manage vegetation within the City's electric grid, enhance the productivity of utility staff, harden systems, and more effectively protect as well as notify the public if an issue arises. In addition, the listed technologies are intended to aid in the response and recovery time in the event of a wildfire.

1. Goals
   - Prevent electric utility-caused wildfires.
   - Increase technology use and reliability to promote interdepartmental coordination in the event of a wildfire caused by or impacting the Redding community.
   - Decrease response time for emergency responders to engage in emergencies that threaten grid infrastructure and other REU facilities.

2. Actions Taken

Aerial Imagery

- A city-wide aerial orthophotography project for vegetation canopy analysis was completed on November 5, 2020. This project is actively utilized and provides clear data layers related to overgrown vegetation proximate to REU facilities, as well as those areas at a higher risk of fires. Up-to-date imagery will continue to play a critical role in ensuring REU Arborists, RFD, and Parks Division crews are able to maintain a safer landscape around REU facilities and infrastructure. This program is scheduled to be completed every two years. In October 2022, a study was conducted on the vegetation canopy within the city limits, identifying private property areas with high vegetation outside the parameters related to the utility. This data may help to quantify the potential wildfire dangers within the city limits and possible vegetation management efforts. In addition, the analysis showed an increased fire risk to the community near outdoor camping sites on public property. Studies will continue during the 2023 fire season.

Unmanned Aerial Vehicles (UAV)

- The purchase and training related to UAVs were completed May 19, 2020, enabling aerial patrol of overhead lines using Forward Looking Infrared Radar (FLIR). UAVs have been used in the field throughout 2022 for public safety monitoring. Additionally, the program assists both RPD and RFD in monitoring fires as well as the investigation process to determine fire origination and initial cause. With the completion of the Emergency Operation Center (EOC), UAV cameras are able to stream live video from the field directly to the EOC as needed.

Light Detection and Ranging (LIDAR)

- After completion of the Tier 3 areas west of Redding in 2020, REU utilized the same contract firm, Quantum Spatial, to continue the vegetation survey for the rest of REU's system in Tier 1 & 2 areas in 2021, using the LIDAR (Light Detection and Ranging)

technology. LIDAR was not performed in 2022. The precise data was also used as an import to the PLS Cadd system to better model the construction of the existing transmission facilities.

Automatic Vehicle Location (AVL)

- The AVL program is critical to identify and track first responders and other emergency vehicles during events such as a wildfire. RPD patrol vehicles and RFD vehicles have been equipped with AVL devices. The City of Redding Information Technology Department worked to equip RPD Investigations vehicles and all REU vehicles with AVL devices in addition to police patrol cars and fire apparatus vehicles. The AVL system is online and part of the new EOC at REU's Avtech Parkway Headquarters. The AVL system continues to be a valuable tool to ensure resources are dispatched efficiently to both emergencies as well as outages.

City-Wide Cameras

- The installation of cameras for REU operations, fire detection, and mitigation are critical in combating fires that may impact the electric infrastructure. Two camera systems are currently being implemented. Strategic sites in the proximity of REU's lines and facilities were identified for the first set of fixed cameras with a live feed. Initial installation steps began in June 2020. Additionally, fixed cameras will continue to be installed at critical infrastructure sites throughout 2023. The second camera program is associated with IQ FireWatch. The City Council approved the purchase of IQ FireWatch cameras and displays on June 16, 2020. The IQ FireWatch camera technology provides early notifications of smoke up to 10 miles outside the City limits. Three key sites for camera installation were identified, and contracts with vendors were approved for construction to begin in December 2020. The project was completed on May 1, 2021, and active during the 2021 and 2022 fire seasons. An external alarm company monitored the cameras 24 hours a day from May 1, 2021, through November 30, 2021, and May 1, 2022, through November 30, 2022.

Fixed and Mobile City-Wide Communications Platform

- The need for reliable communication is vital during emergencies such as wildfires, and the City's current radio systems required replacement. A needs assessment and careful analysis of the RPD, RFD, REU, and SHASCOM's system needs began in early 2020. A contract between the City of Redding and Motorola Radio Communications was approved by the City Council, and the implementation of a new citywide fixed communications platform started in January 2021. The collaborative effort with several City of Redding Departments and outside industry experts was completed during the 4th quarter of 2022. Redding Police and Electric Departments successfully transitioned to the new radio system in July 2022. In addition, five radio desk sets were programmed and placed in the EOC at Avtech Parkway and one within the Redding Police Records Division. Redding Fire Department's transition was delayed due to the 2022 fire season however they successfully moved to the new system in December of 2022. The mobile

command communication platform was approved by the City Council on October 6, 2020, and was completed in July 2021. The Mobile Command Center has been continually utilized for emergency responses throughout 2021, as well as emergency incident training, special events, and during a large hazmat spill in downtown Redding in January 2022.

Department Operations Center (DOC)

- A majority of the data, imagery, and communication resources from the Technology Program have been integrated into a Department Operations Center at REU's Avtech Parkway headquarters. This facility was designated by the City Council as the City's new Emergency Operations Center (EOC) following its completion during the second quarter of 2021. The technology includes aerial Imagery, real-time UAV imagery, automatic vehicle locations, fixed cameras, IQ FireWatch, unified communications, and REU system data received and managed through the DOC. REU and the City of Redding can now coordinate with partner agencies, communicate with customers and the media, and most importantly, ensure field staff has access to evolving real-time information during emergency operations. An action committee has been established to prioritize improvements to the information fed into the DOC. The objective will be to ensure that all data available is connectable, robust, and accurate with qualified, trained personnel to use, rather than creating new data.

C. REU Emergency Operation Program

The purpose of the REU Emergency Operations Program (EOP) is intended to provide structured guidance for REU staff to effectively manage emergencies from an all-hazards approach and is modeled after the ICS structure followed by the City of Redding's Emergency Operations Plan.

1. Goals
   - Operational readiness for staff to effectively and efficiently manage all aspects of a large emergency such as a wildfire.
   - Communicate timely information to all stakeholders, including staff, customers, City Management, the City Council, and the media.
   - Establish clear roles and tasks for REU staff within the Emergency Operations structure under Incident Command.

2. Actions Taken
   - The REU Emergency Operations Standard Operating Procedure (SOP) was activated six (6) times for a total of 10 days during the 2022 calendar year as a result of the National Weather Service issuing Red Flag Warnings for the Redding area.
   - REU conducted an emergency drill on March 29, 2022, to ensure operational readiness for the wildfire season. An additional drill was completed on November 16, 2022.
   - The Emergency Operations SOP was activated during the Flanagan Fire on March 4, 2022, and the Branstetter Fire on September 1, 2022.

- An Emergency 911 software application was installed at the Power Control Center, providing immediate notifications directly from SHASCOM of wildfires in or near the City of Redding limits.
- An inter-agency cooperation and communication protocol continues to be updated with Shasta County Health and Human Services.
- REU Communications actively posted Red Flag notifications to the public and news media through social media, REU's website, and press releases.
- REU successfully implemented a new emergency notification system through the Civic Ready platform for email and text notifications to City employees related to urgent communications.
- New P25 Motorola radio system implemented in 2022 for internal and interdepartmental communications. Mobile radios were installed in all designated REU Distribution vehicles, and new handheld radios were distributed to field staff.

D. REU Distribution 10-Year Capital Improvement Program

The purpose of the Distribution 10-Year Capital Improvement Program is to enhance the distribution system by replacing specific components to reduce the probability that the system will initiate a fire and harden the electrical distribution system to better survive a fire initiated by other sources. In order to complete the necessary system hardening efforts within the required timeline, including fuse and arrestor replacement and additional circuit reclosers, contract line workers will need to be utilized to supplement REU's workforce. REU Line personnel are currently unable to take on these significant improvement projects due to the required routine maintenance of the existing infrastructure and multiple vacant positions.

For a timeline of present and future improvement work items, see the chart on page 11. Listed below are specific actions taken to date to work towards the stated goals.

1. Goals
    - Enhanced inspections and tracking of assets.
    - System hardening of key subsystems.
    - Improved situational awareness.
    - System improvements providing better operational practices.
    - The addition of switching to provide precision de-energization.

2. Actions Taken
    - Modifications were made to one additional 12kV distribution circuit, allowing the automatic reclosing action to be re-enabled for this circuit during Red Flag Warnings. To date, a total of five circuits have had reclosing re-enabled since the implementation of the Plan.
    - A Work Order has been created for priority work in Tier 3 and Tier 2 areas. This effort will fire harden an additional 11 circuits, which will allow their automatic reclosing action to be re-enabled during Red Flag Warnings. Required materials have been

purchased, received and installation is approximately 90% complete and projected to be completed before the 2023 fire season.

- To date, 295 fault indicators for overhead circuits have been installed at strategic locations to aid the Troublemen to more quickly identify the location of the faulted line resulting in reduced customer restoration times. In addition, fault indicators have been installed at four underground locations, with an additional 40 locations identified for installation. The underground circuits tend to be the most time-consuming construction type to both troubleshoot and isolate the faulted location.
- GIS Software is being upgraded to expand the use of tablet-based inspection for overhead lines and vegetation management. This will greatly improve the identification and tracking of hazards found, work performed, and work remaining over the present paper-based system.
- Engineering finalized all animal-related system hardening construction standards on April 6, 2021. Materials were purchased for animal guards and covered jumper wires, and installation is 90% complete for priority Tier 3 areas. This will help reduce outages and occasional fires initiated by animal and tree contact with exposed conductors in the high-fire threat areas.
- Engineering finalized all construction standards on April 6, 2021, for the installation of non-arcing fuses and non-arcing surge arrestors to be implemented in Tier 2 and Tier 3 areas. Materials have been purchased, and installation is 90% complete for priority Tier 2 and Tier 3 hazard areas.
- An improved customer-facing, web-based outage map was created for improved customer awareness of outages and restoration times. The system is accessible on the REU web page and became operational at the end of October 2021.
- As of December 22, 2022, 397 out of 800 wooden poles in high fire threat zones have been wrapped with fire retardant webbing.

E. Audit Findings

1. Audit Findings Related to CPUC Fire Threat Map
    - The CPUC Fire Threat map was reviewed for changes on December 29, 2022. No boundary changes were noted for the 2022 calendar year.
    - Previously modified 12kV circuits were evaluated for compliance with the mitigation recommendations to keep these circuits on the Circuit Recloser Enabled list.
    - Vegetation mitigation efforts, approved by the Redding Fire Marshall, on June 21, 2021, were repeated in the spring of 2022 for the 12kV circuits allowing their addition to the Circuit Recloser Enabled list.

2. Audit Findings Related to Fire Ignitions.
    - Number of fires caused by REU facilities:

Fire Threat Zone	Number of Fires Initiated	Number of Fires on RFW Day
Tier 1	5	0

Tier 2	1	0
Tier 3	0	0

The Plan requires REU to describe any fires greater than one acre. One fire was caused by a squirrel climbing between two pot heads (overhead cable terminations). The arching caused a vegetation fire of 1.94 acres on August 8, 2022.

3. Audit Finding Related to Wires Down
   - A wire-down event includes any instance where an electric transmission or primary distribution conductor falls to the ground or on a foreign object:

Date	Outage No.	Fire Threat Zone	Line Voltage	Cause
3-18-22	J.E.22.03.038	Tier 1	12kV	Third-Party
03/22/22	J.E.22.03.042	Tier 1	12kV	Third-Party Vehicle Caused
04/25/22	J.E.22.04.055	Tier 1	12kV	Third-Party Vehicle Caused
05/28/22	J.E.22.05.062	Tier 1	12kV	High Wind-Tree
08/25/22	J.E.22.07.052	Tier 1	12kV	Animal/Bird
12/27/22	J.E.22.12.084	Tier 2	Secondary	Tree

4. Identifying Corrective Deficiencies in the Plan:
   - REU has not received any notice of deficiencies or potential deficiencies in the 2022 calendar year, and there are no logged deficiencies to report.

5. Monitoring the Effectiveness of the Inspections:
   - Inspection reports and progress have been reviewed quarterly for overhead lines. After creating dedicated Electrical Inspector positions, completion of critical inspections has significantly improved for both overhead & underground inspections. Additionally, REU is implementing an improved software-based Workforce Management System and Mimms-based inspection, implemented by SSP Innovations, to ensure that the inspections/repair process is being performed to industry best practices.
   - Overhead LIDAR Surveys of REU's transmission and distribution system used in 2020 and 2021 to confirm the effectiveness of the past vegetation inspection program. REU intends to repeat the Lidar survey approximately every 3rd year. In 2022, REU initiated using contract inspectors, EDM Intl, to perform a detailed GIS-based vegetation inspection of all 12kV primary areas. Tier 1 areas had been deemed the lowest priority in previous years, but now the focus is to complete new priorities found by the detailed inspections per best practices and CPUC, General Order-95.

F. Lessons Learned to Incorporate into Future Plans

- The number of transmitting fault indicators has been increased with the completion of repeaters at the substations. Non-transmitting fault indicators have also been determined as adequate and more flexible in deployment for rapid identification of the faulted line portion. This information is helpful since the disabling of automatic circuit reclosers greatly increased the outage time before restoration.
- The Priority 1, Non-arcing surge arrestors and fuses for the 12kV distribution are nearly complete. The Priority 2 equipment is taking considerably longer than anticipated due to the number of crews available, the customer outage notification process, and the large number of locations to be modified. The completion date for this effort was extended an additional year.
- The initial concept of pre-spraying the power poles in the high-risk areas with fire retardant prior to fire season was a great effort for staffing. New technology has been developed which wraps the base of the pole with a fire-retardant webbing. REU's design standards have been modified and material purchased allowing REU to phase out the spraying process and focus on the application of the pole webbing. As noted above, over 300 poles were wrapped during the 2022 calendar year.

5. Revision History

Revision:	Revision Description:	Date:
1.0	Original document	12/1/2020
2.0	2021 Monitoring & Auditing Annual Report	12/7/2021
3.0	2022 Monitoring & Auditing Annual Report	12/30/22

Item #	Calendar Year / WMP Year # / Fiscal Year	2019 / 1 / 2019/20	2020 / 2 / 2020/21	2021 / 3 / 2021/22	2022 / 4 / 2022/23	2023 / 5 / 2023/24	2024 / 6 / 2024/25	2025 / 7 / 2025/26	2026 / 8 / 2026/27	2027 / 9 / 2027/28	2028 / 10 / 2028/29	2029
1	Field verify and revise Tier 2 and Tier 3 boundary	Complete										
2	Perform necessary tree trimming and vegetation removal in priority areas	Complete										
3	Reconfigure specific distribution circuits to feed only Tier 1 areas	Complete										
4	Install non-arcing arrestors, fuses, and bird/squirrel guards, covered jumpers in T2/T3	X	X	X	X	X						
5	Create 30-foot sterilized perimeter for substations in T2 and T3 areas	Complete										
6	Apply fire retardant or fire wrap to wood poles for T2 and T3 areas	X	X	X	X	X	X					
7	Install fault indicators for faster location of distribution outages		X	X	X							
8	Install mesh network to retrieve outage data from Remote Metering Project	Complete										
9	Connect line fault indicator data to SCADA	Complete										
10	Integrate remote meter data and fault indicator data with Outage Management System		X	X	X							
11	Provide secondary water source to Power Plant	Complete										
12	Install additional 12KV switches at T1 boundary	Complete										
13	Install fast reclosers/sectionalizers at T1 boundary			X	X	X						
14	Convert overhead to underground for critical COR water facilities					X	X					
15	Improve existing access roads and add additional to critical sections of the system			X	X	X	X	X				
16	Replace 115KV wood poles with Steel or Laminate in T2 and T3 areas			X	X	X	X	X	X	X	X	
17	Convert overhead circuits to underground where practical in T2 and T3 areas.					X	X	X	X	X	X	
18	Convert Keswick River crossing from wood to steel									X	X	
19	Upgrade 12KV Breaker Protect Relay to better coordinate with circuit fusing		X	X	X	X						

Revised December 2022