WILDFIRE MITIGATION PLAN

VERSION 1.1

Approved February 16, 2021

by Resolution CC-21-09

Effective: March 1, 2021

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I. OVERVIEW

A. POLICY STATEMENT

The City of Shasta Lake ("City") Electric Department's overarching goal is to provide safe, reliable, and environmentally-friendly energy at the lowest possible cost consistent with sound business practices. In order to meet this goal, the City, through its Electric Department, 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 ("WMP" or "Plan") describes in detail the range of activities that the Electric Department is taking to mitigate the threat of power-line ignited wildfires, including its various programs, policies, and procedures. This Plan is subject to direct supervision by the City of Shasta Lake City Council and is implemented by the City Manager. This Plan complies with the requirements of Public Utilities Code section 8387 for publicly owned electric utilities to prepare a wildfire mitigation plan by January 1, 2020, and annually thereafter.

The policies described in this Plan describe the City's policies and preparedness in mitigating risks associated with power-line ignited wildfires. The Plan compliments other City planning documents, such as the City of Shasta Lake Hazard Mitigation Plan and other emergency planning documents administered by other departments within the City. The programs and strategies included in the WMP are evolving and are subject to change. As new technologies, practices and networks develop, and other environmental influences or risks are identified, changes to address them may be incorporated into the future iterations of the WMP which is, in effect, a living document.

C. ORGANIZATION OF THE WILDFIRE MITIGATION PLAN

This Wildfire Mitigation Plan included the following elements:

- Objectives of the Plan;
- Roles and responsibilities for carrying out the Plan;
- Identification of key wildfire risks and risk drivers;
- Description of Wildfire Prevention Strategies;
- Metrics for measuring the performance of the Plan and identifying areas for improvement;
- Community outreach and education.

II. 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 the City's transmission and distribution system may be an original or contributing source for the ignition of a fire. The City has evaluated the prudent and cost-effective improvements to its physical assets, operations, and training that can help to meet this objective, and has implemented those changes consistent with this evaluation.

B. RESILIANCY OF THE ELECTRIC GRID

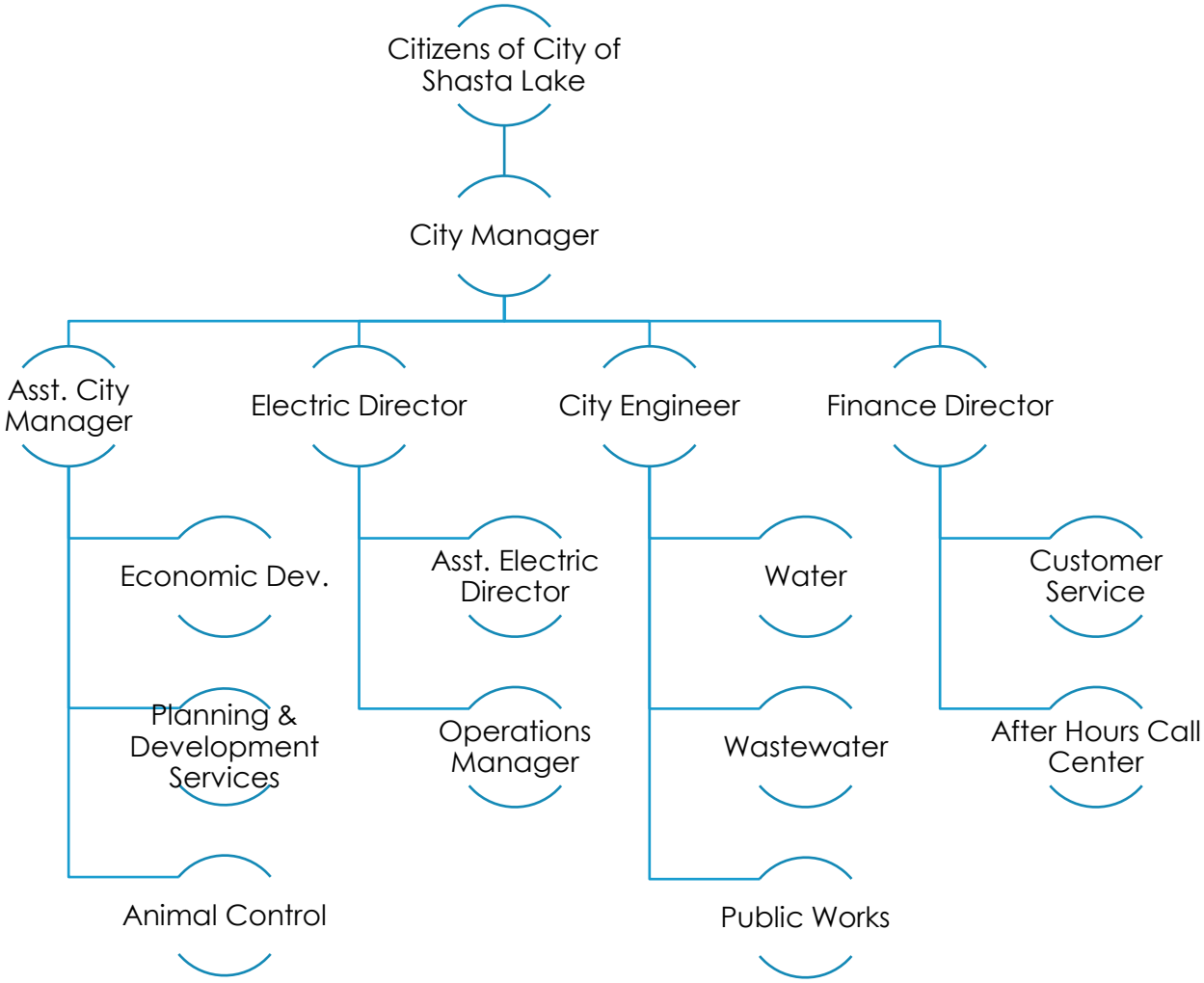
The secondary goal of this Wildfire Mitigation Plan is to improve the resiliency of the electric grid. As part of the development of this Plan, the City's Electric Department is assessing new industry practices and technologies that will reduce the likelihood of a disruption in service and improve the restoration of service.

C. MINIMIZING UNNECESSARY OR INEFFECTIVE ACTIONS

The final goal for this Wildfire Mitigation Plan is to measure the effectiveness of specific wildfire mitigation strategies. Where a particular action, program, or protocol is determined to be unnecessary or ineffective, the City will assess whether a modification or replacement is merited. This Plan will also help determine if more cost-effective measures would produce the same or better results.

III. ROLES AND RESPONSIBILITIES

A. SHASTA LAKE ROLES AND RESPONSIBILITIES



The City of Shasta Lake ("City") utilizes a City Council / City Manager reporting hierarchy. The 5-person City Council are elected by voters who reside within city limits to rotating 4-year terms. The Mayor and Vice Mayor positions are in title with these positions nominated and appointed every 2 years by the City Council. The City Council is responsible for the adoption of all policy and delegates the operational implementation of policy to the City Manager.

The City Manager has full operational authority of the City and operates as the Chief Executive, reporting directly to the City Council. The City Manager provides direction and management to all City staff while implementing City Council policy. A subset of the City organizational chart is

shown above to show reporting hierarchy of groups or positions that have customer-facing functions and/or roles in implementing this WMP or in emergency response.

The City Manager acts as the Public Information Officer (PIO) for general communication with the media and public and during emergency situations. The City Manager may delegate this role to the Assistant City Manager. The Assistant City Manager also assumes operational authority of the City Manager in the absence of the City Manager.

The Finance Director oversees customer-facing functions, including communications with customers regarding power outages, receiving and routing reports of potentially faulty City equipment, receiving and routing reports of potentially dangerous conditions, etc. The Finance Director administers the contract with the third-party after-hours call center service, which is activated outside normal business hours, holidays, and weekends. The operators at the after-hours call center are responsible for receiving and processing call details and forwarding to the appropriate on-call City personnel for further action.

The Electric Utility Director has overall functional management of the Electric Department and provides day-to-day oversight of the department. The Assistant Electric Director and Electric Operations Manager provide division oversight. The Electric Director reports to the City Manager.

The Assistant Electric Director oversees the design and engineering tasks associated with the distribution system, new service interconnections, engineering standards, SCADA communications, Advanced Metering Infrastructure communications and design, among other duties. The Assistant Electric Director assumes operational authority of the department in the absence of the Electric Director.

The Electric Operations Manager oversees the daily electric utility operations, including: construction, maintenance, vegetation management, and other daily duties. The Electric Operations Manager oversees all field personnel and reports to the Electric Utility Director.

Electric Department staff have the following responsibilities regarding fire prevention, response and investigation:

- Conduct work in a manner that will minimize potential fire dangers.
- Take all reasonable and practicable actions to prevent and suppress fires resulting from City electric facilities.
- Coordinate with federal, state, and local fire management personnel to ensure that appropriate preventative measures are in place.
- Immediately report fires, pursuant to specified procedures.
- Take corrective action when observing or having been notified that fire protection measures have not been properly installed or maintained.
- Ensure compliance with relevant federal, state, and industry standard requirements.
- Ensure that wildfire data is appropriately collected.
- Maintain adequate training programs for all relevant employees.

B. COORDINATION WITH OTHER CITY DEPARTMENTS

In addition to the electric utility, the City owns and operates a water utility and waste water utility, which are administered by their respective department staff and whose distribution infrastructure are administered by the City's Public Works department.

The Water Utility provides retail service to approximately 3,900 customers within the City's boundaries and to the Shasta Dam Visitor Center that is operated by the US Bureau of Reclamation. The City's "Fishermans Point Water Treatment Plant" (WTP) is the single source of all potable water supply within the City of Shasta Lake. This includes all water service to all homes, businesses, and industrial customers; all fire hydrants within City boundaries, and all water used to meet fire flow requirements pursuant to applicable laws and building codes. The WTP relies upon electric service from the City's Electric Department to function properly.

The City owns and operates a Waste Water Utility, including a Waste Water Treatment Plant (WWTP) and 4 sewage lift stations (Pump Stations). The Waste Water Utility staff operates the WWTP. The WWTP and all Pump Stations rely on electric service from the City's Electric Department to function properly.

The City's Public Works Department is responsible for operating and maintaining the water distribution system and sewage collection system, including all pump stations.

The WTP, WWTP, and 3 of 4 Pump Stations are each equipped with a diesel-powered backup generator that is designed to maintain each critical facility's vital functions during short-duration power outages. These units and the supporting infrastructure are not designed for prolonged power outages.

Recent events highlight the importance of City electric service to the water and wastewater facilities. The City suffered from city-wide power outage events on July 26, 2018 (Carr Fire) and on February 13, 2019 (winter storms), both events declared emergencies by the President of the United States.

- Carr Fire: Loss of electric service for 23-hours significantly impacted the WTP ability to produce water for the City's distribution system. Treated water supply in the City's main distribution storage tank fell to approximately 5 feet, which could supply the City's needs for approximately 3-7 hours. Had the outage continued, and had water supplies been depleted, all water services, including fire hydrants and building fire flows, would be inoperable exposing the community to substantial and diverse safety risks.
- February Winter Storms: Loss of electric service for 6-hours at a sewage pump station caused a temporary storage basin to fill. Raw sewage levels rose to approximately 1 foot from storage capacity before electric service had been restored allowing the pumps to operate to safely evacuate waste material. Had the power outage continued, and sewage levels continued to rise, raw sewage would have potentially spilled into local creeks and waterways that connect to critical wildlife habitat.

When electric operations could, or are known to impact the water utility, waste water utility, or public works, City utilities staffs will coordinate to mitigate, or where practical, eliminate impact to utility service continually. Electric Department staff collaborates proactively to notify City water, wastewater, and public works staff of planned outages and communicate as quickly as practical during energy power outages that impact one or multiple enterprises. This emergency notification will be extended to on-duty operator(s) or supervisor(s).

C. COORDINATION WITH COMMUNICATION INFRASTRUCTURE PROVIDERS

During emergency operations, City staff updates the customer-facing information websites or social media for power outage information, affected areas, and restoration updates.

D. STANDARDIZED EMERGENCY MANAGEMENT SYSTEM

As a local governmental agency,[1] the City has planning, communication, and coordination obligations pursuant to the California Office of Emergency Services' Standardized Emergency Management System ("SEMS") Regulations,[2] 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.[3] Pursuant to this structure, the City regularly coordinates and communicates with the relevant safety agencies as well as other relevant local and state agencies.

Under the SEMS structure, a significant amount of preparation is done through advanced planning at the county level, including the coordination of effort of public, private, and nonprofit

[1] As defined in Cal. Gov. Code § 8680.2.
[2] 19 CCR § 2407.
[3] Cal. Gov. Code § 2403(b):

> (1) "Field response level" commands emergency response personnel and resources to carry out tactical decisions and activities in direct response to an incident or threat.
>
> (2) "Local government level" manages and coordinates the overall emergency response and recovery activities within their jurisdiction.
>
> (3) "Operational area level" manages and/or coordinates information, resources, and priorities among local governments within the operational area and serves as the coordination and communication link between the local government level and the regional level.
>
> (4) "Regional level" manages and coordinates information and resources among operational areas within the mutual aid region designated pursuant to Government Code §8600 and between the operational areas and the state level. This level along with the state level coordinates overall state agency support for emergency response activities.
>
> (5) "State level" manages state resources in response to the emergency needs of the other levels, manages and coordinates mutual aid among the mutual aid regions and between the regional level and state level, and serves as the coordination and communication link with the federal disaster response system.

organizations. Shasta County serves as the Operational Area and is guided by the Emergency Management Council that is made up of the County Sherriff, Fire Warden, Chair of the Board of Supervisors, and senior leadership positions from the County.

The Shasta County Sherriff's Office of Emergency Services (OES):

- Coordinates with Federal, State, and local agencies to prepare, respond, and recover from emergencies and natural disasters.
- Is responsible for maintaining and updating the County Emergency Operation Plan (EOP), which is an all hazards plan for Shasta County.
- Has a direct link to the CA Governor's Office of Emergency Services (Cal-OES) during disasters or any other critical incidents and can work with Cal-OES to obtain a Presidential emergency proclamation.
- Maintains the county Emergency Operation Center (EOC), which can be activated to address major incidents to carry out the functions of the EOP.
- Serves as a point of contact for the City of Shasta Lake, and other local agencies, to Cal-OES.

The City is a member of the California Utility Emergency Association, which plays a key role in ensuring communications between utilities during emergencies. The City also participate in the Western Energy Institute's Western Region Mutual Assistance Agreement, which is a mutual assistance agreement covering utilities across a number of western states.

IV. WILDFIRE RISKS AND DRIVERS ASSOCIATED WITH DESIGN, CONSTRUCTION, OPERATION, AND MAINTENANCE

A. PARTICULAR RISKS AND RISK DRIVERS ASSOCIATED WITH TOPOGRAPHIC AND CLIMATOLOGICAL RISK FACTORS

The City of Shasta Lake has several attributes that pose higher risk factors for wildfire. City of Shasta Lake and its surrounding areas:

1. Are classified as "Wildland Urban Interface," or "WUI," which is defined as "an area where human made structures and infrastructure are in or adjacent to areas prone to wildfire[4]." Approximately 5.15 square miles and 3.20 square miles are defined as Wildland Urban Intermix and Interface, respectively, for a total of 8.35 square miles with a WUI designation, out of a total area of 10.83 square miles (77.1%).
2. Contains variable terrain.
3. Is near Shasta Lake (the lake itself), which can contribute to strong north winds, although this is not common.

The area is home to several species of oak trees, including White Oaks, and species of pine trees, particularly Gray Pines. Both White Oaks and Gray Pines are susceptible to failure during strong wind events. Both varieties can grow to reach approximately 100-ft in height at maturity introducing challenges for vegetation management, as these types of trees can be well outside the powerline right-of-way but still be within striking distance in the event these trees fall.

Drought can contribute to several WMP issues. Any drought year has the potential to create a prolonged "fire season." Multi-year droughts, such as the drought experience in the mid-2000s, can weaken all tree and vegetation species making them more susceptible to insect infestation and breakage, and more prone to fire ignition.

The City faces some restrictions and influence that challenge the City's ability to manage vegetation effectively near overhead electric assets. Some City electric assets reside on Federal lands, where right-of-way width fall to minimal levels and are narrower than the City's standard trimming practices. The most restrictive Federal mandate appears to prioritize how the powerline clearing looks, aesthetically, from the surface of Shasta Lake (the lake itself), discouraging wide clearances around powerlines for their undesirable appearance. Other Federal restrictions prohibit the use of herbicides, a vegetation management treatment that is extremely effective at long term fuels suppression and management inside powerline rights-of-ways. Local opinion and policy pressures seek to protect native trees from any trimming and/or removal, including White Oaks and Gray Pines, which are native to the area.

Generally, when the above factors of environment, topology, climate, and external policy become factors in wildfires, risks are driven by: foreign objects contacting high-voltage electrical

[4] https://www.usfa.fema.gov/wui/

equipment (e.g., animal contact, vegetation, mylar balloons, vehicles); equipment failure; or wire to wire contact. Other risks are driven by deliberate actions of others (e.g., vandalism), or actions by City personnel.

B. ENTERPRISEWIDE SAFETY RISKS

Electric Department operations, engineering, and field personnel were consulted in conducting a risk assessment analysis for wildfires that could potentially involve City overhead electric equipment. The risk analysis focused on potential causes and consequences of catastrophic wildfire involving City electric equipment.

1. KEY RISK DRIVERS THAT COULD TRIGGER A WILDFIRE EVENT INVOLVING CITY ELECTRIC EQUIPMENT:

- Contact by Object
  - Animal
  - Vegetation
  - Vehicle
  - Unknown / Other
- Equipment Failure
  - Pole
  - Crossarm
  - Insulator
  - Fastening hardware
  - Conductor / splice
  - Fuse
  - Lightning arrestor
  - Transformer
  - Protection device failure
  - Unknown / Other
- Wire to Wire Contact
  - Weather
  - Vehicle
- Other
  - Other
  - Deliberate Act: Terrorism, vandalism, other
  - City Personnel

2. CONSEQUENCES OF A WILDFIRE INVOLVING CITY ELECTRIC UTILITY EQUIPMENT:

- Serious injury or death
- Disruption of public/utility services
- Damage to property and infrastructure
- Legal and regulatory compliance
- Public trust
- Financial
- Environmental

3. FIRE RISK DRIVERS

Electric utility equipment design, engineering, and safety protocols are closely regulated under health and safety under national, regional, and local safety standards. Considering the commonality across legal and regulatory structures that govern electric utility operations, the risk drivers of wildfire ignition by electric utility assets share strong similarities across organizations, including City of Shasta Lake. Staff evaluated utility operations, based on broad past industry

experience and operational experiences within the City and the following grouping of risk drivers are present.

1. Contact from objects
2. Equipment failure
3. Wire to wire contact
4. Other

Contact from Objects: City of Shasta Lake utilizes bare wire conductors for its transmission and distribution lines, which is a common practice for all utilities. Per City Council policy, the Electric Department builds and maintains mandatory clearances between the powerlines and stationary objects, including ground clearance, nearby structures, vegetation, and other powerline assets. Other types of objects (e.g., animals) can move into powerline assets, contacting lines, which can cause sparks, arcs, reliability issues, and safety issues. The City utilizes protection equipment that ultimately limit the time under which an object is in contact with an energized line (e.g., reclosers, fuses) which in turn limits the amount of energy that is flowed into that foreign object. These projection devices operate in very small fractions of a second, but even momentary contact with high voltage electrical equipment may be sufficient time and energy to result in sparks, arcs, or other form of fire ignition.

Vehicles contacting poles and anchors can cause a wide range of issues with electric utility equipment. Vehicle crashes can damage or destroy power poles. The shock of a vehicle-pole collision can shake all overhead equipment, creating additional weight-loading stress on crossarms, insulators, fasteners, etc., which can cause other utility fixtures to fail. Shaking can also cause powerlines phase-to-phase contacts. All of these possibilities can cause sparks, arcs, and wire down events, which can introduce a fire ignition source on nearby objects and vegetation.

Equipment Failure: All human-made objects can fail prior to the end of the equipment's expected useful life. Structural failures; including breakage of poles, crossarms, hardware, etc.; can contribute to wildfire ignition through sparks, arc, or downed wires coming into contact with nearby vegetation or objects in or near the powerline right of way. Malfunctioning equipment may also contribute to wildfire ignition, particularly if protection equipment fails to operate as intended.

Wire to Wire Contact: Powerlines that come into contact with other energized lines can create fire ignition sources through sparks or arcs. Wire to wire contact can occur during strong weather events (e.g., wind gusts cause wires to slap together) or when poles shake (e.g., when poles or anchors are crashed into by vehicles).

Other: There are several direct and indirect modes under which the City's electric assets can contribute to wildfire. The City could fall victim to a deliberate act of terrorism or vandalism that could cause damage to City electrical equipment leading to sparks, arcs, or downed wires, which can contribute to wildfire.

Electric department utilizes certified electrical line workers to carry out the daily operations of the City's electric grid, including switching, construction, and maintenance activities. The City utilizes

experience tree management crews certified to work in close proximity of energized lines for vegetation management activities. Field personnel may contribute to wildfire ignition by virtue of working in in the field, particularly if vehicles or equipment near vegetation where electric assets traverse open country. To manage this risk, City personnel are trained and are equipped with basic fire suppression tools. On high wind days, additional City personnel with wildland firefighting training and/or Firefighter 1 certifications accompany electric crews in the field for additional fire suppression expertise and capability.

4. OUTCOMES OF WILDFIRE RISKS

Any of the above risks have the potential to contribute to a catastrophic wildfire. Recent incidents around the State have demonstrated that such risks and outcomes could have the following adverse consequences:

- Loss of life and/or significant injury.
- Significant and widespread damage to public, private, and infrastructure property.
- Long duration outages, or unreliable electric service.
- Substantial expenditure of firefighting resources.
- Litigation and regulatory consequences.
- Damage to the City's creditworthiness and/or ability to purchase insurance.
- Loss of public trust.
- Bankruptcy.

5. RISK MANAGEMENT

The City operates with a work force of approximately 50 FTE, 10 of which are in the Electric Department. As a small organization, there is regular and frequent interaction and coordination amongst employees, including across departments. Electric Department employees are directly tasked with constructing and maintaining City electric assets and vegetation management in accordance with all applicable laws and regulation. All employees in the Animal Control Department are certified as wildland firefighters or higher, with training provided by the Shasta Lake Fire Protection District. The SLFPD Fire Chief regularly attends City department head meetings administered by the City Manager. Additional fire protection resources are provided under a Wildland Fire Protection Agreement executed by the City, SLFPD, and Cal Fire, with contract costs covered by the Electric Department.

Staff interactions focus on wildfire mitigation strategies and tactics. The objective of these ongoing coordinated efforts are to prioritize staff and financial resources to reduce the risk of wildfire ignition and to maximize wildfire suppression response should an ignition occur.

C. CHANGES TO CPUC FIRE THREAT MAP

The City does not recommend any changes to the CPUC statewide Fire Threat Map, adopted January 19, 2018, at this time. Future changes in the City's knowledge or recommendations going forward will be communicated as required by statute.

V. WILDFIRE PREVENTATIVE STRATEGIES

A. HIGH FIRE THREAT DISTRICT

Personnel from the City's Electric Department directly participated in the development of the California Public Utilities Commission' s (CPUC) Fire-Threat Map,[5] which designates a High-Fire Threat District. In the map development process, City staff worked with local fire officials to identify the areas of the City's electric service territory that are at an elevated or extreme risk of power line ignited wildfire. The Electric Department has incorporated the High Fire Threat District into its construction, inspection, maintenance, repair, and clearance practices.

B. WEATHER MONITORING

The Electric Department monitors current and forecasted weather data from a variety of sources including:

- United States National Weather Service;
- United States Forest Service Wildland Fire Assessment System;
- National Fire Danger Rating System;
- National Interagency Fire Center – Predictive Services for Northern and Southern California;
- Local weather data sources;
- Internal knowledge of local conditions; and
- Electric Department weather station at the City Corporation Yard.

Each work day, the Electric Operations Manager, or designee, shall review at least one weather data source and assign one of two operating conditions based on the relevant weather data and knowledge of local conditions, with the normal operation condition applied by default unless otherwise noted. Any Electric Department staff may review weather conditions for the applicable work day.

(1) Normal: During normal conditions, no changes are made to operations or work policy.

(2) Extreme: During extreme fire-risk conditions, including Red Flag Warning (RFW) as declared by the National Weather Service, the Electric Department may delay routine work on energized primary lines (12.47 kV) as determined by the Electric Operations Manager or designee. The Electric Department may perform necessary work to preserve facilities or property and may preposition fire suppression personnel to sites with elevated risk of wildfire ignition. Extreme weather is defined as: weather phenomena that are at the extremes of the historical distribution and are rare for a particular place and/or time and/or RFW conditions.

[5] Adopted by CPUC Decision 17-12-024.

The general procedure Electric Department staff shall follow for each work day designated "Extreme" is as follows. The Electric Utility Director may revise this procedure from time to time.

1. The Electric Operations Manager, or designee, shall assess weather conditions. If the workday is forecasted as a "Red Flag Warning" or similarly designated by a bona fide weather forecasting agency, the work day shall be designated as an "Extreme" weather event.
2. The Electric Operations Manager shall determine if any modifications of work assignments shall apply to Electric Department field personnel, including tree trimming crews directly managed by the Electric Department. Modifications may include but are not limited to: deferring routine work, standing down into emergency operations status (i.e., crews only respond to known electric-related events), reassign staff to patrol electric grid assets, etc.
3. The Electric Operations Manager shall provide further instructions to the Electric Leadworker, or designee, with instructions on any applicable work modifications that would apply during the extreme weather event.
4. The Electric Leadworker, or designee, shall inform all Electric Department field personnel of the "Extreme" weather designation and applicable work modifications in the day's tailboard briefing. The tailboard briefing shall specify the scope of duties for all electric field personnel, general procedure in the event of wildfire or similar emergency, and additional safety protocols that are activated for the workday (such as equipping all vehicles with 5-gallon water packs).
5. All Electric Department employees present at the tailboard meeting shall sign to demonstrate their attendance and to acknowledge their understanding of the contents of the tailboard meeting.
6. The Electric Leadworker shall brief any additional City personnel who may be assigned to accompany Electric Department field personnel for the purpose of providing additional fire suppression capabilities. For example, Animal Control personnel are certified Wildland Firefighters and one vehicle may be equipped with a 125 gallon pumped fire suppression apparatus. The briefing may be included as part of the daily tailboard meeting, if the additional personnel are present, or at the job site. The briefing shall, at a minimum, include a description of the roles and responsibilities of electric vs. non-electric personnel, and safety procedures related to the deployment of firefighting equipment around electric assets.

C. DESIGN AND CONSTRUCTION STANDARDS

The City's electric facilities are designed and constructed to meet or exceed the relevant federal, state, or industry standard. The Electric Department treats CPUC General Order (GO) 95 as a guideline for minimum design and construction standards for overhead electrical facilities. The Electric Department meets or exceeds guidelines in GO 95 and monitors and follows as appropriate the National Electric Safety Code. The Electric Department updates its construction standards from time to time.

D. VEGETATION MANAGEMENT

The Electric Department maintains a comprehensive Vegetation Management Plan (VMP) to establish and implement the standards for clearing vegetation around powerline assets, which meets or exceeds the statues and guidelines identified below, and updates the VMP from time to time as practices and technology evolve.

The City meets or exceeds the minimum industry standard vegetation management practices. The Electric Department 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 time-of-trim guidelines do not establish a mandatory standard, but instead provide useful guidance to utilities. The Electric Department will use specific knowledge of growing conditions and tree species to determine the appropriate time of trim clearance in each circumstance.

E. INSPECTIONS

The Electric Department maintains a comprehensive Asset Inspection Plan (AIP) to establish and implement the standards for inspection and maintenance of City-owned powerline assets, which meets or exceeds the statues and guidelines identified below, and updates the AIP from time to time as practices and technology evolve.

The City meets or exceeds the minimum inspection guidelines provided in CPUC GO 165 and CPUC GO 95, Rule 18. Additionally, Electric Department staff use their knowledge of the specific environmental and geographical conditions to determine when areas outside of the High Fire Threat District require more frequent inspections.

If Electric Department staff discovers a facility in need of repair that is owned by an entity other than the City, Electric Department staff will issue a notice to repair to the facility owner to facilitate any necessary repairs.

F. WORKFORCE TRAINING

The Electric Department has implemented work rules and complementary training programs for its workforce to help reduce the likelihood of an ignition. All field staff will be: trained in the content of the WMP; trained in proper use and storage of fire extinguishers; required during pre-job briefings to discuss: potential(s) for ignition, environmental conditions (current and forecasted weather that coincides with the duration of work for the day); and to identify the closest fire extinguisher.

Any ignition will be reported to the Electric Director for follow-up.

G. RECLOSER POLICY

For this first iteration of the WMP, the City will disable automatic reclosing functions on all substation and field reclosers from May 1 through November 30, or as otherwise determined necessary by the Electric Director.

H. DEENERGIZATION

The City will continue its long-standing practice to deenergize its electric system when directed to by personnel from fire, law enforcement, or other emergency responding agencies. The City generally will not proactively deenergize its electric system during high fire threat periods based on the following:

- The City's electric service territory is approximately 11 square miles, with local fire response located centrally within this area;
- De-energizing the City's electric system could put the community at higher risk to wildfire due to its potential impact to the City's water supply, including all water supplied to City fire hydrants, potential for increased call volume and subsequent impact to law enforcement and fire agencies, and changes in human activity during power outages that could increase the opportunity for fire;
- The City has fully deployed Advanced Metering Infrastructure and SCADA systems on its electric infrastructure which enables staff to monitor, assess, and act upon system events remotely in real-time;
- The City plans to gather real-time information from field personnel patrolling areas with higher fire risk and may preposition fire suppression assets with electric field crews

1. IMPACTS TO PUBLIC SAFETY

Proactively deenergizing the City's electric grid is expected to impact Law Enforcement and Fire Response agencies differently. Such outages are not expected to have a significant impact to local Law Enforcement as the local resources may draw from the larger resource pool of the Shasta County Sherriff's Office, which also serves as the Shasta County Emergency Operation Center (EOC). Local buildings are equipped with backup generators that have performed reliably in recent unplanned power outage events. Law Enforcement officials do not expect prolonged and geographically extensive power outages to impact their communications, availability of personnel, equipment usage, or response time to call volume.

Widespread (i.e., city-wide, region-wide) and prolonged (i.e., PSPS events lasting 2-7 days) power outages are expected to have significant adverse impact to local Fire Response operations. Fire representatives note that the City of Shasta Lake has a disproportionately large population of people who rely on life-sustaining, electricity-dependent medical equipment and note that calls for services received under normal circumstances regularly include people from this population. During past power outage events, call volume increases markedly for Fire personnel and commits local resources to provide medical aid. Once on scene, Fire Response personnel cannot leave a patient in medical need unless relieved by other qualified personnel. Such increases in medical-related service calls served by Fire Response personnel will compete

for resources with fire-related service calls, suggesting that proactive power shutoffs will significantly and adversely diminish local Fire Response capabilities to combat wildfires should one start during a proactive power shutoff (recall that 90% of wildfires are caused by ignition sources other than powerline issues).

2. CUSTOMER NOTIFICATION PROTOCOLS

In the event of a planned outage (i.e., knowledge of the outage at least 24-hours in advance), the City shall contact impacted customers by phone, email, or in person to inform affected customers, if known, the projected start and end time of the outage. In the event of an unplanned outage or an outage event that impacts a broad set of customers, the City shall notify customers via social media and website communication platforms to provide updates on impacted areas, number of customers impacted, and restoration times, if known.

VI. COMMUNITY OUTREACH AND PUBLIC AWARENESS

The City of Shasta Lake is a publicly owned electric utility and maintains extensive relationships across all organizations in the community, including public safety agencies that lead emergency response efforts within the City. City management maintains constant contact with local law enforcement and fire agencies, including the Shasta County Sheriff's Office (SCSO) and the Shasta Lake Fire Protection District (SLFPD). SCSO provides law enforcement services to the City by a contract arrangement, and the City provides a Sheriff substation that is centrally located within the City. The Sheriff substation commander reports directly to the City Manager. The City regularly collaborates with SLFPD through various forums, including a newly formed "Community Emergency Preparedness" committee, and the City recently agreed to help fund a new full-time SLFPD Fire Prevention Officer who reports directly to the Fire Chief and will be responsible for all fire prevention, fire safety, and education activities in the SLFPD boundaries. The SLFPD Fire Prevention Officer's primary duties include enforcement of state and local fire prevention regulations, coordinate with the City building official and code enforcement staff for fire code enforcement activities, and conduct fire prevention inspections, among other duties.

The public has the opportunity to engage the elected governing body of the City of Shasta Lake at each City Council meeting. All City Council meetings are publicly agendized and regularly scheduled meetings are televised and local television and available via the City's website. All members of the public have an opportunity to address the City Council during public comment periods.

The City is active in the community offering support to a number of local non-profit organizations, the Chamber of Commerce, and a number of community events, such as: Boomtown Festival, Veterans' Day Parade, and the Big Idea Science Bowl held at Shasta Dam. The City staffs booths to engage the public in discussions on energy, water, wastewater, public safety, wildfire prevention and preparedness, and the City's overall efforts to promote public safety.

VII. RESTORATION OF SERVICE

Power restoration generally follows the same protocol regardless of cause, but exact steps and order of restoring service depends on specific details of the outage event. Restoration of service begins with manual patrols of the affected portions of the system before any circuits are reenergized. Suspect equipment or distribution assets that cannot be patrolled will remain deenergized. System performance, outage intelligence, and system abnormalities will be monitored via the City's SCADA system and its AMI system.

VIII. EVALUATING OF THE PLAN

A. METRICS AND ASSUMPTIONS FOR MEASURING PLAN PERFORMANCE

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

METRIC 1: FIRE IGNITIONS

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

- City electric 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
- City has knowledge that the fire occurred.

In future WMPs, the City will provide the number of fires that occurred that were less than 10 acres in size. Any fires greater than 10 acres will be individually described.

METRIC 2: WIRES DOWN

The second metric is the number of distribution and transmission wires downed within the City's electric service territory. For purposes of this metric, a wires down event includes any instance where an electric transmission (i.e., 115,000 volt) or primary distribution conductor (i.e., 12,000 volt) falls to the ground or on to a foreign object. The City will divide the wires down metric between wires down inside and outside of the High Fire Threat area (i.e., Tiers 2 and 3 vs. Tier 1, respectively).

The City will not normalize this metric by excluding unusual events, such as severe storms. Instead, the City will supplement this metric with a qualitative description of any such unusual events.

B. IMPACT OF METRICS ON PLAN

The City anticipates that there will be relatively limited data gathered through these metrics, particularly in the initial years. Therefore, it will be difficult to drawn meaningful conclusions based on this data. The City will evaluate modifying these metrics or adding additional metrics in future years.

C. MONITORING AND AUDITING THE PLAN

This Wildfire Mitigation Plan is subject to review by the City of Shasta Lake City Council. Electric department staff will present this Plan to the City Council on an annual basis. Additionally, a qualified independent evaluator will present a report on this Plan to the City Council.

D. IDENTIFYING AND CORRECTING DEFICIENCIES IN THE PLAN

Staff will have the role of evaluating current practices and procedures and recommending changes or enhancement to improve the Wildfire Mitigation Plan. If for unforeseen circumstances, regulatory changes, new technologies, or any other reason, any deficiencies of this WMP will be presented to the City Council in the form of an updated WMP at least on an annual basis.

The Electric Utility Director, or designee, will be responsible for presenting corrections of any deficiencies, if any, to the City Council for consideration.

E. MONITORING THE EFFECTIVENESS OF INSPECTIONS,

The City utilizes General orders 95 and 165 (GO95 and GO165, respectively) as its guide to inspect its system. Field staff routinely patrol the service territory and correct deficiencies as they are encountered. The City tracks deficiencies that are repaired upon discovery within its maintenance software, "Partner," consistent with the guidelines of GO95 and GO165. Deficiencies that cannot be repaired immediately are assigned into one of two possible categories:, "attention needed" or 2 "immediate attention needed," with the discovery and remedy tracked in Partner.

IX. INDEPENDENT EVALUATOR

Public Utilities Code section 8387(c) requires the City to contract with a qualified independent evaluator with experience in assessing the safe operation of electrical infrastructure to review and assess the comprehensiveness of this Wildfire Mitigation Plan. The independent evaluator must issue a report that is posted to the City's website. This report must also be presented to the City Council at a public meeting.

The City will utilize a process consistent with the City's purchasing policies. Consideration will be given to the evaluator's relevant industry experience, similar work for other municipally owned utilities or special districts, expertise and experience in line construction and maintenance, responsiveness, and familiarity with relevant California statutes, regulations, and operational guidelines.

The City will seek an independent evaluator following the approval of the initial Wildfire Mitigation Plan, or as a time determined by the City Council, after independent evaluators become available. Staff anticipates retaining an evaluator and having the evaluator's findings available prior to the second iteration of the City's WMP.

ASSEST INSPECTION

PLAN

Overview

The City of Shasta Lake voluntarily follows the guidelines for inspection of electric facilities set forth by the CPUC in General Order 165. The exception to this General Order is that the City of Shasta Lake does not report directly to the CPUC. The City Council for the City of Shasta Lake is the governing body for the Electric Department.

Inspection Intervals

The City of Shasta Lake does two patrols annually of the 115KV transmission lines. The patrols are to inspect the line and make sure vegetation management goals are being met. The 12KV distribution lines are patrolled once a year to inspect line and make sure vegetation management goals are being met. All detailed and intrusive inspections on the 12KV and 115KV lines are done more frequent than the recommended requirement, but at no specific interval. These inspections are documented in our Distribution Inspection Software (Partner).

Maintenance Documentation

The Electric Department uses a maintenance monitoring system, Distribution Inspection Software (Partner). Using Partner, the City logs the condition of its transmission and distribution equipment. Updates can be logged by City personnel while in the field. Partner allows supporting information, such as photos or other attachments, to be attached to individual assets. All operations personnel can access this information in real time while connected to the data network.

Partner allows the department to assign work to field personnel from the application user interface. When work is completed a reinspection occurs documenting what repairs/replacement of equipment was performed.

As of 2019, all intrusive pole inspections are done by an IML pole tester. This gives the department much more detailed information on the integrity of the pole and the degradation of the pole is logged.

Public Utilities Commission of the State of California
Inspection Requirements for Electric Distribution and Transmission Facilities

Adopted March 31, 1997 Effective March 31, 1997
(D.97-03-070 in I.95-02-015 and R.96-11-004)

Amended August 20, 2009 by D.09-08-029 in R.08-11-005
Amended January 12, 2012 by D.12-01-032 in R.08-11-005

I. Purpose

The purpose of this General Order is to establish requirements for electric distribution and transmission facilities (excluding those facilities contained in a substation) regarding inspections in order to ensure safe and high-quality electrical service.

II. Applicability

This General Order applies to all electric distribution and transmission facilities (excluding those facilities contained in a substation) that come within the jurisdiction of this Commission, located outside of buildings, including electric distribution and transmission facilities that belong to non-electric utilities.
The requirements of this order are in addition to the requirements imposed upon utilities under General Orders 95 and 128 to maintain a safe and reliable electric system. Nothing in this General Order relieves any utility from any requirements or obligations that it has under General Orders 95 and 128.

This General Order does not apply to facilities of communication infrastructure providers.

III. Distribution Facilities

A Definitions

For the purpose of this General Order,

(1) **"Urban"** shall be defined as those areas with a population of more than 1,000 persons per square mile as determined by the United States Bureau of the Census.

(2) **"Rural"** shall be defined as those areas with a population of less than 1,000 persons per square mile as determined by the United States Bureau of the Census.

(3) **"Patrol inspection"** shall be defined as a simple visual inspection, of applicable utility equipment and structures, that is designed to identify obvious structural problems and hazards. Patrol inspections may be carried out in the course of other company business.

(4) **"Detailed"** inspection shall be defined as one where individual pieces of equipment and structures are carefully examined, visually and through use of routine diagnostic test, as appropriate, and (if practical and if useful information can be so gathered) opened, and the condition of each rated and recorded.

(5) **"Intrusive"** inspection is defined as one involving movement of soil, taking samples for analysis, and/or using more sophisticated diagnostic tools beyond visual inspections or instrument reading.

(6) **"Corrective Action"** shall be defined as maintenance, repair, or replacement of utility equipment and structures so that they function properly and safely.

B Standards for Inspection

Each utility subject to this General Order shall conduct inspections of its distribution facilities, as necessary, to ensure reliable, high-quality, and safe operation, but in no case may the period between inspections (measured in years) exceed the time specified in Table 1.

C Record Keeping

The utility shall maintain records for (1) at least ten (10) years of patrol and detailed inspection activities, and (2) the life of the pole for intrusive inspection activities. Such records shall be made available to parties or pursuant to Commission rules upon 30 days notice. Commission staff shall be permitted to inspect such records consistent with Public Utilities Code Section 314 (a).

For all inspections records shall specify the circuit, area, facility or equipment inspected, the inspector, the date of the inspection, and any problems (or items requiring corrective action) identified during each inspection, as well as the scheduled date of corrective action.

D Reporting

By July 1st each utility subject to this General Order shall submit an annual report for the previous year under penalty of perjury.

The report shall list four categorical types of inspections: Patrols, Overhead Detailed, Underground Detailed and Wood Pole Intrusive. The report shall denote the total units of work by inspection type for the reporting period and the number of outstanding (not completed) inspections within the same reporting period for each of the four categories.

Sample Report Template:

Type of Inspections (1)	Due (2)	Outstanding (3)
Patrols	xxx	xxx
OH Detailed	xxx	xxx
UG Detailed	xxx	xxx
Wood Pole Intrusive	xxx	xxx

Notes:

1) Each utility will define its reporting unit basis (e.g., circuit, grid, facility / equipment).
2) Total inspections due in the reporting period. (Does not include outstanding inspections from prior years.)
3) Total inspections required that were not completed in the reporting period. (Does not include outstanding inspections from prior years.)

IV. Transmission Facilities

Each utility shall prepare and follow procedures for conducting inspections and maintenance activities for transmission lines.

Each utility shall maintain records of inspection and maintenance activities. Commission staff shall be permitted to inspect records and procedures consistent with Public Utilities Code Section 314 (a).

/s/ Paul Clanon
Paul Clanon
Executive Director

Table 1

Distribution Inspection Cycles (Maximum Intervals in Years)

	Patrol		Detailed		Intrusive	
	Urban	Rural	Urban	Rural	Urban	Rural
Transformers						
Overhead	1	2[1]	5	5	---	---
Underground	1	2	3	3	---	---
Padmounted	1	2	5	5	---	---
Switching/Protective Devices						
Overhead	1	2[1]	5	5	---	---
Underground	1	2	3	3	---	---
Padmounted	1	2	5	5	---	---
Regulators/Capacitors						
Overhead	1	2[1]	5	5	---	---
Underground	1	2	3	3	---	---
Padmounted	1	2	5	5	---	---
Overhead Conductor and Cables	1	2[1]	5	5	---	---
Streetlighting	1	2	x	x	---	---
Wood Poles under 15 years	1	2	x	x	---	---
Wood Poles over 15 years which have not been subject to intrusive inspection	1	2	x	x	10	10
Wood poles which passed intrusive inspection	---	---	---	---	20	20

(1) Patrol inspections in rural areas shall be increased to once per year in Extreme and Very High Fire Threat Zones in the following counties Imperial, Los Angeles, Orange, Riverside, Santa Barbara, San Bernardino, San Diego, and Ventura. Extreme and Very High Fire Threat Zones are designated on the Fire and Resource Assessment Program (FRAP) Map prepared by the California Department of Forestry and Fire Protection or the modified FRAP Map prepared by San Diego Gas & Electric Company (SDG&E) and adopted by Decision 12-01-032 in Phase 2 of Rulemaking 08-11-005. The fire-threat map is to be used to establish approximate boundaries and Utilities should use their own expertise and judgment to determine if local conditions require them to adjust the boundaries of the map.

Note: This General Order does not apply to cathodic protection systems associated with natural gas facilities.

Note: For the purpose of implementing the patrol and detailed inspection intervals in Table 1 above, the term "year" is defined as 12 consecutive calendar months starting the first full calendar month after an inspection is performed, plus or minus two full calendar months, not to exceed the end of the calendar year in which the next inspection is due.

VEGETATION MANAGEMENT PLAN

Vegetation Management

To deliver your electricity safely and reliably, the City of Shasta Lake follows a regular schedule for inspecting and trimming more than 60 miles of distribution lines and 15 miles of transmission lines in our service area. Throughout the year, the City will clear vegetation away from power lines, poles and transformers to reduce the chance of power outages. An annual tree trimming contract with contractors takes care of routine trimming and electric crews/contractors take care of emergency/dangerous trees. It is important to note that the City of Shasta Lake does not provide tree trimming services for electrical service connected to your home. Should trees near your service line require trimming, you or your tree trimming service may call the City to de-energize the lines before the project begins. There is no charge for this service.

Inspections

To maintain a reliable system, the City of Shasta Lake crews inspect all lines for vegetation issues at least once a year. This entails driving/walking the entire system and noting any issues to address such as lack of clearance or dead trees that pose a risk to the electric lines.

Tree Pruning

To maintain the reliability of the electrical system, the City generally needs 12 feet of space between tree canopies and overhead distribution power lines. But for fast-growing trees such as mulberry or eucalyptus, the City may need as much as 20 feet of clearance to prevent power outages. For transmission lines the City tries to keep the vegetation directly below to a minimum, and keep all trees cleared back a minimum of 20 feet.

Directional pruning

The City removes only branches that conflict with power lines. The City uses a technique called directional pruning to redirect a tree's growth away from the lines. This technique is recommended by the International Society of Arboriculture, the American National Standards Institute and the National Arbor Day Foundation.

The City will remove entire branches where they attach to the main trunk of the tree. This technique helps protect the tree from disease and insects.

Sometimes the situation requires pruning only one side of the tree, pruning one side more than the other, or pruning just the middle of the tree. These variations are known as side pruning or "V pruning." Trees may appear unbalanced at first, but a healthy tree will cope with the changes, and its appearance will soften over time.

Tree removal

The City cannot use direction pruning on some trees, such as redwoods or palms, because they grow straight up from a so-called central leader. When these trees are planted under power lines, the City must cut back the crown or remove the tree.

The City will remove trees to protect your property from potential hazards and to prevent tree-related power outages. If the City has a need to remove a tree on your property because of a potentially hazardous situation, the City will contact you ahead of time. The City will not charge you for the removal.

Vines

Vines growing on utility poles pose a danger to line workers and the public. If the vines grow into the high voltage wires, they can conduct electricity to the ground. They also pose a climbing hazard for any line worker performing maintenance on electric, phone or cable lines. The City will remove vines from poles during each routine tree-trimming cycle. You can help by keeping vines from growing near poles.

Ground-level Equipment

The City asks that you avoid planting any kind of vegetation within 8 feet of our green metal boxes that contain pad-mounted equipment. Please don't let any invasive plants grow over the top of the equipment, which can prevent us from opening the door. For the safety of our line workers, the City will need to remove any vegetation that poses a hazard. Keeping the space around this equipment clear has the added benefit of allowing the City of Shasta Lake Electric crews to restore power to you and your neighbors more quickly during an outage.

Herbicide Management

General

The full width of the established right of way should be treated with selective herbicide spraying to control woody-type "trees" and "brush". All vines on poles, guy wires and overhead stub poles should be treated on entire circuit. All equipment, herbicides, personnel, and materials necessary to perform the work shall be supplied by the contractor. Contractor employees involved in the application of herbicides and/or adjuvants must have all federal, state and local licenses, certificates and permits that are required by law. A licensed commercial pesticide applicator (MS) shall always be present on the job. In the event the property owners object to herbicide treatment of undesirable tree or brush species, the work shall be postponed for that area. Such problems shall be reported to City of Shasta Lake immediately. Contractors shall be responsible for any off right of way and/or chemical drift type damages. Contractors are fully responsible for proper disposal of all chemicals and containers. Contractors shall be responsible for locating sensitive and/or restricted non-vegetative right of way areas where herbicides, as specified on the manufacturer's label, should not be applied. All herbicide mixtures and formulations will be applied according to label directions and/or to manufacturers' recommendations. Under no circumstances shall herbicides be applied at rates exceeding label recommendations. Herbicides to be used shall be selected only from those labeled specifically for use on utility rights of ways.

Wetlands

Only a wetland approved herbicide may be used when spraying within 20' of a stream, river, pond, lake, or wetlands area. Under no circumstances shall any herbicide (wetlands approved or otherwise) be sprayed directly over water where no vegetation exists. Contractor shall not clean equipment, tanks, hoses, or other materials related to herbicide applications in streams, rivers, ponds, lakes, or wetland areas.

Documentation

Contractor shall provide City of Shasta Lake herbicide reports of all applications. Reports shall contain the following information: the location of herbicide application, the date applied, the amount applied, the name of each herbicide being applied and the name of the certified applicator.

Transmission Rights of Way and Integrated Vegetation Management

Vegetation Management of Transmission Rights-of-Way

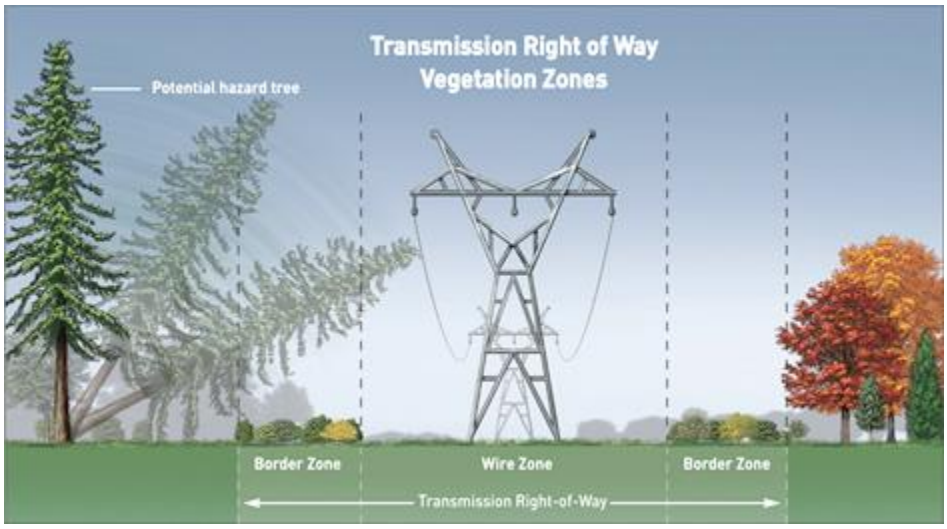
The City of Shasta Lake Electric Department utilizes a program of Integrated Vegetation Management (IVM) to manage vegetation on transmission rights-of-ways. Properly maintained right-of-way's (ROW) are essential for the safety of the public and our workers. The long-term goal of our vegetation management program is to provide for public safety, worker safety, and environmental safety while providing for reliable service.

Integrated Vegetation Management

The first step to creating a low growing plant community is to clear rights-of-way of tall growing and incompatible plant species. This is typically accomplished either mechanically or manually. Cutting or mowing alone is ineffective because it encourages the biological response of re-sprouting. After clearing, right-of-way's are monitored for re-sprouting and reinvasion by incompatible vegetation. Once this occurs, the right-of-way will be enhanced through various methods to provide the desired outcome of a low growing plant community. Many factors are considered before an appropriate method is chosen and implemented.

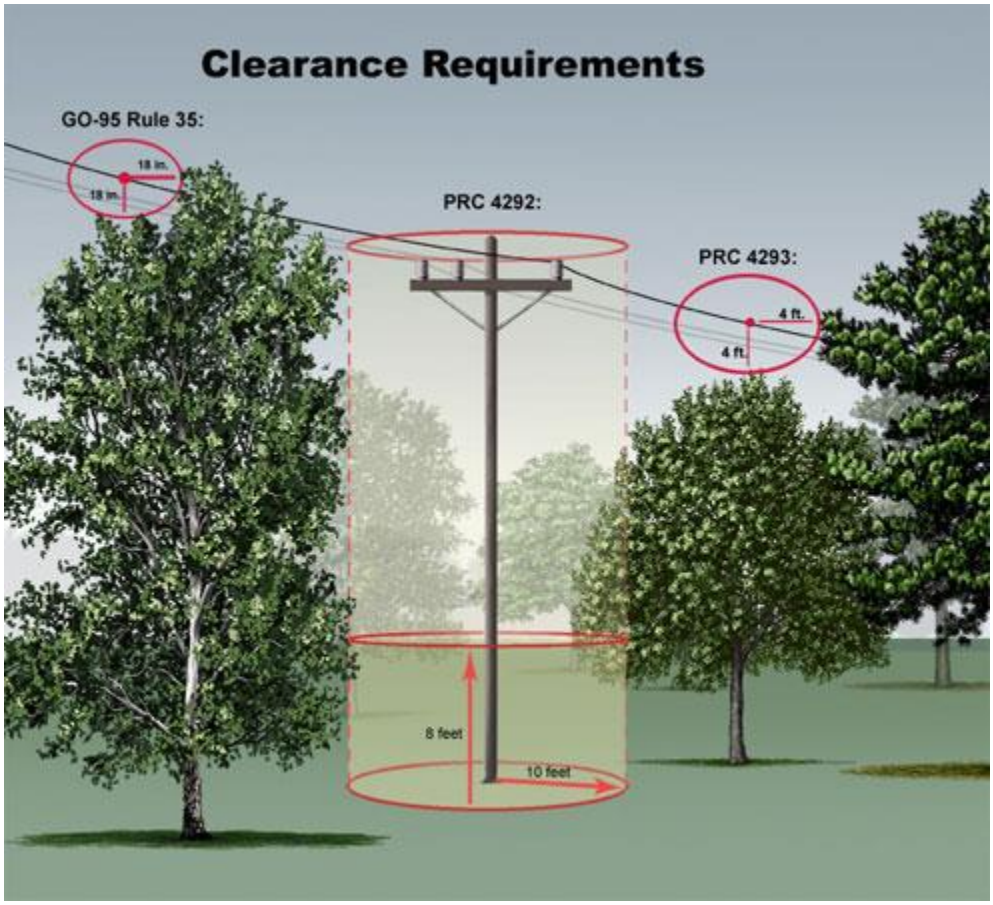
The Wire Zone Border Zone

The Wire Zone consists of low-growing shrub and grass communities directly under the transmission wires plus approximately 15' on both sides. The Border Zone, which is the portion of the right-of-way that extends from 10' outside of the wire to the edge of the ROW, is managed for taller shrubs, and brush plant community. This is the transition zone between the low-growing vegetation and taller.



Laws and Regulations

The City of Shasta Lake Electric Department is a California-based utility that follows the guidelines set forth by the California Public Utilities Commission (CPUC). The City of Shasta Lake Electric Department will obtain a reasonable amount of clearance beyond the minimum requirements to allow for several years' worth of growth, potential wind sway and other environmental factors. Distance obtained from the line after a pruning cycle may be more than 20 feet for fast growing species such as a mulberry or eucalyptus trees along distribution lines and for high voltage transmission lines 4 years or 40 feet of clearance is required.



There are rules and regulations designed to ensure public safety and electric service reliability. Major regulations covering vegetation management include:

- **Public Resource Code 4292: Firebreak Clearing**
  Utilities are required to maintain firebreaks around poles located in wild land areas during fire season that have certain equipment with the potential to emit sparks when operating properly.
- **Public Resource Code 4293: State Responsibility**
  Utilities are required to maintain clearance between vegetation and high voltage power lines during fire season in wild land areas to prevent wild fires. Also requires removal of dead, diseased or dying trees that could fall into power lines.
- **General Order 95: Utility Vegetation Management Requirements**
  Utilities are required to maintain clearance between vegetation and high voltage power lines at all times in all areas for public safety and electric system reliability.

- **North American Electric Reliability Council (NERC) Standard FAC-003-1: Transmission Vegetation Management Standard**
  FAC-003-1 is a Federal Energy Regulatory Commission (FERC) mandated standard, enforced by NERC which requires utilities to take preventative action to reduce widespread outages caused by vegetation conflicts on critical electric transmission lines over 60,000 volts. Utilities must have a formal vegetation management program that meets specific standards and maintains required clearances between vegetation and transmission electric facilities at all times in all conditions.

Public Resource Code, Section 4292: Power Line Hazard Reduction

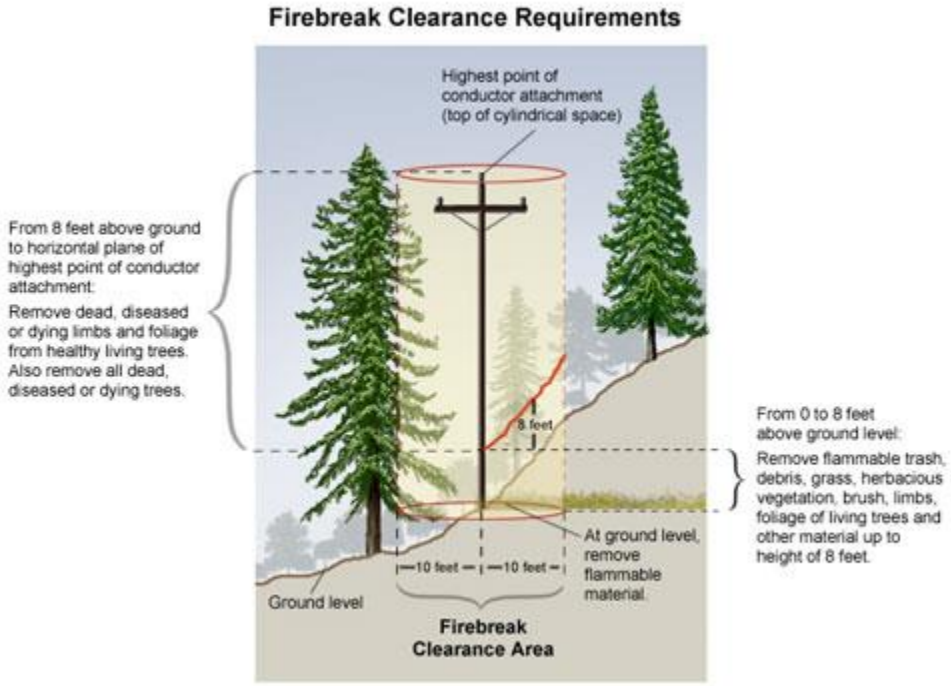
Except as otherwise provided in Section 4296, any person that owns, controls, operates, or maintains any electrical transmission or distribution line upon any mountainous land, or forest-covered land, brush-covered land, or grass-covered land shall, during such times and in such areas as are determined to be necessary by the director or the agency which has primary responsibility for fire protection of such areas, maintain around and adjacent to any pole or tower which supports a switch, fuse, transformer, lightning arrester, line junction, or dead end or corner pole, a firebreak which consists of a clearing of not less than 10 feet in each direction from the outer circumference of such pole or tower. This section does not, however, apply to any line which is used exclusively as telephone, telegraph, telephone or telegraph messenger call, fire or alarm line, or other line which is classed as a communication circuit by the Public Utilities Commission. The director or the agency which has primary fire protection responsibility for the protection of such areas may permit exceptions from the requirements of this section which are based upon the specific circumstances involved.

Section 1254 - Minimum Clearance Provisions

The firebreak clearances required by PRC 4292 are applicable within an imaginary cylindrical space surrounding each pole or tower on which a switch, fuse, transformer or lightning arrester is attached and surrounding each dead-end or corner pole, unless such pole or tower is exempt from minimum clearance requirements by provisions of 14, CCR, 1255 or PRC 4296. The radius of the cylindroid is 3.1 m (10 feet) measured horizontally from the outer circumference of the specified pole or tower with height equal to the distance from the intersection of the imaginary vertical exterior surface of the cylindroid with the ground to an intersection with a horizontal plane passing through the highest point at which a conductor is attached to such pole or tower. Flammable vegetation and materials located wholly or partially within the firebreak space shall be treated as follows:

- (a) At ground level - remove flammable materials, including but not limited to, ground litter, duff and dead or desiccated vegetation that will propagate fire, and;
- (b) From 0 - 2.4 m (0-8 feet) above ground level remove flammable trash, debris or other materials, grass, herbaceous and brush vegetation. All limbs and foliage of living trees shall be removed up to a height of 2.4 m (8 feet).
- (c) From 2.4 m (8 feet) to horizontal plane of highest point of conductor attachment remove dead, diseased or dying limbs and foliage from living sound trees and any dead, diseased or dying trees in their entirety.

Figure 1: Graphical representation of Section 1254 showing the minimum clearances required around a utility pole.



Public Resource Code, Section 4293: Line Clearance Guidelines

Except as otherwise provided in Sections 4294 to 4296, inclusive, any person that owns, controls, operates, or maintains any electrical transmission or distribution line upon any mountainous land, or in forest-covered land, brush-covered land, or grass-covered land shall, during such times and in such areas as are determined to be necessary by the director or the agency which has primary responsibility for the fire protection of such areas, maintain a clearance of the respective distances which are specified in this section in all directions between all vegetation and all conductors which are carrying electric current:

- (a) For any line which is operating at 2,400 or more volts, but less than 72,000 volts, four feet.
- (b) For any line which is operating at 72,000 or more volts, but less than 110,000 volts, six feet.
- (c) For any line which is operating at 110,000 or more volts, 10 feet.

In every case, such distance shall be sufficiently great to furnish the required clearance at any position of the wire, or conductor when the adjacent air temperature is 120 degrees Fahrenheit, or less. Dead trees, old decadent or rotten trees, trees weakened by decay or disease and trees or portions thereof that are leaning toward the line which may contact the line from the side or may fall on the line shall be felled, cut, or pruned so as to remove such hazard. The director or the agency which has primary responsibility for the fire protection of such areas may permit exceptions from the requirements of this section which are based upon the specific circumstances involved.

General Order 95, Rule 35: Tree Pruning

Where overhead wires pass through trees, safety and reliability of service demand that tree pruning be done in order that the wires may clear branches and foliage by a reasonable distance. The minimum clearances established in

Table 1, Case 13, measured between line conductors and vegetation under normal conditions, shall be maintained. (Also see Appendix E for tree pruning guidelines.)

When a utility has actual knowledge, obtained either through normal operating practices or notification to the utility, dead, rotten and diseased trees or portions thereof, that overhang or lean toward and may fall into a span, should be removed.

Communication and electric supply circuits, energized at 750 volts or less, including their service drops, should be kept clear of limbs and foliage, in new construction and when circuits are reconstructed or repaired, whenever practicable. When a utility has actual knowledge, obtained either through normal operating practices or notification to the utility, that any circuit energized at 750 volts or less shows strain or evidences abrasion form tree contact, the condition shall be corrected by slacking or rearranging the line, pruning the tree or placing mechanical protection or the conductor(s).

EXCEPTIONS:

1. Rule 35 requirements do not apply to conductors, or aerial cable that complies with Rule 57.4-C, energized at less than 60,000 volts, where pruning or removal is not practicable, and the conductor is separated from the tree with suitable materials or devices to avoid conductor damage by abrasion and grounding of the circuit through the tree.
2. Rule 35 requirements do not apply where the utility has made a "good faith" effort to obtain permission to prune or remove vegetation but permission was refused or unobtainable. A "good faith" effort shall consist of current documentation of a minimum of an attempted personal contact and a written communication, including documentation of mailing or delivery. However, this does not preclude other action or actions from demonstrating "good faith". If permission to prune or remove vegetation is unobtainable and requirements of exception 2 are met, the utility is not compelled to comply with the requirements of exception 1.
3. The Commission recognizes that unusual circumstances beyond the control of the utility may result in nonconformance with the rules. In such cases, the utility may be directed by the Commission to take prompt remedial action to come into conformance, whether or not the nonconformance gives rise to penalties or is alleged to fall within permitted exceptions or phase-in requirements.

   Note: Revised November 6,1992, by Resolution No. SU-15, September 20, 1996, by Decision No. 96-09-097 and January 29, 1997, by Decision No. 97-01-044.
4. Mature trees whose trunks and major limbs are located more than six inches, but less than 18 inches, from primary distribution conductors are exempt from the 19-inch minimum clearance requirement under this rule. The trunks and limbs to which this exemption applies shall only be those of sufficient strength and rigidity to prevent the trunk or limb from encroaching upon the six-inch minimum clearance under reasonable, foreseeable local wind and weather conditions. The utility shall bear the risk of determining whether this exemption applies, and the Commission shall have the final authority to determine whether the exemption applies in any specific instance, and to order hat corrective action be taken in accordance with this rule, if it determines that the exemption does not apply.

   Note: Added October 22, 1997, by Decision No. 97-10-056.

Appendix E

The following are guidelines to Rule 35.

The radial clearances shown below are minimum clearances that should be established, at time of pruning, between the vegetation and the energized conductors and associated live parts where practicable.
Vegetation management practices may make it advantageous to obtain greater clearances than those listed below:

A. Radial clearances for any conductor of a line operating at 2,400 or more volts, but less than 72,000 volts 4 feet

B. Radial clearances for any conductor of a line operating at 72,000 or more volts, but less than 110,000 volts 6 feet

C. Radial clearances for any conductor of a line operating at 110,000 or more volts, but less than 300,000 volts 10 feet

D. Radial clearances for any conductor of a line operating at 300,000 or more 15 feet

Table1:

Radial Clearances				
		Wire or Conductor Concerned		
Case No.	**Nature of Clearance**	**A Span Wires (Other than Trolley Span Wires) Overhead Guys and Messengers**	**B Communication Conductors (Including Open Wire, Cables and Service Drops), Supply Service Drops of 0 - 750 Volts**	**C Tolley Contact, Feeder and Span wires, 0 - 5,000 Volts**
13	Radial clearance of bare line conductors from tree branches or foliage (aaa)(ddd)	--	--	18 inches (bbb)

Radial Clearances					
		Wire or Conductor Concerned			
Case No.	**Nature of Clearance**	**D Supply Conductors of 0 - 750 Volts and Supply Cables Treated as in Rule 57.8**	**E Supply Conductors and Supply Cables, 750 - 22,500 Volts**	**F Supply Conductors and Supply Cables, 22.5 - 300 kV**	**G Supply Conductors and Supply Cables, 300 - 550 kV(mm)**
13	Radial clearance of bare line conductors from tree branches or foliage (aaa) (ddd)	--	18 inches (bbb)	1/4 pin spacing shown in table 2, Case 15 (bbb) (ccc)	1/2 pin spacing shown in table 2, Case 15

(aaa) Special requirements for communication and supply circuits energized at 0 - 750 volt

(bbb) May be Reduced for conductor of less than 60,000 volts when protected from abrasion and grounding by contact with tree.

(ccc) For 22.5 kV to 105 kV, minimum clearance shall be 18 inches.

(ddd) Clearances in this case shall be maintained for normal annual weather variations, rather than at 60 degrees, no wind.

SHASTA LAKE ELECTRIC UTILITY TREE PLANTING GUIDELINES FOR NEW DEVELOPMENT

- **OVERHEAD ELECTRIC LINES**

  New trees less than 20 feet from overhead high voltage lines (12000 Volts) should be selected to have a height of 25 feet or less when fully grown. Ground separation distances may need to be increased for trees of larger canopy to maintain 10 feet of safe clearance from limbs at all times.

  TREE SELECTOR WEBSITE: http://selectree.calpoly.edu

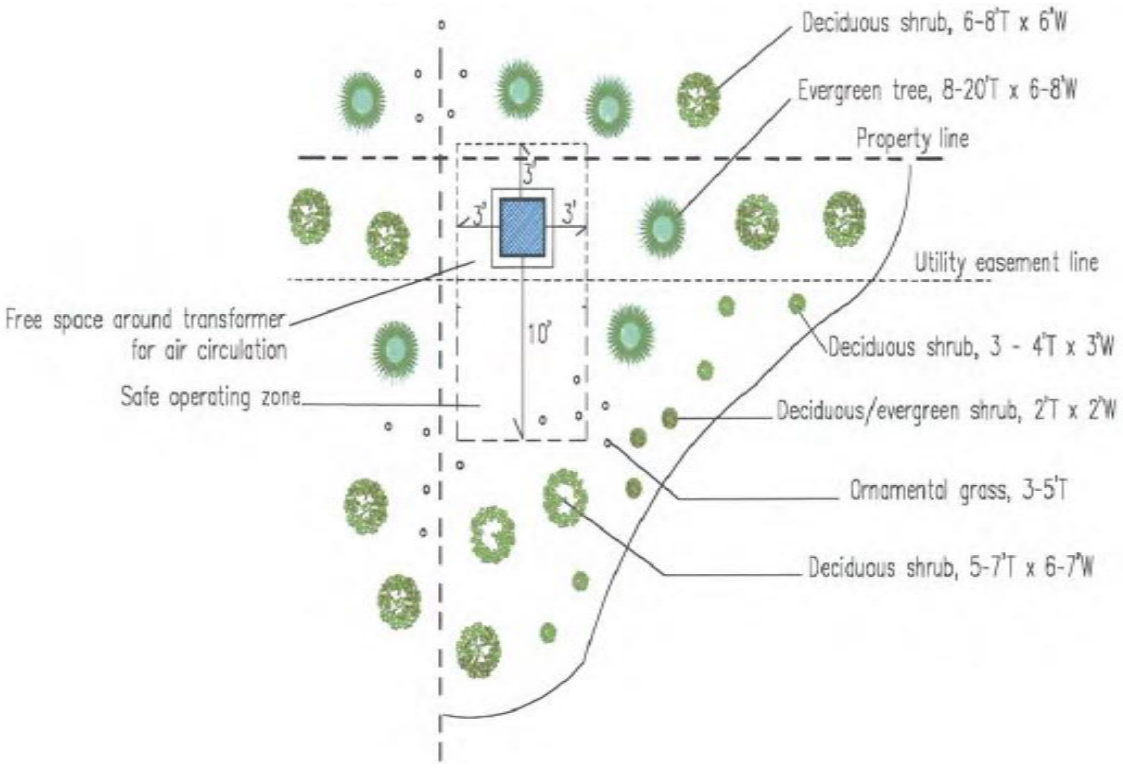
- **UNDERGROUND ELECTRIC LINES**

  Adequate room to operate electrical equipment is important to the reliability of the electric service and for the linemen to work safely. The linemen use long 8 foot fiberglass sticks to operate the equipment live when trouble is found or when system maintenance is required.

Planting near Pad Mounted Transformers

-10 feet of clearance is needed on transformer front

-3 feet on back and sides



NOTE: Pad mounted switches (PME/PMH style etc.) require 10 feet on both front and back to operate. Underground utility high voltage electric boxes/vaults should be located 10 feet from trees to avoid root damage and provide appropriate access.