

## **Redlines of Key Changes in the City of Palo Alto's 2021 Wildfire Mitigation Plan**

Below are redlines of the key changes between the City of Palo Alto's April 27, 2021 update to our Wildfire Mitigation Plan (WMP) and our December 16, 2019 WMP. Please see Appendix F near the end of the document; no other changes were made as part of this update, as the other provisions of our December 2019 remain relevant and timely.

Additionally, as part of our 2021 submission, the City of Palo Alto provided an Informational Response document, which responded to each of the recommendations made by the WSAB in the *Guidance Advisory Opinion for the 2021 Wildfire Mitigation Plans of Electric Publicly Owned Utilities and Cooperatives*.

The redlined version is intended to simplify the WMP's review process and is not part of or a supplement to the City of Palo Alto's WMP.

# Utilities Wildfire Mitigation Plan



April 27, 2021



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*PURPOSE*

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Devastating wildfires throughout the State of California have prompted electric utilities throughout the state to identify areas within their jurisdiction that are susceptible to power-line ignited wildfires and to take steps to prevent their occurrence. This plan outlines the processes and activities undertaken by the City of Palo Alto's Utilities Department (CPAU) to mitigate the threat of wildfires associated with overhead electric lines and associated equipment owned and operated by CPAU.

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*WILDFIRE RISK FACTORS*

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Located 35 miles south of San Francisco and 14 miles north of San Jose, Palo Alto is a community of approximately 67,082 residents. Part of the San Francisco Metropolitan Bay Area Palo Alto is located within Santa Clara County and borders San Mateo County. The City's boundaries extend from San Francisco Bay on the east to the Skyline Ridge of the coastal Santa Cruz mountains on the west, with Menlo Park to the north and Mountain View to the south. The City encompasses an area of approximately 26 square miles, of which one-third is open space (a majority being in the western foothills of the Santa Cruz mountains). The city is predominantly a flat urban setting with treelined streets transitioning into the sparsely populated and open space areas of the western foothills.

CPAU manages the 60kV subtransmission, 12kV and 4kV primary, and secondary electric distribution systems serving customers within the city limits. There are approximately 304 miles of primary distribution line in the city, of which 6% is in the western foothills area. Of the lines in the foothills, 56% are overhead bare conductors attached to insulators on wood poles. The remaining 44% is underground.

Palo Alto has long been a leader in addressing issues that are tied to climate change. Starting with the Sustainability Policy in 2000, to the Climate Protection Plan in 2007, and most recently adopting the Sustainability/Climate Action Plan in 2016. Palo Alto understands the wildfires occurring throughout California may well be a new norm and we must take a proactive approach to prevent this from happening in Palo Alto.

In 2011 CPAU hired a Consultant to perform a Hazard Risk Assessment to assess natural and man-made intentional hazard risks associated with the City of Palo Alto's Utilities Department's (CPAU's) electric, gas, water, wastewater and fiber utilities as a combined entity. The primary purpose of the assessment was to provide information on potential risk exposure and the financial responsibility for losses that could result from property damage, bodily injury and/or death, and interruption of business.

The evaluation was based on 14 different hazard types (9 natural, 5 man-made) which included wildfire in the Foothills area due to the impact of wind on electric facilities. Of all the hazards evaluated, wildfire due to wind in the foothills posed the highest financial risk.

Staff is in the process of negotiating a contract with a consultant to conduct a review and update the Risk Assessment specifically for the impact of wildfire in the foothills attributed to the electric system.

Within CPAU's service territory and the surrounding areas, the primary risk drivers for wildfire are the following:

- Vegetation type;
- Vegetation Density;
- Weather;
- High winds;
- Terrain;
- Changing Weather Patterns (Climate Change)
- Extended drought;
- Electric system maintenance and construction practices and methods
- Electric system operating practices
- Vegetation management practices

### *COMPLIANCE*

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This plan is prepared in compliance with [Senate Bill \(SB\) 901](#), which amended Public Utilities Code Section 8387 by establishing several new policies and programs to help address the increased risk of wildfires across the state. The bill further directed California's electric utilities to develop wildfire mitigation plans regarding power lines and equipment. Public electric Utilities such as Palo Alto must annually prepare a wildfire mitigation plan; receive an independent review to assess compliance, and ensure it complies with all applicable rules, regulations, and standards; and present it to their governing body at a noticed public meeting for comment.

This plan applies to areas identified as a High Fire Threat in the California Public Utilities Commission (CPUC) State Firemap. As of 2019, the High Fire Threat Area in Palo Alto is all areas with the city limits west of Highway 280 (Foothills Area). Adjoining areas in other cities and jurisdictions are included in PG&E's Wildfire Mitigation Plan.

This plan also touches on several areas of the CPAU Strategic Plan by "identifying high priority issues that interfere with emergency services and recovery times and develops plans

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to improve resiliency, engage stakeholders and strengthen collaboration to achieve a shared objective, and enhance planned maintenance programs with clearly defined plans.”<sup>1</sup>

## *OBJECTIVES*

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The overarching objective of the work instituted by CPAU in this plan is to eliminate electrical faults on the overhead electrical system in the High Fire Threat Area in Palo Alto, thereby eliminating power-line ignited wildfires and the ensuing risk to life and property. But this is a stretch goal that cannot be 100% guaranteed through changes to the electric system as outside forces can impact even the most robust construction. Even if all electric facilities were underground, there still exists the possibility, though at much lower probability, that a fault on the underground electric system could be a source of ignition of a wildfire.

### **Minimizing Sources of Ignition**

The primary goal of this Wildfire Mitigation Plan is to minimize the probability that CPAU’s distribution system may be an original or contributing source for the ignition of a fire. CPAU continues to evaluate the prudent and cost-effective improvements to its physical assets, operations, and training that can help to meet this objective and has implemented, or plans to implement, those changes consistent with this evaluation. These improvements include: changes to construction practices; increased inspection and maintenance; new and revised operating practices during periods of high fire threat; and increase in staff awareness.

### **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 of this plan, CPAU assesses new industry practices and technologies that will reduce the likelihood of a disruption in service, minimize the impact to customers, and improve the time of service restoration should there be a wildfire that impacts the electric system.

### **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, CPAU will determine which modification or replacement is required, or what new actions should be implemented to improve the plan. This plan will also help determine if more cost-effective measures would produce the same or better results.

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<sup>1</sup> 2018 City of Palo Alto Utilities Strategic Plan – Priority 4, Strategy 5, Action4.



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## *DEFINITIONS*

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*Deenergization* – to shut off electrical power. This can be either planned (intentional act by Utilities staff) or unplanned (a short circuit causes a protective device, e.g. circuit breaker, to open causing an outage).

*Fault* – refers to short circuits on an electric system. Examples include a bird or tree making contact between wires, a piece of equipment failing, or wires coming together because of severe wind or car pole accident.

*Fuses* – equipment used to isolate faults on the electric system. This is basically a piece of wire that melts and breaks an electric circuit if the current exceeds a safe level.

*High Fire Threat Area* – areas that are at an elevated or extreme risk of power line ignited wildfire as identified during the CPUC State Firemap development process.

*PSPS* – Public Safety Power Shutoff

*Public Safety Power Shutoff* – a proactive deenergization of the electric system by the utility during periods of high fire threat to prevent power-line ignited wildfires.

*Recloser* – circuit breakers on the distribution system that will sense the occurrence of a short circuit and automatically open, shutting off power. They can be programmed to automatically reclose, to restore power after opening or can be remotely or manually reclosed.

*Reclose* – the action of closing a device after it has automatically opened due to a short circuit on the electrical system. Some devices, such as Reclosers and Substation Circuit Breakers, can be programmed to automatically reclose.

*SCADA* – “Supervisory Control and Data Acquisition”, is the system used by CPAU to remotely monitor the status and operate equipment on the electric system.

*Tier level* – the CPUC State Firemap assigns Tier levels to all areas of California based on their risk of wildfires.

Tier 1: Moderate Risk – any area not designated Tier 2 or 3

Tier 2: Elevated risk – A greater likelihood of utility-associated wildfire that would impact people/property; and where enhanced utility regulations could be expected to reduce utility-fire risk

Tier 3: Extreme risk – The highest likelihood of utility-associated wildfire that would impact people/property; and where the most restrictive utility regulations could be necessary to reduce utility-fire risk.

*Wildfire* – a sweeping and destructive conflagration {fire} especially in a wilderness or a rural area.<sup>2</sup>

### *ROLES AND RESPONSIBILITIES - CITY OF PALO ALTO DEPARTMENTS*

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CPAU will work with other Departments of the city to mitigate the threat of wildfires that could impact the city and residents. These departments work individually and together to:

- Ensure the electric system operates in a manner that will minimize potential wildfire risks.
- Take all reasonable and practicable actions to minimize the risk of a catastrophic wildfire caused by CPAU electric facilities.
- Coordinate with federal, state, and local fire management personnel as necessary or appropriate to implement CPAU's Wildfire Mitigation Plan.
- Immediately report fires, pursuant to existing department practices and the requirements of this Wildfire Mitigation Plan.
- Take corrective action when the staff witnesses or is notified that fire protection measures have not been properly installed or maintained.
- Comply with relevant federal, state, and industry standard requirements, including the industry standards established by the CPUC.
- Collect and maintain wildfire data necessary for the implementation of this Wildfire Mitigation Plan.
- Provide regular training programs for all employees having obligations for implementation of this Wildfire Mitigation Plan.

#### **Utilities Department**

The City of Palo Alto is the only municipality in California that operates a full suite of City-owned utility services (electric, water, natural gas, wastewater, fiber optic). CPAU manages these services and has been providing quality service to the citizens and businesses of Palo Alto since 1896.

CPAU is responsible for the design, construction, maintenance, and operation of the utility electric and water systems in the City of Palo Alto and is the lead on all utility system mitigation activities. Various personnel within Utilities are involved with creating and

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<sup>2</sup> Definition cited from Merriam - Webster Dictionary

implementing the tasks in this plan. Detailed roles and responsibilities for Utilities Department staff are shown in Appendix D.

The Electric Engineering and Electric Operations Managers are responsible for ensuring that this mitigation plan is prepared, completed, and updated as planned. Electric Engineering staff are responsible for activities related to design, policies and procedures, and contractor selection. Electric Operations staff are responsible for operating, construction, inspection, and maintenance activities, and overseeing the completion of field mitigation activities by other city departments.

### **Urban Forestry Division of the Public Works Department**

The Urban Forestry Division (URBAN FORESTRY) maintains nearly 66,000 trees in Palo Alto's urban and rural areas. The urban forest consists of all trees in the City, public and private street trees, park trees, forested park-lands and trees on private property.

City Staff, in-house tree crews, and contractors plant, prune, maintain, and remove public trees; clear vegetation from utility lines; issue tree permits and monitor tree protection for development and capital improvement projects; field resident questions and requests; and attend to tree emergencies.

### **Fire Department**

The Palo Alto Fire Department (FIRE) strives to apply the best practices in fire, rescue and emergency services, and uses innovative approaches to protect the citizens and businesses in Palo Alto. They are committed to reducing the community's risk from fire and other emergencies and focus a great deal of resources to identify, mitigate and prevent hazards that could cause fires or other emergencies.

FIRE is a first responder to any fire incidence and a key resource in helping to assess hazards for proactive mitigation and prepare reaction plans prior to a fire occurring.

### **Open Space and Parks Division of the Community Services Department**

Open Space and Parks (OPEN SPACE) is responsible for the maintenance of 174 developed acres of urban park lands and 2000 acres of "rural" open space areas in the western foothills of Palo Alto.

A portion of the High Fire Threat area in Palo Alto includes two open space preserves.

- Foothills Park is a 1,400-acres preserve with rugged chaparral, woodland, fields, streams, a lake, and 15 miles of trails. It is bounded by Portola Valley, Los Altos Hills, Pearson-Arastradero Preserve and Los Trancos Open Space Preserve in Portola Valley.

- Pearson Arastradero Preserve is 622 acres of grassland, riparian and oak woodland habitat. It has nine miles of trails and two small lakes. Hikers, equestrians and cyclists use the preserve. It is bounded by Stanford, Los Altos Hills, Portola Valley, and Foothills Park.

Rangers and other division staff maintain and operate facilities in Foothills Park and provide an onsite presence to identify and alert city personnel to issues that affect the park or surrounding areas.

### **Office of Emergency Services**

The Office of Emergency Services' (OES) mission is to prevent, prepare for, mitigate, respond to, and recover from all hazards. They develop, maintain, and sustain a citywide, comprehensive, all-hazard, risk-based emergency management program that engages the whole community.

OES manages and coordinates the overall emergency response and recovery activities and is key to ensuring all necessary coordination and communication with the community, governmental agencies, or emergency responders is accomplished in a systematic and complete manner.

### *COMPLETED TASKS*

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#### **City of Palo Alto Foothills Fire Management Plan**

The Foothills Fire Management Plan<sup>3</sup> addresses a broad range of integrated activities and planning documents to address and mitigate the impacts of fire hazards in the Foothills area. The Fire Management Plan Update addresses the following key items:

- Fire Hazard Assessment
- Regional Evacuation Routes
- Wildland Fire Management Recommendations and Mitigations
- Recommendations for specific high-threat areas
- Management Plan
- Review of Municipal Ordinances
- Staffing of the fire station closest to the Foothills
- Implementation Plan and Identification of Potential Funding

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<sup>3</sup> Available at <https://www.cityofpaloalto.org/civicax/filebank/documents/61522> and last updated in January 2017

The plan was developed by the City of Palo Alto's Urban Forestry, Fire, and Open Space staff in collaboration with, or with input from, various stakeholders including:

Arrillaga Property: 500 Los Trancos Road	Pony Tracks Ranch
CAL FIRE	Portola Pasture Stables
Friends of Foothills Park	San Mateo County FireSafe Council
Grassroots Ecology (formerly Acterra)	San Mateo County Sheriff
Los Altos Hills Fire District	Santa Clara County Fire Department
Los Altos Hills: ARES/RACES	South Skyline Association
Los Trancos Water District	Stanford Community Residential Leaseholders (SCRL)
Los Trancos Woods Neighborhood	Stanford University
Menlo Park Fire District	Town of Los Altos Hills
Midpeninsula Regional Open Space District	Vista Verde Community Association
PA Protect Our Open Space	Woodside Fire Protection District
Palo Alto Hills Neighborhood Association	

### **High Fire Threat Area Identification**

In 2012, the CPUC ordered the development of a statewide map (Fire-Threat Map) designed specifically for the purpose of identifying areas where there is an increased risk for utility associated wildfires (Attachment B). Publicly Owned Utilities, though not under the jurisdiction of the CPUC, participated in development of the Fire-Threat Map. CPAU took the responsibility of acting as the "territory lead" and performed the assessment of the geographical areas under their responsibility. CPAU worked with local fire departments, the City's Urban Forestry staff, communications companies, and the adjoining electric utility, and with the assistance of a fire science consultant determined the areas within the City's jurisdiction that are at an elevated or extreme risk of power line ignited wildfire.

The High Fire Threat Area in Palo Alto was identified as all areas within the city limits west of Highway 280 (see Attachment C) and is rated as Tier 2 – Elevated Risk, no other areas in Palo Alto were identified for inclusion in the Fire Threat Map. High Fire Threat areas require more stringent construction, vegetation management, and inspection requirements as listed in CPUC General Order 95 – Rules for Overhead Line Construction ("GO 95"). Though not governed by these rules, CPAU follows them as a minimum industry safety standard for construction of its electric lines.

### **Public Utility Code 8387 (SB 1028)**

SB 1028 mandated that the governing boards of local publicly owned electric utilities determine wildfires risk in certain geographic areas. Specifically, governing bodies are to determine whether any portion of an area within its jurisdiction has a "significant risk of catastrophic wildfire" resulting from the utility's electrical lines and equipment.

On August 20, 2018, the Palo Alto City Council determined that the area within City limits west of Highway 280 (Foothills area) is at significant risk of catastrophic wildfire resulting from electric lines. They also approved mitigation measures that Public Works and Utilities staff will implement to reduce the risk of wildfire.

## *ONGOING FIRE PREVENTION ACTIVITIES*

### **Vegetation Management**

Responsibility: Electric Operations Manager will coordinate activities with Manager Urban Forestry

CPAU, through the efforts of Urban Forestry, meets or exceeds the minimum industry standard vegetation management practices. Specifically, CPAU meets the standards articulated in: (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 (See table below). These standards require significantly increased clearances in the High Fire Threat Areas. The rules establish a minimum clearance and a guideline for clearance distance at the time of trimming requirement between conductors and trees. Clearance distance at the time of trimming are discretionary guidelines. Urban Forestry will use specific knowledge of growing conditions and tree species to determine the appropriate clearance distance. Urban Forestry will also clear ground vegetation around the base of a pole to minimize the chance of fires.

Within the High Fire Threat Area, Urban Forestry performs an evaluation of every tree that has the potential to have branches strike, or the entire tree fall into, the overhead facilities. Urban Forestry performs more frequent and detailed inspections of these trees, and in severe cases will work with the land owner to remove the tree.

General Order 95: Rule 35		Appendix E
Type of Clearance	Minimum Clearance	Clearance at time of trim (allows for tree growth between tree trimming)
Radial clearance of bare line conductors from tree branches or foliage	1.5 feet	4 feet
Radial clearance of bare line conductors from vegetation in the Fire-Threat District	4 feet	12 feet

**Table 1: Minimum allowable clearances of overhead primary (12,000 Volt) electric lines from vegetation, stipulated in CPUC General Order 95.**

**Electric System Inspection**

Responsibility: Electric Operations Manager

CPAU meets or exceeds the minimum inspection requirements provided in CPUC GO 165 and CPUC GO 95, Rule 18. Pursuant to these rules, CPAU inspects electric facilities in the High Fire Threat Area more frequently than the other areas of its service territory. Additionally, CPAU staff uses their knowledge of the specific environmental and geographical conditions to determine when areas outside of the High Fire Threat Area require more frequent inspections. CPAU also uses infrared scanning of our facilities to detect problems before they reach a point of failure.

If staff discovers a facility in need of repair that is owned by an entity other than CPAU, we issue a notice to repair to the facility owner and works to ensure that necessary repairs are completed promptly.

CPAU works to ensure that all inspections within the High Fire Threat Area are completed before the beginning of the historic fire season, typically June 1<sup>st</sup>. CPAU monitors drought conditions and other relevant factors throughout the year to determine if inspections should be completed on a shorter timeframe.

Future overhead electric line inspections in the High Fire Threat Area will be coordinated between CPAU, FIRE, URBAN FORESTRY, OPEN SPACE, and OES staff, as required, to ensure all needs are met.

**Electric System Maintenance**

Responsibility: Electric Operations Manager

Maintenance work is identified through several methods including:

- Visual Inspection by CPAU Staff – staff performs an annual visual inspection of all overhead facilities in the High Fire Threat Area.
- Wood pole inspection and treatment program – staff contracts out to perform inspection and treatment of all wood poles in the city on a 10-year cycle. Poles identified for replacement are done so on a priority basis depending on level of deterioration.
- Notification by other City staff or outside sources – staff will act as necessary on the identification of issues by CPAU staff, other City staff, outside utility sources (PG&E, AT&T, etc.) or citizens.

Work is scheduled and accomplished as needed by CPAU or contract staff based on priorities set by CPAU.



**Training**

Responsibility: Electric Engineering and Operations Managers

Staff within CPAU's Engineering and Operations Divisions have received an overview of the development of measures to reduce the risk of power line-ignited fires. As of this first iteration of the Wildfire Mitigation plan, CPAU is developing related processes and procedures as applicable. Training will commence once these are finalized and will include general readiness requirements and guidance from FIRE.

CPAU is reviewing and updating as needed the procedures to prepare for and respond to load shedding requirements due to influences outside of the City, i.e. high voltage transmission line outages. Load shedding may be required if the impact of deenergization of a transmission line impacts the stability of the transmission network. The determination is made by the California Independent System Operator (CAISO) who makes the call to reduce electrical demand on the system. Depending on the amount of decrease required, load shedding could result in rolling blackouts for Palo Alto customers.

**Electric System Design/Operation**

Responsibility: Electric Engineering and Operations Managers

- Reclosers – there are two reclosers on the electric distribution line in the Foothills Area. Both devices will automatically open when they sense the large amount of current that flows when a fault (short circuit) occurs on the line. Both can also automatically close (i.e. reclose) after a preset time delay. To minimize the risk of causing a fire, this reclosing capability is permanently disabled on both reclosers and the circuit breaker at the substation. Before the recloser is manually/remotely closed, CPAU staff will patrol the lines to identify the cause, repair the line as needed, or ensure that the cause of the outage is no longer present. Disabling the reclosing capability could result in longer duration outages due to the time required for line patrolling and manual closing of the equipment to restore power.
- Fuses – the fuses used in the High Fire Threat Area are “non-expulsion” type, meaning when they blow due to a fault, any hot metal of the fuse is contained within the fuse holder and does not fall to the ground where it could ignite dry vegetation.
- Protective device coordination – Staff has performed protective device coordination studies to ensure that a fault on the line is isolated as quickly as possible and the impact is limited to the smallest area possible. This also aids during troubleshooting to identify the location and cause of the outage after it has occurred. The fuses have been changed on the distribution system based on these studies.
- Staff Notification – staff will be notified when pending high fire threat conditions are identified. Deenergization protocols, in development, will be implemented.



- Deenergization – Often referred to as a Public Safety Power Shutoff (PSPS) CPAU has the authority to preemptively shut off power due to high fire-threat conditions; however, this option will only be used in extraordinary circumstances. CPAU considers a PSPS as a last resort to eliminate the possibility of a wildfire caused by overhead electric equipment and is only expected to occur during extreme weather conditions. A PSPS will impact all electrical customers in the High Fire Threat Area for the duration of the extreme weather conditions and the time afterward to inspect all facilities and make repairs as necessary. Because of this CPAU has drafted the PSPS policy and procedures on identification of the fire threat condition that will dictate deenergization, the authorization process to implement, a pre/post communication process to notify customers and outside entities, and post inspection/restoration. PSPS communication is coordinated with OES staff. The decision to institute a PSPS includes working with CPAU’s Water utility staff to determine if pumping water up to the reservoirs located in the Foothills Area in advance of shutting off power should occur to ensure there is sufficient water and water pressure for firefighting activities, should they be necessary. CPAU, in conjunction with City Staff, will make a case-by-case decision to shut off power based on the following considerations:
  - Red Flag Warnings issued by the National Weather Service for fire weather zones that include the Foothills Area;
  - City staff assessments of local conditions, including wind speed (sustained and gust), humidity and temperature, fuel moisture, fuel loading and data from weather stations;
  - Real-time information from staff located in areas identified as at risk of being subject to extreme weather conditions;
  - Input from City fire experts and vegetation experts;
  - Input from local and state fire authorities regarding the potential consequences of wildfires in select locations;
  - Awareness of mandatory or voluntary evacuation orders in place;
  - Expected impact of de-energizing circuits on essential services;
  - On-going fire activity throughout the City’s territory and California;
  - Notifications to local governments and public officials; and
  - Safety and potential impacts to communities and customers

The plan to deenergize includes procedures for communications with customers, residents, and outside agencies, and power restoration after the threat passes. The lines must be patrolled and inspected to ensure there is no damage before restoring power. Approval of the CPAU PSPS policy and procedure should be completed by January 2020. A draft of the PSPS policy is included in Appendix G.

During the October 2019 Red Flag Warnings for the Santa Cruz Mountains, CPAU staff utilized a PG&E website of weather stations<sup>4</sup> to monitor weather conditions in the Palo Alto High Fire Threat Area. CPAU is installing a weather station at one of our water reservoirs in the High Fire Threat Area. This should be completed by the end of 2019.

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## *PROPOSED ACTIVITIES TO REDUCE RISK OR IMPROVE RESPONSE*

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### **CPAU – Electric**

Responsibility: Electric Engineering and Operations Managers

- Electric Service Restoration after an Outage – CPAU is assessing current practices and procedures for troubleshooting outages to identify the cause and restore power to identify any process improvements that may be necessary, or equipment that could be installed, that would decrease the restoration time without sacrificing safety. All deenergized lines will undergo a full visual inspection prior to reenergization (i.e. restoring power to customers).
- Refine Construction Practices – CPAU staff is evaluating the current construction practices for overhead distribution lines in the High Fire Threat Areas and will identify and implement practices that could reduce the likelihood of utility line caused fires and outages, and increase the resiliency of the line should one occur. Staff will implement changes brought about by experience and industry best practices. This could include alternative pole/crossarm types (steel/composite/fiberglass vs wood) that will withstand fire and improve resiliency; insulated overhead wire (tree wire); different line construction techniques (triangular/vertical vs crossarm); raptor (bird) protection at electric equipment; increased pole loading safety factors; and replacement of protective devices (line breaker vs fuses) for improved response time. Staff will also review possible improvements to the fiber optic cables used for the communication needs of utility and city facilities.
- Rebuild/reroute Overhead Line – based on the findings of new construction practices, CPAU staff will determine the cost and feasibility of rebuilding the approximately 11 miles of overhead line, as necessary. This could include rerouting to avoid vegetation and improve access for inspection and maintenance.
- Convert overhead lines to underground – where possible the feasibility of converting the overhead lines to underground will be assessed. Because of the terrain, there will be areas where this will not be possible.
- SCADA switch to facilitate line deenergization – to facilitate the ability to quickly shut off power on the line serving the Palo Alto foothills, CPAU staff will install a remotely operable switch at a select location. This switch will give Electric Dispatch Operators at

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<sup>4</sup> [https://www.pge.com/en\\_US/safety/emergency-preparedness/natural-disaster/wildfires/pmps-weather-map.page](https://www.pge.com/en_US/safety/emergency-preparedness/natural-disaster/wildfires/pmps-weather-map.page) , Page Mill Road location

the Utility Control Center the capability to deenergize the line immediately, when a decision is made.

- Drone inspection of utility lines and vegetation – because of the inaccessibility of some portions of the overhead lines, staff may seek the capability to inspect the lines, pole top equipment, poles, and vegetation clearance using aerial drones. This will give close-up visual access to many things that can only be viewed from the ground. Past investigation into this technology several years ago showed that it was not capable of providing the photo/video resolution necessary to adequately and reliably analyze the condition of infrastructure. Newer technologies may prove to be more capable for this task. The decision to move forward with this activity will depend on progress made with rebuilding/changing the existing overhead lines.
- Additional activities will/could be identified by CPAU staff during completion of the work identified in this plan or through the annual overhead line inspection process. These will be added and tracked on the status of proposed activities sheet in Appendix F.

## **CPAU – Fiber**

Responsibility: Electric Engineering and Operations Managers

- Communications System Improvements – there is a need to improve communications for personnel in the foothills. There are spots where radio communications are spotty or non-existent. CPAU is working with OES to facilitate improvements by installing additional fiber optic cables to a proposed location for a new antenna.

## **CPAU – Water**

Responsibility: WGW Engineering and Operations Managers

- Proactive pumping of water up to reservoirs – part of the procedures for identifying fire threat conditions and the decision to deenergize power lines will include working with CPAU's Water utility staff to determine if pumping water up to the reservoirs located in the Foothills Area in advance of shutting off power should occur to ensure there is sufficient water and water pressure for firefighting activities, should they be necessary.
- Emergency generators – CPAU will assess the need for emergency diesel backup generators at key utilities facilities, if needed.

## **URBAN FORESTRY**

Responsibility: Electric Operations Manager will coordinate activities with Urban Forestry

- Urban Forestry performs an evaluation of every tree that has the potential to strike overhead facilities if it were to fall. Urban Forestry performs more frequent or detailed inspections of any trees considered high risk or species that exhibit rapid regrowth, and in severe cases will work with the land owner to remove the tree.

- Additional activities are documented in the City of Palo Alto Foothills Fire Management Plan – 2016 Update

## **FIRE**

Responsibility: Electric Operations Manager will coordinate activities with FIRE

- Site Visits – FIRE will perform site inspections on private property to assess defensible space around homes, home construction, and access for emergency responders necessary to prevent damage due to wildfires.
- Controlled Burns – FIRE will assess the need, seek approval for, and carry out any controlled burns in the Foothills Area during the cooler months to reduce fuel buildup and decrease the likelihood of serious wildfires. This will be coordinated with the partner agencies and groups.
- Fire Threat condition monitoring – FIRE will work with CPAU on development of the process to monitor 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.
  - Fire warnings provided by OES

One of four operating conditions will be determined based on the relevant weather data and knowledge of local conditions:

1. Normal: During normal conditions, no changes are made to operations or work policy.
2. Elevated: During elevated fire-risk conditions.
3. Extreme: During extreme fire-risk conditions.
4. Red Flag: If the National Weather Service declares a Red Flag Warning for any portion of CPAU’s service territory.

The decision to deenergize electric lines in the Foothills Area will be made jointly and determined during this evaluation.

- Additional activities are documented in the City of Palo Alto Foothills Fire Management Plan – 2016 Update

## **OPEN SPACE**

Responsibility: Electric Operations Manager will coordinate activities with OPEN SPACE

- Fuel Reduction – Per the Foothills Fire Management Plan, overseeing the removal of built up and annual fuel from roadsides, structures inside preserves, high-use public areas,

evacuation routes, and fire breaks using contractors and park staff through mowing, sawing, and disk lines.

- Patrol – Rangers actively monitor fire danger in type 6 patrol trucks. OPEN SPACE staff informs the public of high fire danger and enforces fire restrictions inside Foothills Park and Pearson Arastradero Preserve.

## **OES**

Responsibility: Utilities Communications Manager will coordinate activities with OES

Situational awareness. OES contributes to the daily monitoring of threats and hazards to the Palo Alto area of interest and shares relevant information within the local and regional community. This also includes introducing advanced technologies to increase our perspective of this hazard area.

Community education and training. OES provides online content, hosts community education sessions, and supports neighborhood preparedness efforts.

Emergency response planning – OES participates in regional planning efforts, continues to evolve existing plans and develop additional emergency related plans.

Alerts and Warnings - OES has procedures for communication with residents during emergencies that are documented in the City Emergency Operations plan and are not included in this document.<sup>5</sup>

## *RESPONSE TO WILDFIRE INCIDENT*

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Responsibility: Response to a wildfire incident will be guided by the City Emergency Operations plan

## **FIRE**

FIRE takes the lead with suppression of any fires and will coordinate efforts with adjoining agencies and if necessary, request mutual aid assistance. They will also, based on their firefighting efforts, determine the evacuation routes for residents and anyone else caught in the area. Evacuation activities are carried out by the Palo Alto Police Department.

---

<sup>5</sup> The City Emergency Operations Plan is on the City website at the following link:  
<https://www.cityofpaloalto.org/civicax/filebank/documents/34121> .

## **OPEN SPACE**

Rangers will provide FIRE with an initial size up of a fire and under direction of FIRE do initial attack with type 6 patrol trucks until FIRE units arrive. Rangers will also initiate Open Space preserve evacuations and direct visitors to safety zones.

## **Communication**

OES will assess the situation and take the lead in activating the Emergency Operations Center (EOC) as necessary, establishing communication with other city and county agencies, coordinate the communication between the EOC and city staff, and coordinate the process of timely release of information to the press and general public.

OES has procedures documented in the City Emergency Operations plan and they are not included in this document.

CPAU will use their own communication channels to coordinate deenergization and restoration efforts of facilities shared with PG&E and AT&T.

## **Emergency Vehicle access**

Activities to maintain access to the Foothills area are documented in the City of Palo Alto Foothills Fire Management Plan – 2016 Update

## **Resident Evacuation routes**

Activities to maintain evacuation routes from the Foothills area are documented in the City of Palo Alto Foothills Fire Management Plan – 2016 Update

## **Mutual Aid**

CPAU – CPAU has mutual aid agreements with “California Utilities Emergency Association” and the “American Public Power Association”. Should there be a wildfire in the foothills, CPAU would call on outside assistance to rebuild the line, as necessary. As part of the review of construction practices and possible line rebuild, keeping the line intact and usable after a fire is a key criterion of any new construction.

FIRE – FIRE has procedures for requesting mutual aid and these are not documented in this plan.

OES – OES has procedures for requesting mutual aid and these are not documented in this plan.

## **CPAU**

During a fire – As a “Disaster Service Worker”, utilities staff will assist other city emergency responders with any activities required of staff. This could include deenergization of electric

lines, clearing of debris, assistance with evacuation, ensuring availability of water, and communication with customers and other utilities (PG&E, AT&T, etc.). Utilities staff will standby for direction from FIRE, Police, and Office of Emergency Services direction.

Electric Service Restoration after a wildfire or deenergization due to wildfire concerns – It may become necessary to deenergize all or portions of the utility electric lines in the foothills. Utilities Operations staff will deenergize electric lines as necessary for safety, fire prevention, and to facilitate firefighting efforts. Activities to restore power will be coordinated with FIRE and would not occur until deemed safe by FIRE.

Before restoring power after a wildfire or proactive deenergization, Utilities staff will perform a full visual inspection of the overhead electric lines. Any damage or hazardous conditions will be repaired before the lines are reenergized. In general, the repairs will be identified, necessary repairs triaged; and then repairs made to restore power as soon as possible. Work will include coordination with PG&E as appropriate and with the Utilities Communication Manager for community outreach.

## *COMMUNITY OUTREACH*

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### **About Wildfire Mitigation Plan**

CPAU will present this Wildfire Mitigation Plan to Council in December 2019.

### **Prior to proactive deenergization**

Notification of deenergization – FIRE, Police, Emergency Services, Water Utility, Telephone, Emergency Operations Center activation, Health Care facilities, and affected Customers

CPAU communications staff will work with OES to develop communication protocol to ensure stakeholders, customers/residents, and critical first responders (health care facilities, communication companies, neighboring agencies, etc.) are notified of any impending Utility activities that will impact electric service in the foothills.

### **Prior to restoring power**

CPAU communications staff will work with OES to provide timely updates on status and conditions related to the fire threat, power deenergization, line conditions, and projections for power restoration.

### **During a fire**

OES has procedures for communication with residents during emergencies that are documented in the City Emergency Operations plan and are not included in this document.



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## *MITIGATION PLAN REVIEW AND ASSESSMENT PROCESS*

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CPAU will use the following metrics to measure the performance of this Wildfire Mitigation Plan:

### **METRIC 1: Outages on the Overhead Electric System in the High Fire Threat Area**

The implementation of activities identified in the Plan will minimize the probability of outages on the overhead electric system in the high fire threat area. Full implementation is necessary to facilitate the objective of zero faults on the overhead system. Utilities will continue to track outages in the high fire threat area and anticipates there will be a reduction over time as activities are completed.

All outages in Palo Alto are reviewed. The cause of the outage, steps necessary to troubleshoot and restore service, and protective device operation are analyzed to determine if equipment operated as expected, if the cause could be related to a bigger issue, or if system improvements could be made to prevent or minimize the impact of the fault. System improvement projects are proposed and implemented based on these findings.

Outages in the High Fire Threat Area will also be evaluated to determine if activities implemented in the Wildfire Mitigation Plan: 1) should have prevented the outage, 2) were inadequate to prevent the outage, 3) could be improved, or 4) would not have been able to prevent the outage. Based on these findings, revisions to the plan will be made as necessary

### **METRIC 2: Fire Ignitions**

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

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

In future Wildfire Mitigation Plans, CPAU 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.

### **Revision and improvement implementation process**

Annually, CPAU will analyze the metrics and identify any deficiencies in the system operation/design or in this Mitigation Plan. This analysis along with proposed improvements will be presented to Council as part of the annual update.



The Utilities Electric Engineering Manager is responsible for plan's implementation, status updates, and that the metrics are tracked to achieve the plan objectives. The manager, or their designee, will monitor completion of the mitigation plan activities and schedule meetings twice a year (4 months prior and just after the start of the typical fire season) to discuss preparation and planning of current and future work. Each Department or Division is responsible for completing activities within their area of responsibility; and identifying and proposing changes or improvements to the plan. Any new items for completion or suggestions for improvement to the plan will be discussed and incorporated into the plan as necessary.

### *AUDITING*

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This Wildfire Mitigation Plan is subject to review by Council. Additionally, a qualified independent evaluator is required to review the initial plan to ensure it complies with the requirements of SB 901 and the actions contained sufficiently address the risk posed by utility lines.

### *ATTACHMENTS*

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- Appendix A: City of Palo Alto Foothills Fire Management Plan
- Appendix B: Map of CPUC High Fire Threat areas in California
- Appendix C: Map of CPUC High Fire Threat area in Palo Alto
- Appendix D: Utilities Wildfire Mitigation Plan Roles and Responsibilities Org Chart
- Appendix E: Summary of requirements of SB 901
- Appendix F: Status of Proposed Activities to Reduce Risk
- Appendix G: DRAFT PSPS Policy and Process

*APPENDIX A: CITY OF PALO ALTO FOOTHILLS FIRE  
MANAGEMENT PLAN*

2009 – Cover and Executive Summary

2012 Update – Cover and Executive Summary

**Palo Alto Foothills Fire Management Plan  
Update**

**WILDLAND FIRE RISK ASSESSMENT AND MITIGATION PROGRAM**

Submitted to:

**City of Palo Alto**

**Attention: Kelly Morariu**  
250 Hamilton Avenue  
Palo Alto, CA 94301

Submitted by:

**Wildland Resource Management, Inc.**

Wildland Resource Management  
134 Journeys End  
Alamo, CA 94507

**January 15, 2009**

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**PART A – FIRE HAZARD ASSESSMENT AND FUEL  
MANAGEMENT PLAN/ PROJECTS**

## **1 EXECUTIVE SUMMARY**

The Fire Management Plan update process addresses a broad range of integrated activities and planning documents to address and mitigate the impacts of fire hazards in the Palo Alto Foothills Area. The area of interest includes the areas west of Foothills Expressway to the city limits of Palo Alto. Fire mitigation project areas include the boundaries of Foothills Park and Pearson-Arastradero Preserve within this area of interest.

The Fire Management Plan Update addresses the following key items:

- Fire Hazard Assessment
- Regional Evacuation Routes
- Review of Municipal Ordinances
- Staffing of Station 8
- Wildland Fire Management Recommendations and Mitigations
- Updates to Pearson-Arastradero Trails Master Plan and Foothills Trail Maintenance Plan
- CEQA Documentation
- Implementation Plan and Potential Funding

**Community Participation.** Community participation in the development of the plan began with the refinement of the scope of work and selection of the consultant team. Three community meetings were held at key points in the planning process to gather continued input from the community. A stakeholder group made up of adjacent jurisdictions, neighborhood associations, special interest groups, volunteers etc. also participated in the planning process. An environmental review in accordance with the California Environmental Quality Act (CEQA) was undertaken by City Staff in conjunction with the plan development.

**Fire Hazard Assessment.** There are many ways to assess fire hazard. Most utilize the three main factors of fuels, weather, and topography, with possible inclusion of elevation or fire history. Fire behavior was chosen as the means to assess fire hazard since it can identify locations where containment may be easiest, and where access may be precluded during the time of a fire. In addition, fire behavior outputs can identify locations where structures or natural resources may be unduly harmed by a wildfire, as well as locations where fire effects may be inconsequential to natural resources.

Not every area identified as a potential fire hazard can be modified to produce low-intensity fires. Not only would this be too costly, but environmental impacts would also be unacceptable.

**Results of Fire Behavior Analysis.** Fire behavior was analyzed for the entirety of the Foothills Area, including adjacent neighborhoods, property owned by Midpeninsula Regional Open Space District (MROSD), and Stanford University. Flame length, rate of fire spread and potential for crown fire were three characteristics considered in the analysis. The following are generalities observed:

Flame lengths follow fuel types, with long flame lengths in chaparral and untreated grass, and short flame lengths in woodlands and mowed grass. The largest areas of long flames are located in Foothill Park and Monte Bello Open Space Preserve. Low fire spread rates were predicted in woodlands and forests, and fast

spread rates in untreated grass and chaparral. There is very little active crown fire predicted within the Foothills area, however, the potential for trees to torch is high throughout the treed portion of the Foothills area. Torching is caused by low-hanging limbs, or ladder fuels.

#### **Wildland Fire Management Recommendations and Best Management Practices**

Treatments were strategically placed to achieve the following goals:

- Life Safety
- Structure and Infrastructure Protection
- Ignition Prevention
- Fire Containment
- Resource Enhancement

Treatments were identified for 51 project areas. The most visible recommended set of projects will be to conduct roadside treatments along Page Mill Road, Arastradero Road, Los Trancos Road, and Skyline Boulevard. Other projects entail the continuation of mowing along trails and some boundaries, grazing along the selected segments of the perimeter of both Parks/Preserves, treatments to install and maintain defensible space around structures, treatments around barbecues to minimize the chance of ignitions, and treatments to bolster the success of fires containment efforts within the parks. Fuel management treatments can also enhance natural resources, through targeting non-native invasive plants as part of biomass removal – potentially with grazing animals, mechanical mowing and hand labor - and conducting prescribed fires in selected areas under conditions consistent with fire control.

Best management practices are included for each treatment type, based on the sensitivity of the resource. These include practices that consider the timing intensity of the treatment, or selection of the type of treatment methods (e.g., whether the project would entail mowing or grazing, hand labor or mechanical equipment), the strata of treatment (e.g., whether the project would remove lower tree limbs, or instead involve grass mowing), and the scale of the treatment (e.g., to treat small or large patches).

#### **Review Recommendations Regarding Pearson-Arastradero Trails Master Plan and Foothills Trail Management Plan**

- Addition of fuel management and fuel reduction zones
- Location of prescribed burns
- Modify fuel break width for performance standards
- Modify roadside treatment standards
- Include fire hazard in regulatory, warning and education signs (especially prescribed fires)

#### **Regional Evacuation Routes**

The Palo Alto Police Department has responsibility within City limits for evacuation operations under state law. However, multiple jurisdictions will likely be involved in an event in the Foothills. Evacuation routes

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should not be blocked anywhere, regardless of jurisdiction or ownership; this is especially important because most of the regional evacuation routes span multiple cities, ownership categories and protection jurisdictions. The following recommendations will help reach a reasonably safe condition along the regional evacuation routes.

- Formalize agreements with adjacent landowners for ingress and egress routes (from parks) and offsite refuge areas
- Develop partnerships to address regional evacuation routes from residential and public areas (Regional Evacuation Plan, Community Notification (multi-jurisdictional) and Unified Command)

#### **Analysis and Recommendations Regarding Staffing of Station 8**

An analysis of the staffing level of Station 8 was conducted that considered the distribution and concentration of fire personnel and equipment in relation to the incidents. The recommendation was to maintain current staffing levels. Response times for incidents are significantly longer from other stations, even when considering mutual aid offered by other jurisdictions. The fire behavior analysis indicates the potential for fast-moving fires of high intensity, further justifying the current staffing levels.

#### **Review of Municipal Ordinances**

The existing code is comprehensive; only minor changes are recommended. These include:

- Expand Wildland Urban Interface Fire Area (between Foothill Blvd & Highway 280)
- Fire Protection Planning: Begin early in permitting process
- Expand Defensible Space Requirements: Maintain roof free of materials
- Expand Access Requirements: bridge load limits, parking restrictions
- Additional guidance for Maintenance of Defensible Space
- Ignition Source Control
- Fencing
- Signage
- Mechanical Equipment Ignition Prevention
- Restriction on Smoking at Pearson-Arastradero Preserve

#### **Implementation Plan and Potential Funding for Fire Management Recommendations**

Implementation of this plan will be managed by the City of Palo Alto staff, including the Fire Department, the Police Department (evacuation, notification, neighborhood preparedness coordinators), and Open Space (rangers). Volunteer groups, such as Acterra, Friends of Foothills, and other groups should continue to be involved and encouraged to help with the implementation. Further, the City should work with mutual aid government agencies and other stakeholders on an ongoing basis.

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**Prioritization of Treatments**

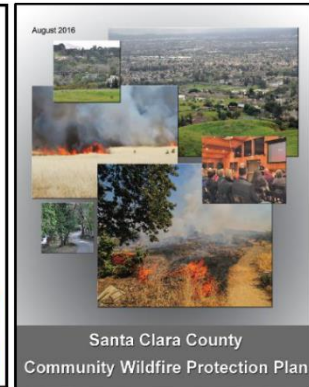
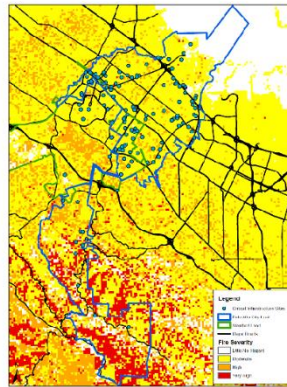
The following is the priority of treatment types:

1. Life Safety
2. Structure and Infrastructure Protection
3. Ignition Prevention
4. Fire Containment
5. Resource Enhancement

**Cost Estimates**

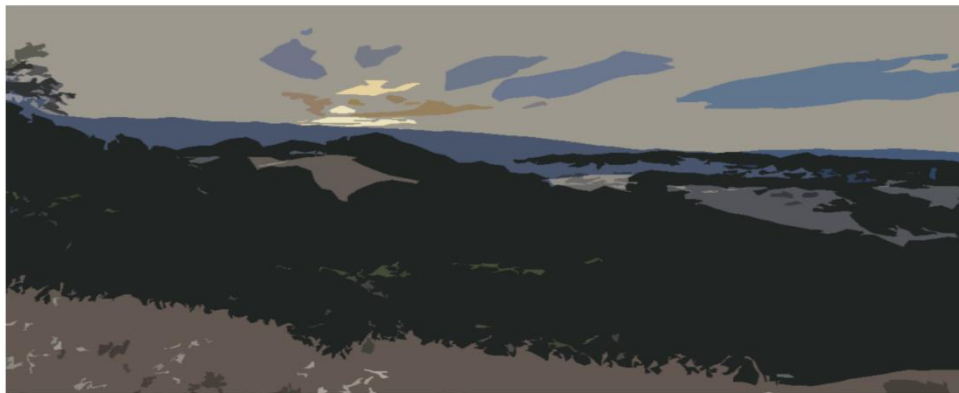
The total five-year cost to implement the recommended projects is estimated at slightly less than \$700,000. The largest cost, at slightly more than \$400,000, is to manage 19 containment areas. The initial treatment for segments of major evacuation routes is estimated to cost almost \$178,000. The use of California Youth Authority Crews may offer a means to reduce costs for the hand labor-based treatments. Without volunteers pre-treatment surveys and follow-up may cost \$100,000 over the next five years.

# FOOTHILLS FIRE MANAGEMENT PLAN



1/23/2017

2016 UPDATE



**Acknowledgements**

This document was prepared by Wildland Resource Management under contract to the City of Palo Alto.

**Contributions**

Daren Anderson..... Community Services Department  
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Nathan Rainey.....Office of Emergency Services  
Mark Nadim .....Midpenninsula Fire Safe Council



*Image 1: Palo Alto Fire Department Brush Rig Patrolling Trapper's Trail*



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*Image 2:Treated area in Foothills Park*



## Executive Summary

The 2009 Foothills Fire Management Plan (FFMP) addressed a broad range of integrated activities and produced planning documents to address and mitigate the impacts of fire hazards in the Palo Alto Foothills Area. The area of interest includes the areas west of Foothills Expressway to the city limits of Palo Alto.

The FFMP addressed fire hazard assessment and regional evacuation routes, wildland fire management recommendations and mitigations. The FFMP also reviewed non-project related topics such as Municipal ordinances related to wildland fire and recommended staffing levels for Station 8 in Foothills Park. It proposed an implementation plan and identified potential funding, and included CEQA documentation for the proposed projects. Last, it recommended updates to the Pearson-Arastradero Trails Master Plan and Foothills Trail Maintenance Plan.

This 2016 FFMP update focuses on topics directly related to fire hazard mitigation, emphasizing project-related improvements. This program is also documented in the City of Palo Alto Local Hazard Mitigation and Adaptation Plan (LHMAP) and demonstrates how the City mitigates wildfire risk through the implementation of projects in the FCWPP.

This update provides a description of significant accomplishments achieved since 2009 in the areas of treatment of evacuation routes, prescribed fire and associated containment lines, and residential boundary treatments (mowing, disking). Program costs are also provided showing how allocated funds were used. City funding since 2009 has totaled \$452,332.

A post treatment fire behavior assessment is also included in this update to describe the threat but also to identify areas of future treatments. The most important benefit has been an increased ease of evacuation and emergency access through the expansion of managed roadside vegetation. The roadsides along Arastradero Rd, Los Trancos Rd and Page Mill Rd are all safer for access and egress through increased line of sight, reduced fuel volumes and reduction of ladder fuels. The probability of ignitions has been reduced through a reduction of fuels near barbecues and structures, and along roadsides. The potential for containment of a wildfire (both within the parks, and between City property and neighbors) has been enhanced through the creation, maintenance, and enhancement of reduced fuel zones. These treatment areas are strategically placed along property perimeters and ridgelines.

The update also incorporates the participation in the county-wide Community Wildfire Protection Program (CWPP), which includes a Palo Alto/Stanford annex.<sup>1</sup> The county CWPP project began after the initiation of this planning update, but future updates will be transitioned to the Palo Alto/Stanford Community Wildfire Protection Plan on a five year update cycle.

### Foothills Fire Management Plan Update Process

The 2009 Foothills Fire Management Plan (FFMP) addressed a broad range of integrated activities and produced planning documents to address and mitigate the impacts of fire hazards in the Palo Alto Foothills Area. The area of interest includes the areas west of Foothills Expressway to the city limits of

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<sup>1</sup> The Santa Clara County Community Wildfire Protection Program (CWPP) is a collaborative approach for reducing wildland fire risks to communities and the environment. The plan includes an analysis of conditions such as fire apparatus access, community evacuation, fuels, topography, and weather. The plan also includes proposed projects developed through the workshops. <http://www.sccfd.org/santa-clara-county-community-wildfire-protection-plan>

Palo Alto.

The 2009 Plan addressed fire hazard assessment and regional evacuation routes, wildland fire management recommendations and mitigations. The FFMP also reviewed non-project related topics such as Municipal ordinances related to wildland fire and recommended staffing levels for Station 8 in Foothills Park. It proposed an implementation plan and identified potential funding, and included CEQA documentation for the proposed projects. Last, it recommended updates to the Pearson-Arastradero Trails Master Plan and Foothills Trail Maintenance Plan.

This 2016 update focuses on topics directly related to fire hazard mitigation, emphasizing project-related improvements. This program is also documented in the City of Palo Alto Local Hazard Mitigation and Adaptation Plan (LHMAP) and demonstrates how the City mitigates wildfire risk through the implementation of projects in the FCWPP. The City of Palo Alto contracted with Wildland Resource Management Group, who also completed the 2009 FFMP effort, to assist in this update. Staff members from Community Services, Fire, Public Works Departments and the Office of Emergency Services formed the planning team to work with Wildland Resource Management Group. Additionally, members of the Midpeninsula Fire Safe Council also provided input to this update.

### **Accomplishments**

Since the Foothills Fire Management Plan was adopted in Jan 2009 significant progress has been made. Perhaps two of the most significant accomplishments have been advances in organization and relationships.

The City will be taking an additional step to adopt the FFMP as a Community Wildfire Protection Plan. With a Community Wildfire Protection Plan (CWPP), the City is in a better position to receive grants from Federal or State funding sources. Because the FFMP satisfied the requirements of a CWPP, the City was able to simply obtain an approval signature from the local CAL FIRE representative and send it to the California Fire Alliance where it became official.

Another significant advance was the development of an ongoing relationship with the Santa Clara County Fire Safe Council (SCFSC). The City developed a 5-year Stewardship Agreement with the SCFSC to help implement the FFMP/CWPP. An annual work plan is mutually agreed-upon, based on availability of funding and capacity of the SCFSC. The SCFSC typically supervises and pays for CAL FIRE hand crews to reduce fuels along roads and in say Foothills Park and Pearson-Arastradero Preserve, and provides community outreach and education programs in the City regarding wildland fire.

A novel organizational strategy was adopted which recognizes that the FFMP involves and requires support from many City Departments. While the program originated in the Fire Department, the Public Works Department, Office of Emergency Services and Community Services Department are all key to the success and beneficiaries of the projects. As such, representatives of each of these four departments meet regularly (generally quarterly, but sometimes more often) to strategize effective actions. The Chair of this inter-departmental group rotates between the departments. Funding is pooled from all four departments based on the anticipated costs of performing fire hazard reduction work under their responsibility. For example, roadside treatments on public right-of-ways are funded by Public Works whereas evacuation treatments along roads inside parks are funded by the Community Services Department.

Through efforts and funding of the City and with support of the SCFSC, many on-the-ground projects



*APPENDIX B: MAP OF CPUC HIGH FIRE THREAT AREAS IN CALIFORNIA*





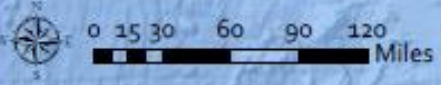
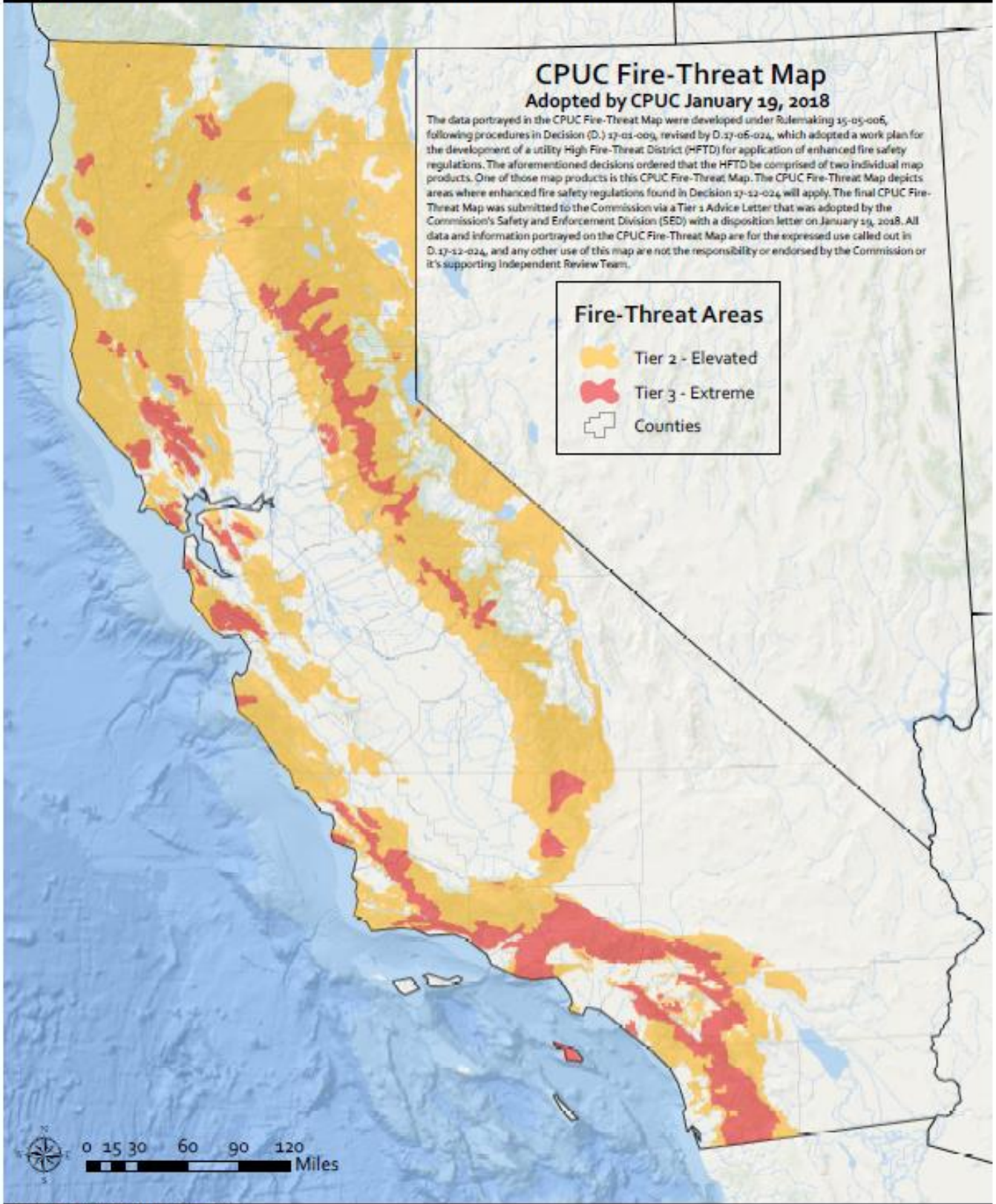
**State of California - Public Utilities Commission**

**CPUC Fire-Threat Map  
Adopted by CPUC January 19, 2018**

The data portrayed in the CPUC Fire-Threat Map were developed under Rulemaking 15-05-006, following procedures in Decision (D.) 17-01-009, revised by D.17-05-024, which adopted a work plan for the development of a utility High Fire-Threat District (HFTD) for application of enhanced fire safety regulations. The aforementioned decisions ordered that the HFTD be comprised of two individual map products. One of those map products is this CPUC Fire-Threat Map. The CPUC Fire-Threat Map depicts areas where enhanced fire safety regulations found in Decision 17-12-024 will apply. The final CPUC Fire-Threat Map was submitted to the Commission via a Tier 1 Advice Letter that was adopted by the Commission's Safety and Enforcement Division (SED) with a disposition letter on January 19, 2018. All data and information portrayed on the CPUC Fire-Threat Map are for the expressed use called out in D.17-12-024, and any other use of this map are not the responsibility or endorsed by the Commission or it's supporting Independent Review Team.

**Fire-Threat Areas**

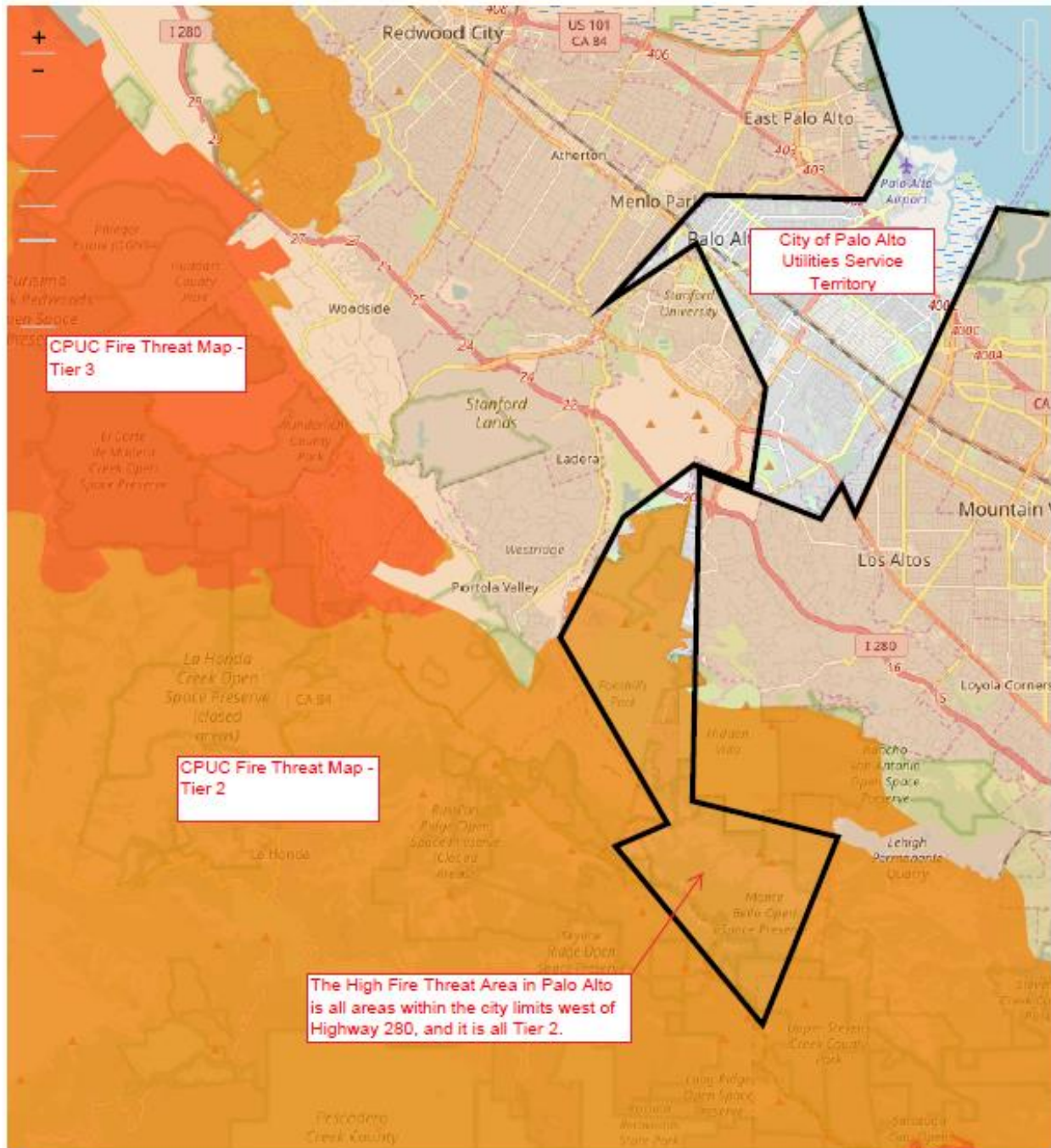
-  Tier 2 - Elevated
-  Tier 3 - Extreme
-  Counties



For more information about the data and map depicted, or other matters related to Utility wildfire safety, please contact Terrie Prosper at [Terrie.Prosp@cpuc.ca.gov](mailto:Terrie.Prosp@cpuc.ca.gov)  
Basemap sourced from Esri (World Ocean).

*APPENDIX C: MAP OF CPUC HIGH FIRE THREAT AREA IN  
PALO ALTO*



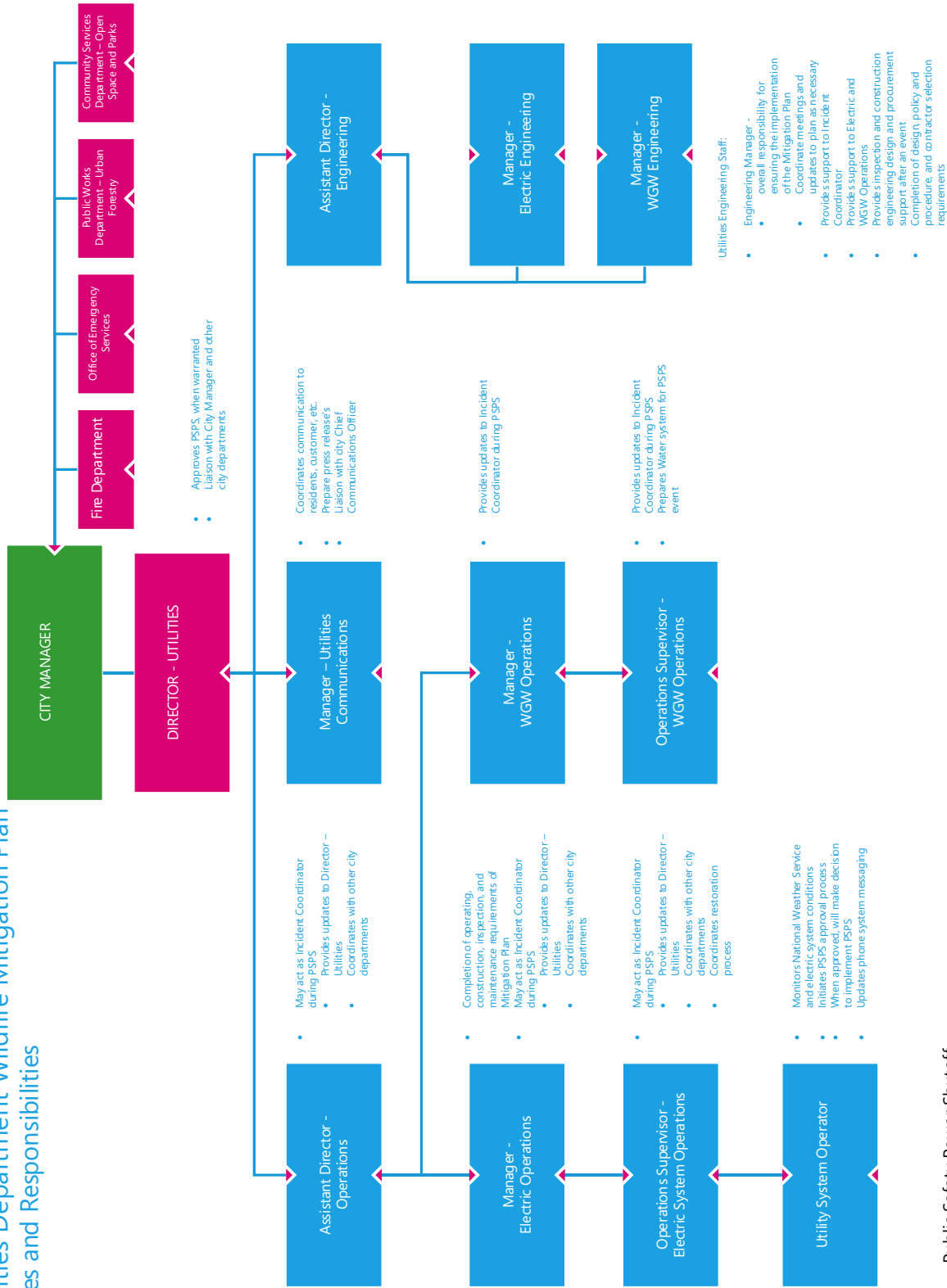


*APPENDIX D: UTILITIES DEPARTMENT WILDFIRE  
MITIGATION PLAN ROLES AND RESPONSIBILITIES*





Utilities Department Wildfire Mitigation Plan  
Roles and Responsibilities



PSPS – Public Safety Power Shutoff  
WGW – Water, Gas, and Wastewater

*APPENDIX E: SUMMARY OF REQUIREMENTS OF SB 901*

<b>SB 901 REQUIREMENTS</b>		
<b>Requirement</b>	<b>Statutory Language</b>	<b>Cross Reference</b>
<b>Persons Responsible</b>	An accounting of the responsibilities of persons responsible for executing the plan.	Page 7 - Roles and Responsibilities Appendix D
<b>Objectives of the Plan</b>	The objectives of the wildfire mitigation plan.	Page 5 - Objectives
<b>Preventive Strategies</b>	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.	Page 9, 11, 15 - Completed Tasks, Ongoing Activities, Proposed Activities
<b>Evaluation Metrics</b>	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.	Page 21 – Mitigation Plan Review and Assessment
<b>Impact of Metrics</b>	A discussion of how the application of previously identified metrics to previous wildfire mitigation plan performances has informed the wildfire mitigation plan.	Page 21 – Mitigation Plan Review and Assessment
<b>Deenergization Protocols</b>	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.	Page 13 – Electric System Design / Operation - Reclosers
<b>Customer Notification Procedures</b>	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.	Page 13 – Ongoing Fire Prevention Activities – Electric System Design/Operation - Deenergization
<b>Vegetation Management</b>	Plans for vegetation management.	Page 11, 16 – Vegetation Management, Urban Forestry

<b>Inspections</b>	Plans for inspections of the local publicly owned electric utility's or electrical cooperative's electrical infrastructure.	Page 12, 15 – Electric System Inspection; Drone Inspection
<b>Prioritization of Wildfire Risks</b>	<p>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:</p> <p>(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.</p> <p>(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.</p>	Page 3 – Wildfire Risk Factors
<b>CPUC Fire Threat Map Adjustments</b>	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.	Page 10 – High Fire Threat Area Identification
<b>Enterprise wide Risks</b>	A methodology for identifying and presenting enterprise wide safety risk and wildfire-related risk.	Page 3 – Wildfire Risk Factors
<b>Restoration of Service</b>	A statement of how the local publicly owned electric utility or electrical cooperative will restore service after a wildfire.	Page 19 – Response to Wildfire Incident – CPAU

<p><b>Monitor and Audit</b></p>	<p>A description of the processes and procedures the local publicly owned electric utility or electrical cooperative shall use to do all of the following:</p> <p>(i) Monitor and audit the implementation of the wildfire mitigation plan.</p> <p>(ii) Identify any deficiencies in the wildfire mitigation plan or its implementation, and correct those deficiencies.</p> <p>(iii) Monitor and audit the effectiveness of electrical line and equipment inspections, including inspections performed by contractors, which are carried out under the plan, other applicable statutes, or commission rules.</p>	<p>Page 21, Appendix E – Mitigation Plan Review and Assessment;</p>
<p><b>Qualified Independent Evaluator</b></p>	<p>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.</p>	<p>Page 22 – Auditing</p>

*APPENDIX F: STATUS OF PROPOSED ACTIVITIES TO REDUCE RISK OF WILDFIRE*

	<b>Activity</b>	<b>City Staff Member Responsible</b>	<b>Description/Status</b>	<b>Projected Completion Date</b>	<b>Status Date</b>
1	Overhead line rebuild	Engineering Manager – Electric	<p>Staff is working on drafting the Scope of Work and Request for Proposal for consultants/contractors to bid on the design and construction of a new/replacement utility line in the High Fire Threat Area (Foothills).</p> <p>Proposals and bids received were either incomplete or at very high cost. Utilities staff is proceeding with plans to do design in-house staff. Utilities engineering staff is designing the first overhead segment to be converted to underground with construction that began February 2021</p>	Summer 2025	4/26/2021
2	Document construction standards for high fire threat areas	Engineering Manager – Electric	<p>New construction standards for use in the high fire threat areas will be developed as Phase I of the Overhead line rebuild/relocation/replacement project listed item 3. Staff will work with the consultant selected for the overhead line rebuild project to develop the standards based on staff input, industry best practices, and existing material stock items. This will be phase I of the project before any design work is started.</p> <p>The need for new construction standards are still being assessed. New construction standards were part of the Foothills overhead line rebuild contract which staff decided</p>	June 2022	4/26/2021

			to design in-house. If 100% of the overhead line is built underground then new standards may not be required.		
3	Deenergization (PSPS) policy and procedures	Assistant Directors – Engineering and Operations	<p>Documents for a PSPS Policy and a PSPS Procedures have been developed and are being reviewed for approval. Some procedures have already been implemented to meet the concerns brought on by Red Flag warnings in October 2019.</p> <p>Documents for a PSPS Policy and Procedures are being reviewed.</p>	Summer 2021	4/26/2021
4	Fiber optic cable extension	Engineering Manager – Electric	<p>Staff is working on development of the design to install new fiber optic cable to enhance the communications capability in the Foothills for City staff. Depending on the staff availability this may be done as its own project or as part of the overhead line rebuild.</p> <p>The construction of the fiber optic cable will be done concurrently with either the overhead line rebuild or underground design. Segments of underground communication conduit are being installed with the electric substructure work.</p>	Summer 2025	4/26/2021
5	Emergency generator assessment	Engineering & Operations Managers – WGW	<p>Water, Gas, and Wastewater Engineering and Operations staff are discussing the need for emergency backup generators at the water pumping stations and wastewater lift station in the Foothills.</p> <p>The generator assessment is complete and staff is now working on the generator requirements for each site.</p>	Summer 2022	4/26/2021

6	SCADA switch installation	Engineering & Operations Managers – Electric	<p>The switch has been identified but requires replacement with a SCADA controlled switch and underground substructure installation for fiber optic communication cables. Depending on the staff availability this may be done as its own project or as part of the overhead line rebuild.</p> <p>The installation of a new SCADA controlled switch will be completed as part of the overhead or underground line rebuild.</p>	Summer 2025	4/26/2021
7	Drone inspection of utility lines in foothills	TBD	<p>No progress on this item at this time. The quality of this type of service when investigated 3 years ago did not meet Utilities or Urban Forestry needs. Staff is hoping that newer technologies will be more useful.</p> <p>No change</p>	TBD	4/26/2021
8	Controlled burn policy and plans	Operations Manager - Electric / CPA Fire	<p>To be in conjunction with the City of Palo Alto Fire Department</p> <p>No change</p>	TBD	4/26/2021
9	New Weather Station	Engineering & Operations Managers – Electric	<p>Electric Operations staff is working to install a new weather station at Montebello Reservoir.</p> <p>The construction of a new utility pole is completed. Installation of a new weather station to follow.</p>	December 2021	4/26/2021



10	Risk Assessment of wildfire in the foothills	Utilities Strategic Business Manager	<p>Staff is in negotiation with a consultant to complete a Risk Assessment of wildfire in the foothills due to utilities electric facilities.</p> <p>An assessment of the City's liability risk to a wildfire was completed by ABSG Consulting Inc.. This was an actuarial study for insurance purposes. It has not resulted in any planned operational changes.</p>	April 2021	4/26/2021
11	Proactive Pumping of water up to reservoirs	Engineering & Operations Managers – WGW	<p>Water, Gas, and Wastewater Engineering and Operations staff are discussing the need to proactively pump water up to the reservoirs before electric lines are deenergized.</p> <p>This activity was provided in the mitigation plan report but not listed in Appendix F. It will be part of staff notification process in the PSPS Policy and Procedures.</p>	Summer 2021	3/25/2021
12	NEW ITEMS WILL BE ADDED AS IDENTIFIED/NEEDED				

TBD – To be Determined

*APPENDIX G: DRAFT PSPS POLICY AND PROCESS*



Policy and Process for Public Safety Power Shutoff

**PURPOSE**

Devastating wildfires throughout the State of California have prompted electric utilities throughout the state to identify areas within their jurisdiction that are susceptible to power-line ignited wildfires and to take steps to prevent their occurrence. One of these steps is a proactive deenergization of electric lines, often called Public Safety Power Shutdown (PSPS), by the State and other California utilities.

The City of Palo Alto’s Utilities Department (CPAU) has the authority to preemptively shut off power due to fire-threat conditions; however, this option will only be used as a last resort in extraordinary circumstances. This document outlines the policy and process to identify the fire threat conditions that will dictate PSPS of CPAU facilities by CPAU. CPAU, in conjunction with City Staff, will make a case-by-case decision to shut off power based on criteria listed in this document. The electric lines most likely to be considered for PSPS are lines in Palo Alto west of Highway 280 which are in a Tier 2 (elevated risk for wildfire) area on the CPUC Fire Threat Map. Palo Alto could also be impacted by PSPS activities initiated by PG&E on the transmission system.

CPAU typically deals with two types of outages, 1) Planned outages for construction maintenance, or 2) Unplanned outages due to circumstances beyond our control, e.g. car pole accidents, birds/tree contact with overhead lines, equipment failure, etc., (commonly referred to as a fault or short-circuit). The PSPS is a preemptive shutdown of power to prevent the occurrence of the faults that cause the unplanned outages from occurring when high fire threat conditions exist, as sparks from a fault or energized wires on the ground could result in wildfires.

**POLICY**

CPAU considers the safety of the community our top priority and will take the necessary steps to mitigate the threat of wildfires associated with overhead electric lines and associated equipment owned and operated by CPAU. In extreme conditions, this will require CPAU to deenergize power lines for the safety of life and property.

**PROCESS**

Below is a summary of tasks for proactive deenergization and restoration of the electric distribution system as part of the City’s wildfire mitigation plan. Details of the steps to implement a PSPS are in “Utilities Wildfire Mitigation Procedure for Public Safety Power Shutoff”.

Task #	Description	Page
1.	Determination of possible need for PSPS based on weather forecast and field conditions .....	2
2.	Preapproval and Authorization to notify customers of possible PSPS based on weather forecasts .....	2
3.	Notification of affected customers of possible PSPS .....	2
4.	Monitoring of real time weather and field conditions .....	3
5.	Notification of customers of impending outage.....	3



**Policy and Process for Public Safety Power Shutoff**

6.	Deenergization of power line .....	3
7.	Inspection and patrol of line .....	3
8.	Notification of customers of impending restoration .....	3
9.	Reenergize power line .....	3

**Determination of possible need for PSPS based on weather forecast and field conditions**

CPAU, in conjunction with other City Staff, will make a case-by-case decision to shut off power based on the following considerations:

- Red Flag Warnings issued by the National Weather Service (NWS) for the fire weather zone that includes the Foothills Area (Santa Cruz Mountains);
- City staff assessments of local conditions, including wind speed (sustained and gust), humidity and temperature, fuel moisture, fuel loading and data from weather stations;
- Real-time information from staff located in areas identified as at risk of being subject to extreme weather conditions;
- Input from city Fire and Urban Forestry staff;
- Input from local and state fire authorities regarding the potential consequences of wildfires in select locations;
- Awareness of mandatory or voluntary evacuation orders in place;
- Expected impact of de-energizing circuits on essential services;
- Notifications to local governments and public officials; and
- Safety and potential impacts to communities and customers

The decision process will occur as soon as the information is available to facilitate an informed decision and timely notification of customers. There may be instances where weather conditions rapidly change and advance notice to customers is not possible. It is anticipated that this will be infrequent, if at all.

**Preapproval and Authorization to notify customers of possible PPS based on weather forecasts**

Once it is determined that a PPS may be required, staff will present an assessment to the Utilities Director or his/her designee will review, assess, and approve the request.

**Notification of affected customers of possible PPS**

If a PPS is approved, staff will notify the City Manager’s Office (CIO), OES, Police, Fire, 911 Dispatch, WGWS Operations, Utilities Customer Service and Utilities Communications. They in turn will communicate with the community, customers impacted, and the media.



## Policy and Process for Public Safety Power Shutoff

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### Monitoring of real time weather and field conditions

Staff will monitor real time and updated forecast information to determine if forecasts are accurate and the PSPS should occur as planned; if changes need to be made to the PSPS scheduling; or if the PSPS can be cancelled.

### Notification of customers of impending outage

If a PSPS is to occur, staff will notify the City Manager's Office (CIO), OES, Police, Fire, 911 Dispatch, WGW Operations, Utilities Customer Service and Utilities Communications. They in turn will communicate with the community, customers impacted, and the media.

### Deenergization of power line

At the determined time, Utilities Electric Operations staff will deenergize all lines in areas identified for PSPS

### Inspection and patrol of line

After the weather has passed and it is safe to do so, Electric Operations staff will perform a full visual inspection of the distribution system to ensure that there is no damage before reenergizing the line. Any damage will be assessed and repairs will need to be made before power can be restored to those sections or anything downstream.

### Notification of customers of impending restoration

Staff will notify the City Manager's Office (CIO), OES, Police, Fire, 911 Dispatch, WGW Operations, Utilities Customer Service and Utilities Communications. They in turn will communicate with the community, customers impacted, and the media.

### Reenergize power line

The lines will be systematically reenergized as the lines are patrolled and inspected, and any damage is repaired.

*APPENDIX F: STATUS OF PROPOSED ACTIVITIES TO REDUCE RISK OF WILDFIRE OR IMPROVE RESPONSE*

	<b>Activity</b>	<b>City Staff Member Responsible</b>	<b>Description/Status</b>	<b>Projected Completion Date</b>	<b>Status Date</b>
1	Overhead line rebuild	Engineering Manager – Electric	<p>Staff is working on drafting the Scope of Work and Request for Proposal for consultants/contractors to bid on the design and construction of a new/replacement utility line in the High Fire Threat Area (Foothills).</p> <p>Proposals and bids received were either incomplete or at very high cost. Utilities staff is proceeding with plans to do design in-house staff. Utilities engineering staff is designing the first overhead segment to be converted to underground with construction that began February 2021</p>	Summer 2025	4/26/2021
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3	Deenergization (PSPS) policy and procedures	Assistant Directors – Engineering and Operations	<p>Documents for a PSPS Policy and a PSPS Procedures have been developed and are being reviewed for approval. Some procedures have already been implemented to meet the concerns brought on by Red Flag warnings in October 2019.</p> <p>Documents for a PSPS Policy and Procedures are being reviewed.</p>	Summer 2021	4/26/2021
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