



Columbia River PUD
Wildfire Mitigation Plan
2021

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1. Introduction

The Pacific Northwest has experienced some of the most devastating and catastrophic wildfires in the country and the risk of wildfires continues to increase. Although Columbia River People's Utility District's ("CRPUD") existing policies – which include vegetation management, routine inspections, and equipment upgrades – indirectly manage and reduce wildfire risk, this Wildfire Mitigation Plan ("Plan") takes an active approach to reduce wildfire-related risks and respond to high wildfire-risk conditions.

1.1 Policy Statement

CRPUD's mission is to provide quality services at the lowest practical cost. In furtherance of its mission statement, CRPUD strives to construct, operate, maintain, repair and replace its electric facilities in a safe, reliable, and environmentally responsible manner.

1.2 Purpose

This Plan describes the strategies and programs to mitigate the threat of wildfires ignited by electrical equipment in CRPUD's service territory and to improve CRPUD's response to wildfire risks in consultation with state and local agencies.

1.3 Objectives

The objectives of this Plan include:

1. Mitigating the threat of wildfires ignited by electrical equipment in CRPUD's service territory.
2. Assisting other agencies within CRPUD's service territory to ensure CRPUD is actively supporting them in wildfire prevention and response efforts during fire season and otherwise.
3. Improving customer awareness of wildfire risk before and during a wildfire event.
4. Evaluating the effectiveness of the Plan and, in consultation with other agencies, improving CRPUD's wildfire mitigation strategies and programs.

2. Utility Profile

CRPUD serves approximately 19,000 electric meters in Columbia County, Oregon, and a small portion of northern Multnomah County.

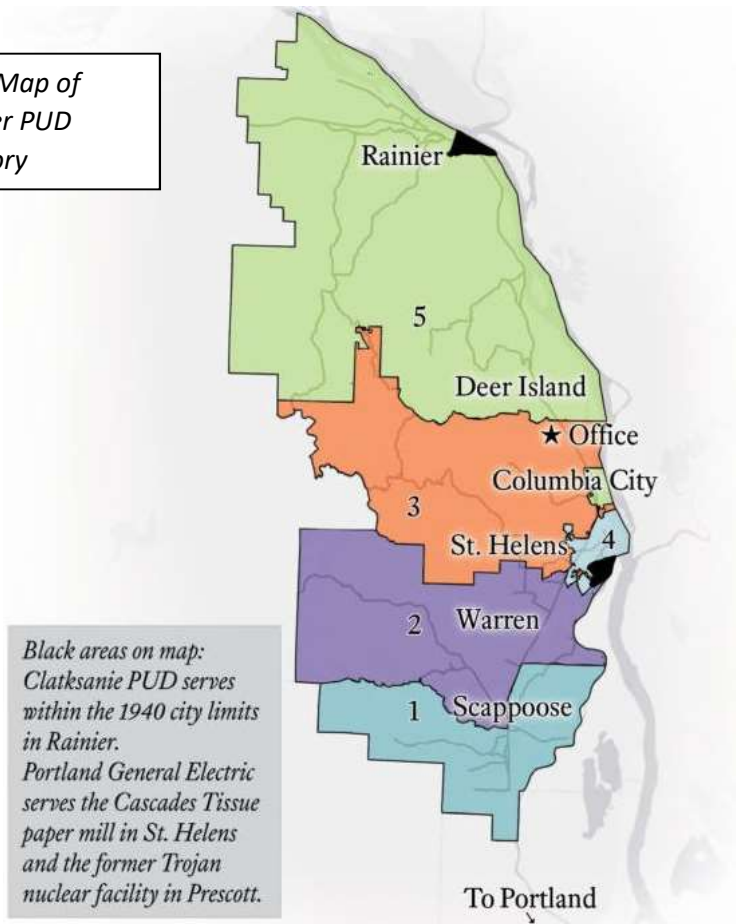
CRPUD currently has 44 employees.

2.1 Service Area

CRPUD's service territory is bordered by Clatskanie People's Utility District to the north, by Portland General Electric to the south, by the Columbia River to the east, and by Oregon Electric Cooperative to the west.

CRPUD's main office resides in Deer Island, Oregon, and CRPUD has nine substations throughout Columbia County. CRPUD's service territory contains roughly 230 square miles of land, and CRPUD maintains over 1,600 miles of electrical transmission/distribution lines that provides power to customers.

Figure One – Map of Columbia River PUD Service Territory



CRPUD's service area is divided into five subdivisions. Voters within each subdivision elect a representative to the Board of Directors. Board Members establish rates and policies for CRPUD and serve staggered four-year terms.



A frosty morning at CRPUD headquarters

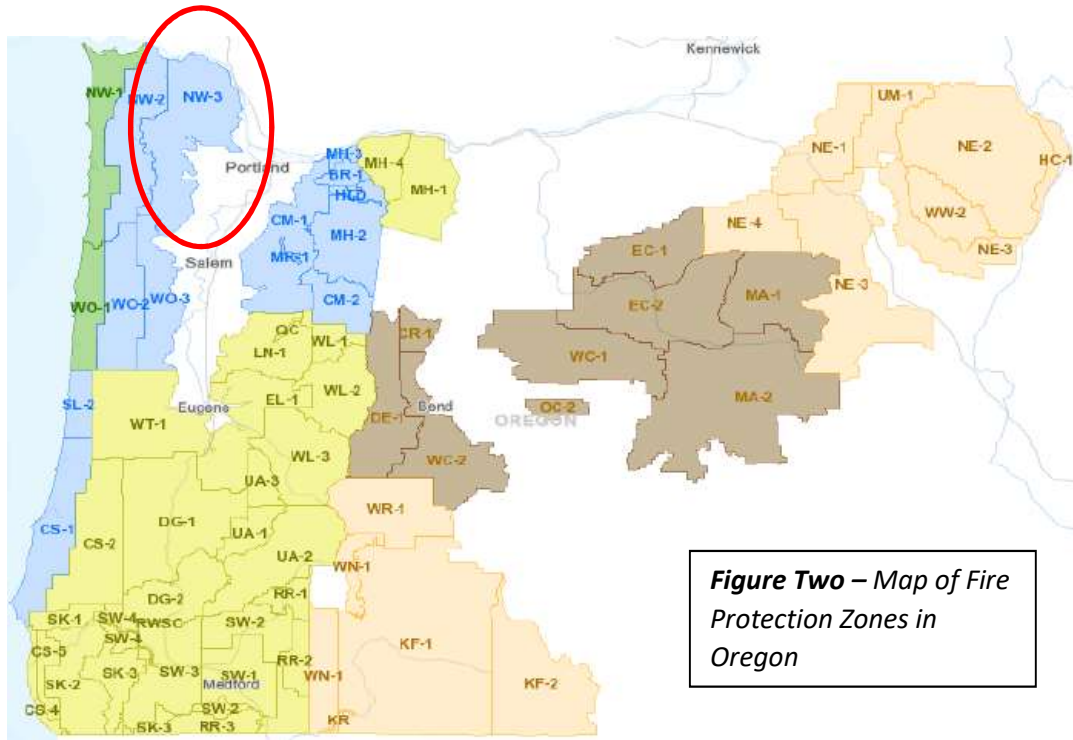
2.2 Asset Overview

Asset	Quantity
Substations – includes power transformers, disconnect switches, circuit breakers, capacitors, voltage regulators, protective devices, relays, communication equipment and a control enclosure.	9
Transmission and Distribution Pole Structures – includes cross arms, braces, insulators, distribution transformers, voltage regulators, switches, line protective devices, capacitors, communication equipment and lighting.	11,631
Surface Structures – includes pad mount transformers, switch stands, junction boxes and underground distribution vaults.	4,674

Asset	OH Circuit Miles	UG Circuit Miles
Total Transmission Lines		
115kV Transmission	14	0
Total Distribution Lines		
Primary Distribution	884	272
Secondary/Service Wire	190.9	272.6

2.3 Fire Protection Zones

The Oregon Department of Forestry (“ODF”) establishes Industrial Fire Precaution Levels (“IFPL”) for each fire protection zone in Oregon. CRPUD’s service area is situated within the NW-3 fire protection zone.



3. Risk Profile

3.1 Risk Assessment

Fires from power lines may be caused when energized facilities contact combustible materials. This may include contact with vegetation or vehicles, wire to wire contact, fuse operation, and equipment failure. CRPUD takes each of these possible events into consideration when planning, designing, and constructing the electric system.

CRPUD conducted a Risk Analysis to develop fire mitigation strategies for its service territory. CRPUD utilizes this analysis to understand its operational risks and identify at-risk areas within its territory. The Risk Analysis is one of many factors that informs CRPUD’s wildfire mitigation strategy and exists in an internal document that will inform CRPUD on specific actions it can take to improve the system.

As part of the Risk Analysis, CRPUD developed a risk score for each feeder area. The risk score is a quantitative measure of wildfire risk with respect the following risk categories:

- **Vegetation** (specifically species, growth rate, density). Vegetation may contribute to the ignition and spread of a fire. Effective vegetation management can mitigate the risk of wildfires.
- **Accessibility** (including terrain, ingress). If an area is harder to reach (or harder to escape, if you are a resident), it poses a unique threat to any personnel that must reach or flee a destination should an emergency, such as a fire, occur. If it is challenging to reach an area due to bad roads, steep country and minimal parking,

the firefighting effort becomes more complex. Emergency response that comes on foot or by vehicle will have a longer, more difficult time reaching the affected area, and face complications while fighting the fire once they arrive.

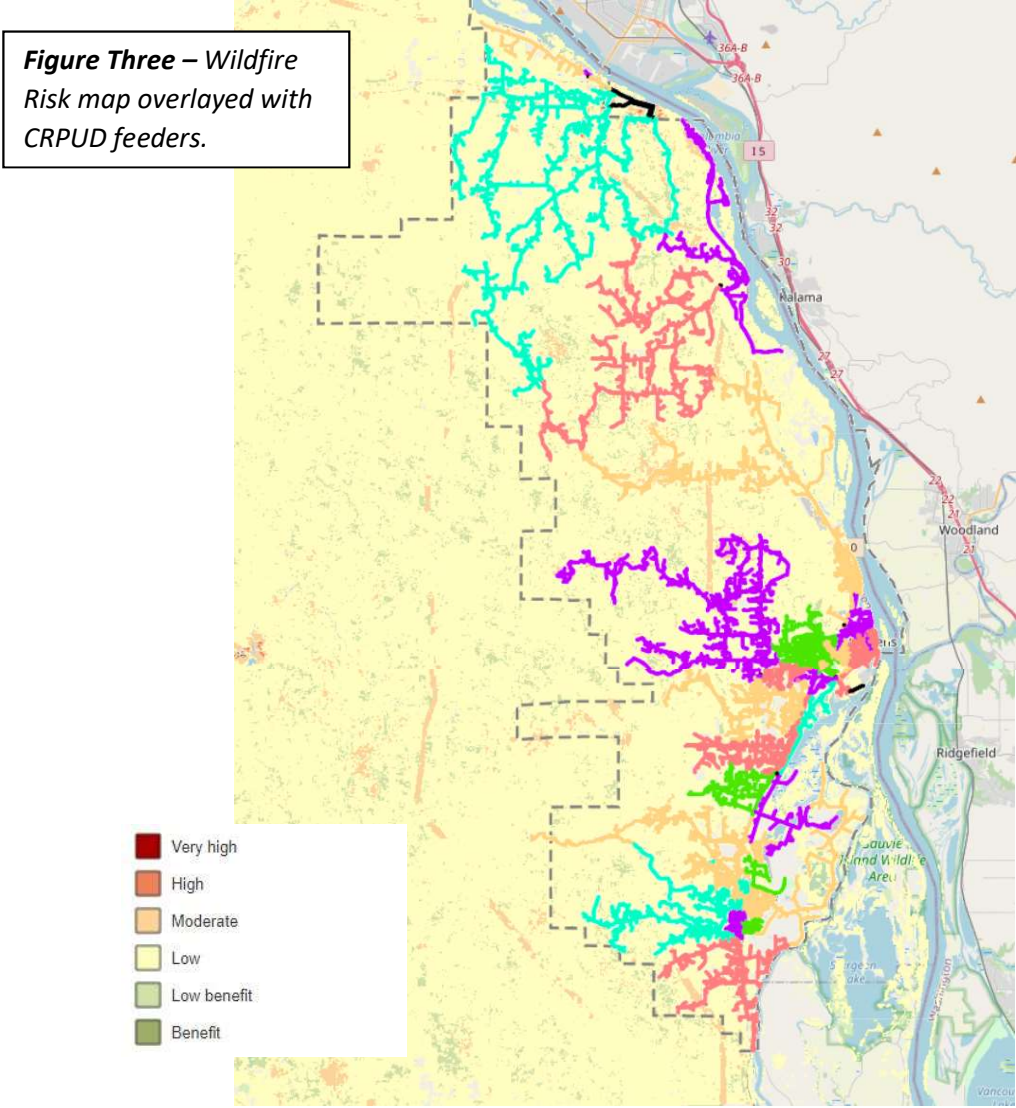
- **Outages** (attributed to vegetation). Outages tell a story of what areas in CRPUD’s system face more frequent interruptions. Reoccurring outages often signal areas that are densely covered with vegetation and require more maintenance and attention to keep operational.
- **Distance** (to firefighting resources). If it takes fire crews longer to access certain parts of CRPUD’s territory, a fire may spread more before crews are able to reach it. Therefore, CRPUD must consider the distance between firefighting resources and CRPUD’s facilities in the development of its wildfire mitigation strategy.
- **Impact of Ignition** (residential customers and critical infrastructure). “Impact of Ignition” refers to the amount of damage that would occur, should a specific area catch fire. For example, this risk category assesses if there is a large population of residents in a certain area or if it would affect crucial businesses such as medical facilities, water providers and/or fire and police departments. If these areas became compromised in a fire, it may harm the greater community and many citizens’ lives.

Feeder areas are assigned a risk score from one to three for each category. Individual and total scores are used to measure and identify the threat of wildfire by location within CRPUD’s territory. The scores are considered in the planning and implementation of CRPUD’s wildfire mitigation strategy. While the scores are informative, the likelihood and frequency of large wildfires is influenced by a complex combination of natural and human factors.

CONDITION AT FEEDER	Scoring criteria – does not have to meet all		
	1- Low Risk	2 – Moderate Risk	3 – High Risk
Vegetation (species, growth rate, density)	<ul style="list-style-type: none"> • slow growing • not in lines 	<ul style="list-style-type: none"> • moderate growing • some areas in lines • needs spot trimming 	<ul style="list-style-type: none"> • fast growing • multiple areas in lines
Accessibility (terrain, ingress)	<ul style="list-style-type: none"> • relatively flat • paved roads 	<ul style="list-style-type: none"> • some hills/ravines • some parking • moderate access 	<ul style="list-style-type: none"> • steep or ravine • areas unpaved • minimal parking
Outages (due to windblown or growing vegetation)	<ul style="list-style-type: none"> • 0-18 outages 	<ul style="list-style-type: none"> • 19-34 outages 	<ul style="list-style-type: none"> • 35-98 outages
Distance (to firefighting resources)	<ul style="list-style-type: none"> • 0-5 miles • feeder primarily in town 	<ul style="list-style-type: none"> • 5-10 miles • parts of feeder in rural area 	<ul style="list-style-type: none"> • more than 10 miles • most of feeder in rural area • some of feeder in inaccessible area
Impact of wildfire (residential or critical infrastructure)	<ul style="list-style-type: none"> • few residents • none or one critical infrastructure (utility or community) 	<ul style="list-style-type: none"> • multiple residents • some critical infrastructure (3-4) (utility or community) 	<ul style="list-style-type: none"> • heavily populated • critical infrastructure (more than 5) (utility or community)

3.2 Overall Wildfire Risk

CRPUD utilizes the online Oregon Wildfire Risk Explorer to evaluate wildfire risk in its service territory. The Oregon Wildfire Risk Explorer is a web-based tool developed by the Oregon Department of Forestry, Oregon State University Institute for Natural Resources, OSU Libraries and Press, US Forest Service, and a wide variety of stakeholders throughout Oregon to give a comprehensive view of wildfire risk and local fire history.¹ As seen in Figure Three (below), CRPUD overlaid a map of the Overall Wildfire Risk – a measure of the likelihood and consequence of wildfire on all mapped highly valued resources and assets – with CRPUD’s primary electric feeders. The combination of these two data sets provides insight into the wildfire risk in different areas of CRPUD’s service territory. In general, CRPUD’s service territory is predominantly in the low-risk category. However, there are some pockets of moderate risk, and a limited amount of high-risk areas.



¹ The Oregon Wildfire Risk Explorer can be accessed at the following web address: https://tools.oregonexplorer.info/OE_HtmlViewer/Index.html?viewer=oe.



CRPUD linemen restoring power during an outage

3.3 Current Practices

CRPUD tracks outages using the FUTURA outage management system. The outage data is used to identify areas with higher-than-normal outage incidences and helps drive system improvements designed to mitigate risk. CRPUD uses its Risk Analysis and the Oregon Wildfire Risk Explorer to identify wildfire risks and evaluate possible measures for reducing outages, including additional tree trimming, replacement of fuses with automatic reclosers, relocating lines, and undergrounding lines.

Annual ground patrols are conducted and provide a visual inspection of the electric facilities as required by OAR 860-024-0011. In addition, crews patrol facilities every day during the normal course of business. All issues noted during these patrols are evaluated and addressed. These inspections help identify potential issues before an outage occurs.

Where practical, lines are located in open areas and away from vegetation. CRPUD considers ground clearance and ease of access for ongoing operations and maintenance in the design of its lines and other facilities.

4. Mitigation Strategies

4.1 Vegetation Management

CRPUD's Vegetation Management Program is an important tool to minimize wildfire risk, increase public safety, and maintain safe and reliable service. The Vegetation Management Program complies with all state and federal clearance requirements, including OAR 860-024-0016 and 0017. This program is assigned to tree crews which are contracted through Asplundh Tree Expert, LLC. CRPUD contracts for two crews year-round to patrol, trim and cut limbs and trees from south to north through CRPUD's service territory on a two-year cycle to maintain minimum clearances. Additionally, crews perform visual inspections to identify and remove

trees and branches where imminent tree or branch failure would potentially damage electric lines or equipment. CRPUD cooperates with customers to remediate hazards and other problem vegetation located outside the right of way.



Tree trimmers at work in CRPUD service territory

4.2 System Inspection and Maintenance

CRPUD performs the following system inspections and maintenance:

Transmission & Distribution Lines

- Bi-annual infrared scans of its transmission lines.
- Bi-annual infrared scans of feeders (down to 25 AMP fuses).
- Ten-year pole inspections to identify NESC violations and rotten poles. These inspections are hired out, and at least 10% of our service territory is inspected each year to ensure that 100% of poles are inspected during each ten-year cycle.

Substations

- Maintenance and testing occur every five years.
- Oil samples are collected annually.
- Inspections are performed monthly.
- Infrared scans are carried out bi-annually.



CRPUD lineman performing work on our Betsy Johnson Substation

4.3 System Hardening

CRPUD's design and construction of its transmission/distribution system and equipment is intended to reduce the likelihood of ignition and improve electrical asset survivability. System hardening investments are evaluated on a case-by-case basis. When prudent, CRPUD utilizes system hardening measures including:

- Stronger poles to address engineering standards that exceed code requirements.
- Shorter span length and larger spacing between energized conductors to reduce mid-span conductor contact.
- Relocate poles closer to the road to enhance access.
- Covered (insulated) service wire is used throughout the district. The covered wire is designed to withstand inadvertent contact with vegetation or other objects without fire ignition.
- Overhead lines may be undergrounded in areas prone to repeated outages due to tree exposure.

4.4 System Protection

Protective Device Settings

Protective devices with alterable settings have been selected, or strategically placed, to better isolate areas identified as having a greater risk for wildfire ignition. Settings can be changed remotely or in person, to reduce reclose operations, reduce fault clearing time, or both.

The decision to change device settings in response to wildfire risk is made by the District on a case-by-case basis based on an analysis of external risks and potential consequences.

Protective devices shown in the table below have been identified as candidates for evaluation (and potential modification) of their settings in response to an escalation in wildfire risk.

ID	LOCATION	DEVICE TYPE	CONTOL TYPE
R7201	TOWNSEND RD, RAINIER	G&W VIPER-ST RECLOSER	SEL-651R
R7202	FERNHILL RD, RAINIER	G&W VIPER-ST RECLOSER	SEL-651R
R4280	NICOLAI RD (WEST) GOBLE	G&W VIPER-ST RECLOSER	SEL-651R
R4265	NICOLAI RD (EAST), GOBLE	G&W VIPER-ST RECLOSER	SEL-651R
R4200	CANAAN RD, DEER ISLAND	G&W VIPER-ST RECLOSER	SEL-651R
R4301	EAST KAPPLER RD, ST HELENS	G&W VIPER-ST RECLOSER	SEL-651R
R4600	SYKES ROAD, ST HELENS	G&W VIPER-ST RECLOSER	SEL-651R
TB-R103	TARBELL SUBSTATION, WARREN	GE VB1 CIRCUIT BREAKER	SEL-351S
R4201	WIKSTROM RD, SCAPPOOSE	G&W VIPER-ST RECLOSER	SEL-651R
R3201	DUTCH CANYON RD, SCAPPOOSE	S&C TRIP-SAVER, CUTOUT MOUNTED RECLOSER	INTERNAL ELECTRONIC, AND EXTERNAL PULL HANDLE
R3203	BONNEVILLE RD, SCAPPOOSE	G&W VIPER-ST RECLOSER	SEL-651R

Additional protective devices will be evaluated for setting modification on a case-by-case basis in response to specific risks or wildfire events.

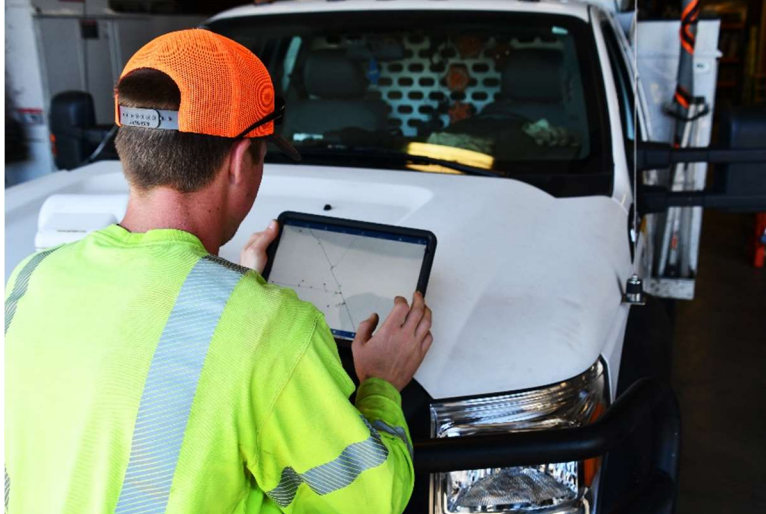
4.5 Operational Tools and Practices

CRPUD employs a number of operational tools to mitigate wildfire risk, including:

4.5.1 Work Tools

- AMI (advanced metering infrastructure) meters are used to view meter status, monitor voltage at the meter level, measure usage, detect tampering, identify and isolate outages, perform remote connect/disconnects, and provide on-demand reads. The AMI system provides overall situational awareness in real time and allows for a proactive approach to potential fire-ignition issues.
- OMS (outage management system) is used for tracking and responding to outages and system hazards. The OMS captures outage information in near real time, consolidates field events, and alerts operators to potential issues impacting the system. OMS information includes outage location, cause, duration and number of customers impacted. The information is used to plan work and prioritize system upgrades including vegetation maintenance.
- SCADA (supervisory control and data acquisition) is used to monitor, operate and remotely control field devices including substation reclosers to isolate a line or line section.

- The Operations Manager monitors weather using a variety of sources including NOAA, National Weather Service, weather apps and various websites.
- During fire season, each CRPUD truck carries fire suppression equipment.



CRPUD crew member utilizing an iPad to access OMS

4.5.2 Work-Based Practices

Key employees at CRPUD are involved in an Emergency Event email chain that includes key wildfire stakeholders in its service area. This allows employees to stay up-to-date with other agencies on wildfire status and other agencies' status and concerns.

4.5.3 Work-Based Training

Incident Command System

Key employees receive ISC 100 training and perform tabletop exercises related to wildfire response and emergency preparedness.

4.5.4 Industrial Fire Protection Level (IFPL) Precautions

IFPL restrictions are based on climatic conditions such as temperatures, wind speed, humidity, firefighting resource availability, and potential trigger events. Local topography and fuel (vegetation) are also factors. The Oregon Department of Forestry determines the IFPL in each of the fire protection zones.

Each precaution level specifies those activities that are permitted and prohibited within the specified zones. Precaution levels are labeled as follows:

- IFPL 1- Fire Season
- IFPL 2- Limited Shutdown
- IFPL 3- Restricted Shutdown
- IFPL 4- Complete Shutdown

CRPUD follows the stipulations and guidelines provided by the Oregon Department of Forestry as seen in the *Industrial Fire Precaution Levels (IFPLs) for Oregon Department of Forestry Protection West of the Cascades* and *Fire Season Requirements* documents located on the Oregon Department of Forestry website located at:

<https://www.oregon.gov/odf/fire/Documents/industrial-fire-precaution-levels.pdf> and <https://www.oregon.gov/odf/fire/Documents/fire-season-requirements-for-industrial-operations.pdf>

4.5.5 Industry Connections & Interagency Collaboration

Emergency Personnel

CRPUD collaborates with other agencies within its service territory regarding wildfire mitigation. CRPUD holds meetings bi-annually to discuss the upcoming fire season and lessons learned from the previous fire seasons. At these meetings, CRPUD is able to exchange information and make necessary changes to its system and processes.

CRPUD is also working with other agencies to expand its right of way clearances. Expanded clearances allow CRPUD to more effectively implement its wildfire mitigation strategies, namely vegetation management.

During a wildfire event, CRPUD leverages its connections with emergency management personnel, first responders, fire chiefs and Department of Forestry staff. In the event of an evacuation due to a fire threat, CRPUD will work with local agencies to determine the best course of action. Additionally, key personnel at CRPUD are in contact with these community stakeholders and receive updates from them on important events.

Local Utilities

Additionally, CRPUD utilizes mutual aid agreements with other utilities. In the case of an emergency event, CRPUD can call on crews from other utilities for assistance. Similarly, CRPUD crews are able to help other utilities in its area if they encounter a large-scale issue.

During fire season, if CRPUD de-energizes lines proactively, or as a result of a wildfire, crews will patrol each line section prior to re-energizing. If there are more lines to patrol than the utility has resources to complete the inspections in a timely manner, CRPUD may call for mutual assistance from other utilities. Requests for assistance under mutual assistance agreements will go to neighboring utilities first before requesting assistance from utilities further away.



CRPUD linemen assisting Emerald PUD in Eugene, OR

5. Response Strategies

5.1 Situational Awareness

5.1.1 Weather Monitoring

CRPUD Engineering and Operations Managers regularly monitor incoming weather using NOAA's National Weather Service data, weather apps, and various websites.

5.2 Operational Response

5.2.1 Operating Procedures during Increased Fire Risk

CRPUD adjusts normal operating procedures based on the following:

Key Response Strategies	
Status	Response
Fire Season - <i>The months of June - September</i>	<ul style="list-style-type: none"> • Monitor forecasted conditions. • Raise situational awareness. • Monitor and adhere to IFPL.
Red Flag Warning Days - <i>Days in which the local fire department establishes a Red Flag Warning</i>	<ul style="list-style-type: none"> • Evaluate the situation for ICS activation and PSPS. • Assess the application of relay sensitivity settings. • Limit non-critical maintenance work. • Monitor and adhere to IFPL.

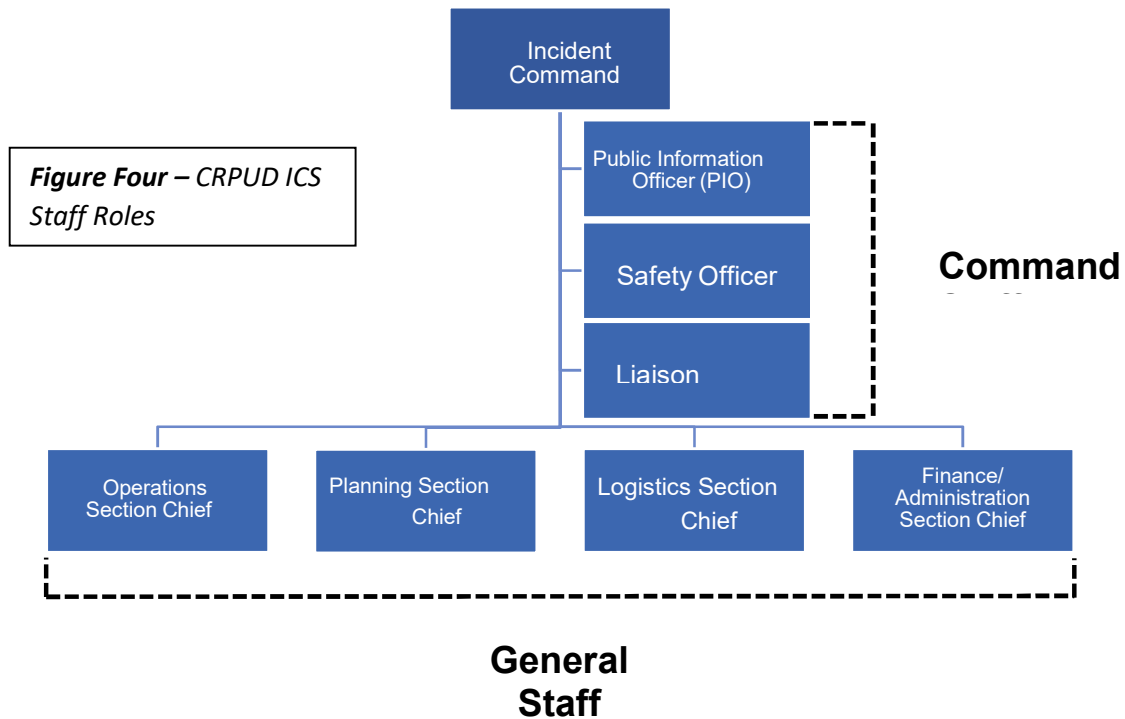
<p>Extreme Risk Days – <i>Days in which the IFPL is at a Level 4.</i></p>	<ul style="list-style-type: none"> ● Evaluate the situation for ICS activation and PSPS. ● Activate relay sensitivity settings. ● Monitor and adhere to IFPL. ● Patrol lines 100 percent before re-energizing. ● Cease non-emergency maintenance work. ● Communicate with local emergency management organizations.
<p>Fire Event - <i>A fire is active within our service territory.</i></p>	<ul style="list-style-type: none"> ● Activate ICS. ● Coordinate de-energizing/re-energizing sections of line with local emergency management. ● Help facilitate evacuations, if needed ● Implement PSPS as necessary. ● Make repairs and assess before re-energizing.

5.2.2 Internal Communication Regarding Fire Level Status

Current IFPL and forecasted conditions are monitored by the Operations Manager, Engineering Manager and Operation’s Assistant daily. They communicate updates on status levels, safety precautions, and procedures to the appropriate CRPUD personnel daily prior to work beginning.

5.2.3 Incident Command System

The Incident Command System (“ICS”) is activated in response to incidents such as natural disasters and during large-scale outage situations. When ICS is activated at CRPUD, designated staff fill the Command and General Staff roles as seen in Figure Four below.



5.2.4 Public Safety Power Shutoff

A Public Safety Power Shutoff (“PSPS”) preemptively de-energizes power lines during high wind events combined with hot and dry weather conditions. CRPUD utilizes PSPS as a last response to mitigate risk during red flag warnings or extreme conditions.

The necessity, location, duration, and timeline of a PSPS activation will be determined by the Incident Commander and may be in consultation with interagency partners including, but not limited to, the Oregon Department of Forestry, Columbia County Emergency Management, and local fire departments. The Incident Commander will evaluate conditions and will determine when it is safe for re-energization. Prior to re-energizing the system, full line patrols of the PSPS area will be performed by Operations field staff.

When considering a PSPS, CRPUD examines external risks and potential consequences of a PSPS, including:

- Potential loss of water supply to fight wildfires due to loss of production wells and pumping facilities.
- Negative impacts to emergency response and public safety due to disruptions to the internet and mobile phone service during extended power outages.
- Loss of key community infrastructure and operational efficiency that occurs during power outages.

- Medical emergencies for members of the community requiring powered medical equipment or refrigerated medication. Additionally, the lack of air conditioning can negatively impact medically vulnerable populations.
- Negative impacts on medical facilities.
- Traffic congestion resulting from public evacuation in de-energized areas can lengthen response times for emergency responders.
- Negative economic impacts from local businesses forced to close during an outage.
- The inability to open garage doors or motorized gates during a wildfire event can lead to injuries and fatalities.

The risks and potential consequences of initiating a PSPS are significant and extremely complex. Based on the above considerations, CRPUD reserves the option of implementing a PSPS when conditions dictate. While CRPUD believes the risks of implementing a PSPS far outweigh the chances of its electric overhead distribution system igniting a catastrophic wildfire, the PSPS provides a last resort tool and another option in a crisis as it could potentially prevent a fire.

On a case-by-case basis, CRPUD will consider de-energizing a portion of its system in response to a known public safety issue or a request from an outside emergency management/response agency.

The decision to implement a PSPS is based on multiple triggers accompanied with the unique understanding of the CRPUD system. No single element is determinative. Potential factors include:

- Imminent fire danger
- Critically dry vegetation that could serve as fuel for a wildfire
- Low humidity levels
- Red flag warnings
- Temperatures over 100°F
- Winds projected beyond 40 mph in high-risk areas
- Mandatory fire orders in effect
- On-the-ground observations from CRPUD or other agency field staff
- Active wildfire in the service area
- Local topography

CRPUD will monitor the evolution of PSPS implementation by other Oregon electric utilities to continue to refine its evaluation criteria and processes.

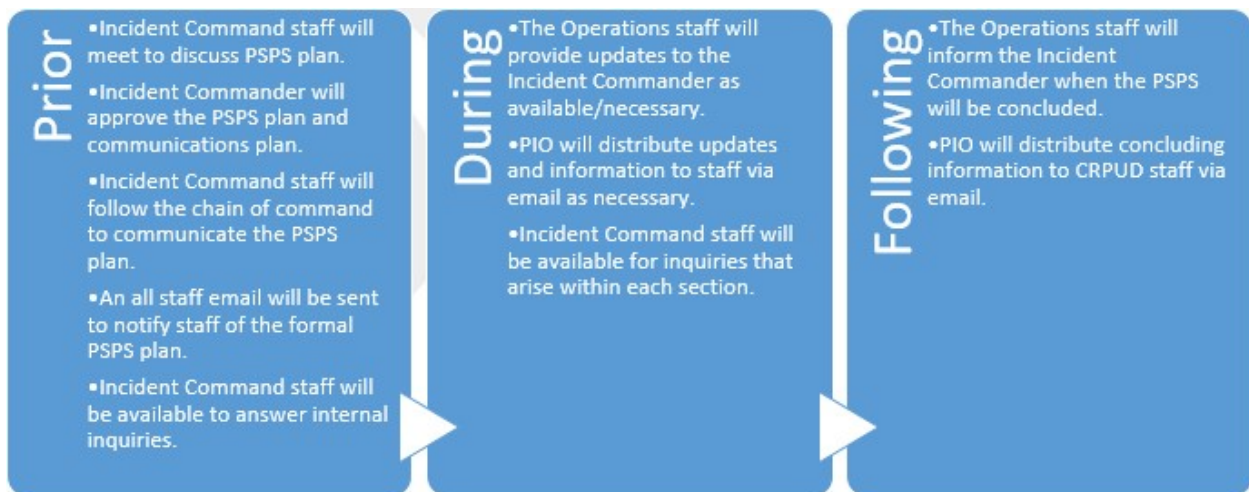


CRPUD serviceman adjusting substation settings

Communications

Internal and external communications are of the utmost importance before, during, and following a PSPS activation. The subsequent process flow charts depict the typical communication strategies executed should a PSPS activation need to occur.

Internal Communications Prior, During and Following a PSPS Activation:



External Communications Prior, During and Following a PSPS Activation:



6. Plan Maintenance & Implementation

6.1 Plan Maintenance & Implementation

This Wildfire Mitigation Plan is subject to review and approval by the CRPUD Board of Directors. Mitigating of wildfire risk is the primary objective of this document. Staff has the role of vetting current procedures and recommending changes or enhancements to build on strategies to meet the objective. CRPUD staff will monitor the effectiveness of the Plan and evaluate potential changes based on factors such as industry developments, new technology, new industry specific fire mitigation measures, modified operational practices, and/or new state laws or requirements. CRPUD staff will recommend changes, if any, in the form of an updated Plan presented to the Board.