

Wildfire Mitigation and Response Plan

Emerald PUD

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1. INTRODUCTION

Oregon’s 2020 wildfire season was one of the most destructive in the state’s history. For Emerald People’s Utility District (the “District”), the worst impacts of the 2020 fire season began on Labor Day weekend when the District’s service territory was affected by a red flag warning. Historically, red flag warnings are rare for Lane County. In addition, for the first time, a portion of the District’s service territory was placed under a Level 3 evacuation order. The District took this and other factors into consideration and proactively deenergized a portion of its service territory. As a result of increasing wildfire risks, occurrences like this are likely to become more common and the District must plan accordingly.

The District’s mission is to provide safe, reliable, low-cost power in an environmentally responsible manner. To meet this goal, the District must construct, operate, and maintain its electric facilities in accordance with applicable laws and in a manner that minimizes wildfire risks.

1.1 Purpose:

The goal of this Wildfire Mitigation Plan (“Plan”) is to support and enhance public safety and mitigate the threat of wildfires ignited by electrical equipment in the District’s service area. The Plan identifies potential risks of ignition from the District’s facilities, assesses those risks, and adopts mitigation strategies to minimize the risk of igniting a wildfire. The Plan also covers strategies to respond to wildfires, regardless of the cause, that include enhanced situational awareness and operational readiness.

2. UTILITY PROFILE

The District is one of six distribution utilities in the greater Eugene/Springfield area in Lane County, Oregon. The District provides power to about 22,000 customers located in approximately 560 square miles which are broken into two geographically isolated regions. The District has one main site that serves as its main office, shop, and warehouse. The District has eight substations in Lane County (seven of which directly provide power to retail customers), 18 miles of transmission lines,¹ 810 miles of overhead distribution lines, and 338 miles of underground distribution lines. There are many areas where the District’s overhead distribution facilities are in the same area – or even on the same poles – as facilities belonging to other utilities.² The District also has a generator site at the Short Mountain landfill.

The operational response procedures developed as part of this Plan are based on geographic areas within the District’s service area and within a reasonable distance of the District’s facilities. These areas include:

¹ Bonneville Power Administration and/or PacifiCorp provide transmission service to seven of the District’s eight substations in Lane County.

² The proximity of facilities belonging to other utilities is a factor considered in some of the response strategies. In addition to transmission lines belonging to BPA and PacifiCorp, there are also distribution lines belonging to PacifiCorp, BlachlyLane Electric Cooperative, Lane Electric Cooperative, Eugene Water and Electric Board, and Springfield Utility Board.

- Fire Weather Zones, see Figure 1
- Evacuation zones
- Fires and Hotspot Dashboard data

2.1 Fire Weather Zones:

The state of Oregon is divided into a number of Fire Weather Zones. When weather conditions in a zone present elevated risks that may lead to the uncontrolled spread of wildfires, the National Oceanic and Atmospheric Administration (“NOAA”) issues a Red Flag Warning for that zone. The District’s service area is located in zones 603, 604, and 606 as shown in Figure 1. The District has established operational response procedures that are enacted if and when the NOAA issues Red Flag Warnings for the District’s service area and surrounding areas.

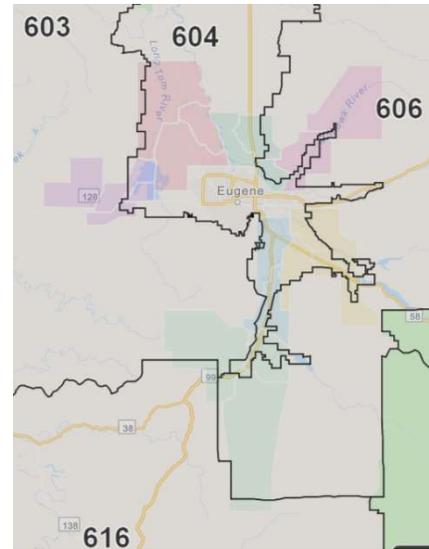


Figure 1 - Fire Weather Zones

2.2 Evacuation Zones:

When wildfires or other emergencies occur, state and local agencies activate emergency response teams. One of the key functions of these teams is to assess and monitor hazardous conditions and issue evacuation orders. The evacuation orders identify the impacted area(s) and assign an evacuation level. While fire weather zones are well defined and static, evacuation zones are created as needed during emergencies and may arise with little or no notice. The District closely monitors regional evacuation orders and links the boundary and evacuation level to the District GIS System of Record.³ The evacuation zones are a critical part of the District’s operational response to emergencies.

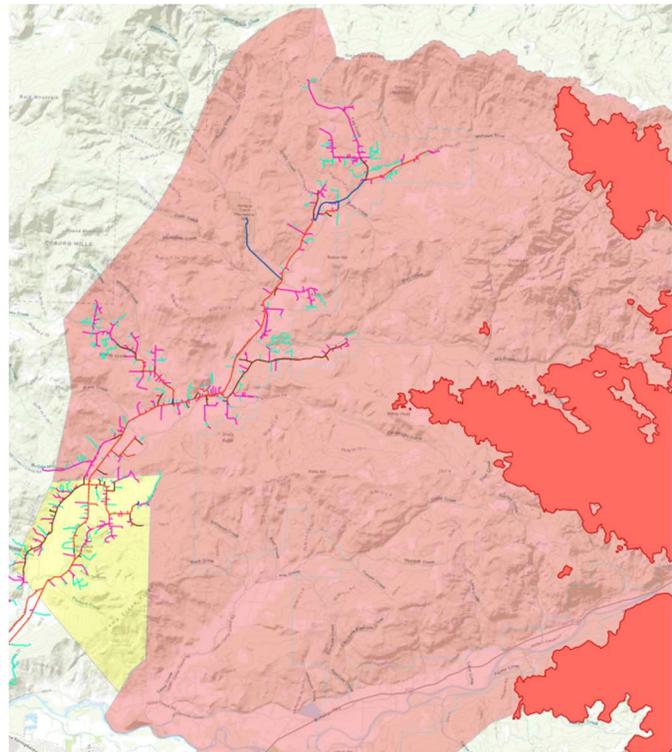


Figure 2 - Map of Mohawk Valley during Labor Day 2020 evacuations

- Legend:
- Dark red: Extent of known fire
 - Pink: Extent of Level 3 evacuation
 - Yellow: Extent of Level 2 evacuation

³ The GIS System of Record is a geographical representation of a database that contains information on all of the District’s facilities in the field. The District links external information, such as evacuation zones and active fire areas, published by outside agencies (e.g., the Oregon Department of Forestry), providing a geographical representation of present conditions along with the District’s facilities.

2.3 Fires and Hotspot Dashboard:

The state of Oregon maintains the Fires and Hotspots Dashboard, a website that shows the size and location of active wildfires.⁴ The District links data from the Fires and Hotspots Dashboard to the District GIS System of Record. The District reviews and uses this information as a critical component of its operational response to emergencies.

The District's electric facilities cross the boundaries of fire weather zones. The District's electric facilities are also likely to cross boundaries of evacuation zones as they are created and adjusted during a wildfire event. Therefore, it is unlikely that there will be an isolation point (e.g., recloser, switch, fuse) at a weather zone or evacuation zone boundary. As a result, operational responses will likely affect District energy facilities and customers in areas beyond just the area of immediate concern.

3. IGNITION RISK IDENTIFICATION AND MITIGATION STRATEGIES

The District identified six potential categories of causes of powerline related sparks and ignitions:

- Vegetation and Wildlife
- Human Caused
- Wire to Wire Contact
- Electrical Equipment Failure
- Protection Equipment Operation
- Other

3.1 Vegetation and Wildlife:

The District has an in-house group that performs vegetation management. This group includes a supervisor and several crews dedicated to maintaining adequate clearances between vegetation and District overhead distribution and transmission facilities. The District's crews perform vegetation management practices in compliance with all applicable state and federal clearance requirements, including OAR 860-024-0016 and 0017. The crews also perform visual inspections of the District's rights-of-way to identify and remove: (a) hazard trees that are in imminent danger of falling into the District's facilities; and (b) high-risk fuel sources, such as straw that may impact certain circuits and gather at poles from time to time. The district performs inspections and vegetation trimming and removal year-round and covers its entire system on a four-year cycle.

The District has implemented measures to decrease the likelihood of contact between energized equipment and wildlife. To minimize the risks presented by these types of contacts, the District includes wildlife guards when installing new electrical equipment such as transformers, capacitors, and reclosers. In addition, as linemen respond to outages that involve wildlife, guards are retrofitted onto existing equipment. Furthermore, in areas that are known to have raptors or other birds of prey, the District constructs its facilities with increased spacing to minimize the risk to raptors or birds of prey from contact with energized equipment.

⁴ The State of Oregon's interactive map of active wildfires is available at <https://www.oregon.gov/odf/fire/pages/firestats.aspx>

3.2 Human Caused:

There are many ignition risks from human activity. For example, the District from time to time responds to accidents involving a vehicle hitting a pole or snagging an overhead line (often communication), which can damage adjacent poles, or cause wires to contact each other as a result of the shock. The resulting sparks can be a source of ignition. In addition to vehicle involved accidents, there can be other hazardous conditions such as equipment (e.g., irrigation pipe, ladders, well drillers, etc.) or flying objects (e.g., balloons, kites, drones, etc.) contacting electric lines. The District regularly reaches out to the public about the risk of contact with overhead lines.

3.3 Wire to Wire Contact:

In certain situations, it is possible for adjacent overhead wires to make contact with each other partway between two poles. When wires contact each other, there may be an immediate flash and sparks can drop to the ground. This can be caused by a number of events, including:

- A physical shock to a structure, such as when a car strikes a pole
- Something mechanically forcing one wire into another, such as a goose or turkey hitting a wire
- Adjacent wires being electromagnetically attracted to each other during certain types of faults

After any of these types of events have occurred, the electric facilities in the area are analyzed and, when appropriate, remedial actions are taken. These can include inseting poles, adding spacers between wires, and resagging wire.

3.4 Electrical Equipment Failure:

The District performs regular safety inspections to reduce the risk of electrical equipment failure. In conjunction with its pole inspection and treatment program, the District conducts detailed inspections of its wires, poles, and attached equipment on a ten-year cycle to assess the condition of the District's equipment. The District will remedy unsafe conditions or defects that could adversely impact reliability or result in failures which are identified during such inspections.

3.5 Protection Equipment Operation:

Fuses and reclosers play a significant role in safeguarding the public and protecting the District's electrical equipment from faults that occur on its distribution system by opening when a fault occurs to stop the electric current from continuing to flow through equipment. The District has replaced approximately twenty fuse installations on main lines with reclosers and is continuing to evaluate reclosures at additional locations. Reclosers provide two advantages over fuses. First, reclosers react more quickly to faults, limiting the amount of energy that is released into the fault and decreasing the risk of damaging equipment and causing a fire. Second, the operation of a recloser can be remotely and quickly modified to isolate facilities at elevated risk of wildfire. The District is also investigating alternate types of fuses for use in certain areas or applications.

3.6 Other:

There are other possible sources of ignition with the District’s electric facilities, including vandalism. While it has been several years since the District’s facilities and ground wires were being frequently cut and removed from District poles and substations, it is a situation that may arise again.

In addition to the District’s electric facilities being a potential source of ignition, its vehicles and tools can be sources of sparks or fire ignition. The District monitors notifications from the Oregon Department of Forestry as fire restrictions are instituted or modified for the two Fire Protection Districts where the District’s crews normally work (West Lane, East Lane). As conditions warrant, the District adjusts the work practices of the crews to reduce the risk of ignition. This includes using a fire suppression vehicle at certain job sites, keeping vehicles on roadways (and off of dried grass), measuring the relative humidity at job sites, not using gas powered chain saws, adjusting work schedules to earlier in the day, and providing a fire safety watch after work at a site is complete.

4. OPERATIONAL RESPONSE STRATEGIES

4.1 Wildfire Crisis Team

Multiple departments within the District collaborate to gather and share information regarding a wildfire or potential wildfire situation. When an extreme weather event occurs, the District’s Crisis Team will determine a plan of action. The Crisis Team members include:

- A. General Manager
- B. Operations Manager
- C. System Engineer
- D. Customer Service Supervisor
- E. Other designated personnel as appropriate

The Crisis Team determines whether and when to implement wildfire communication protocols and considers the external risks and potential consequences of actions taken during an extreme weather event.

4.2 Communications

Once the National Weather Service has issued an extreme weather event, the Crisis Team will determine the appropriate message to distribute to customers and the public. The message will be distributed via one or more of the following channels:

- County Emergency Management agencies
- News media
- Email
- Social media outlets
- Mass phone calls (IVR system)
- District’s Website
- Customer Service Representative (CSR) talking points
- Direct contact with Key Accounts affected

4.3 Situational Awareness

As described below, the District monitors multiple news, weather and emergency management sources to ensure that it is aware of the level of risk of wildfire and the status of active wildfires in the District's service territory and surrounding areas.

- During wildfire season, the Oregon Department of Forestry Public Fire Restrictions issues a daily fire level status. These notifications are emailed directly to the Operations Supervisor and Right of Way Supervisor. Right of Way crews carry firefighting equipment, water, hydraulic chain saws, and handheld weather monitoring stations.
- The NOAA National Weather Service issues alerts when conditions are excessively dry or windy. When conditions meet established criteria, the NOAA issues Red Flag Warnings.
- In the event a wildfire ignites, the District links data published by Oregon Department of Forestry to the District GIS System of Record. Once linked, the data is updated in real time on the District GIS System of Record. The data shows both the location and level (e.g., 1, 2, 3) of Fire Evacuation Zones. The extent of known fires are also displayed and updated on the District GIS System of Record.
- When agencies respond to a wildfire in the area and establish command posts, the District assigns a liaison and establishes communication with the appropriate agencies.

4.4 System Operation Adjustments for Wildfire

The District uses relay-controlled breakers and reclosers in conjunction with fuses to provide protection against faults that occur on its system. The protection system has two basic goals:

- For temporary faults: Allow them to clear without causing a sustained outage to customers.
- For permanent faults: Quickly clear the fault, thereby limiting the risk of exposure of the public to possibly unsafe conditions and minimizing the number of customers affected by a sustained outage.

The relays for breakers and reclosers are programmed to open and close two times (*reclosing*) to allow temporary faults to clear before opening and remaining open (*lock out*) when the fault is permanent. An important aspect about the way the system functions is that relays are set so that they allow fuses to operate to clear permanent faults that are further downstream. This protection scheme is referred to as *coordination* and minimizes the number of people that experience a sustained outage when a fault occurs by allowing the nearest upstream device to operate and deenergize power to the area with the fault. It also minimizes the area that needs to be inspected for additional faults prior to restoring power, which helps reduce the time required to restore power.

The District has several tools for adjusting system operation in response to the risk of wildfires in its service area:

1. Disable reclosing on relays (while maintaining coordination)
2. Modify relay settings to increase sensitivity (at the expense of coordination)
3. Deenergize power lines (Public Safety Power Shut Off)

The decision to implement these tools is made by the District on a case-by-case basis based on an analysis of external risks and conditions and potential consequences associated with customers losing power.⁵

4.5 Red Flag Warning Response

The District's response for the duration of a Red Flag Warning issued for any of the fire weather zones is to disable reclosing on relays that provide power to the affected zone(s).⁶ While this will result in sustained outages for temporary faults, it will maintain coordination so that the device closest to the fault will operate, thereby minimizing the number of customers affected by the outage and the amount of time required to restore power.

4.6 Public Safety Power Shut Off ("PSPS")

A PSPS preemptively de-energizes power lines during high wind events that occur during hot and dry weather conditions. The District utilizes PSPS as a last response in mitigation strategies during red flag warnings or other extreme conditions. The necessity, location, duration, and timeline of a PSPS activation will be determined in consultation with the appropriate emergency services, including law enforcement and/or fire departments. The Crisis Team will evaluate conditions and will determine when it is safe to begin the process of reenergizing its facilities.

When considering a PSPS, the District will examine external risks and conditions 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 of internet service, and communication and 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 the public evacuation in de-energized areas can lengthen response times for emergency responders.
- 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 the decision to initiate a PSPS is extremely complex. Based on the above considerations, the District reserves the option of

⁵ The external risks of customers losing power are discussed in detail below in relation to Public Safety Power Shut Offs. Modifying reclosing on relays and modifying relay settings to increase sensitivity can affect the duration of an outage and, therefore, implicate many of the same concerns as a Public Safety Power Shut Off.

⁶ Note that isolation points on the District's distribution system are not always at the boundary between zones. As a result, customers in a fire weather zone that has not been issued a Red Flag Warning may be impacted by a warning issued for an adjacent weather zone.

implementing a PSPS when conditions dictate in its sole discretion. While the District 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 valuable tool of last resort in a crisis.

On a case-by-case basis, the District 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 considerations including a detailed understanding of the District's electric system. No single element is determinative. Potential factors include:

- Imminent fire danger
- Extreme weather conditions
- Red flag warnings
- Mandatory fire orders in effect
- On-the-ground observations from the District's or other agency field staff
- Active wildfire in the service area
- Local topography

The District will, to the extent possible, coordinate PSPS plans with outside agencies and will distribute a PSPS notification to the public through one or more of the following means: District social media, text messages, email, radio, and the District website. The District will provide additional updates and information to the public as necessary and will communicate that the PSPS has ended using the same channels by which information was initially distributed.

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

4.7 Evacuation Orders

The District will evaluate its response to an evacuation order on a case-by-case basis and the appropriate response may depend on the cause of the evacuation (e.g., fire, flood, bio hazard, etc.). In the event that the main facility is under evacuation orders, the District will move all personnel to remote operations and relocate rolling stock and emergency materials to an alternate location.

4.8 Summary of District Response Activities

The District’s response activities are summarized in Figure 3. The actions listed at each risk level may be implemented at a lower risk level depending on the specifics of the emergency.

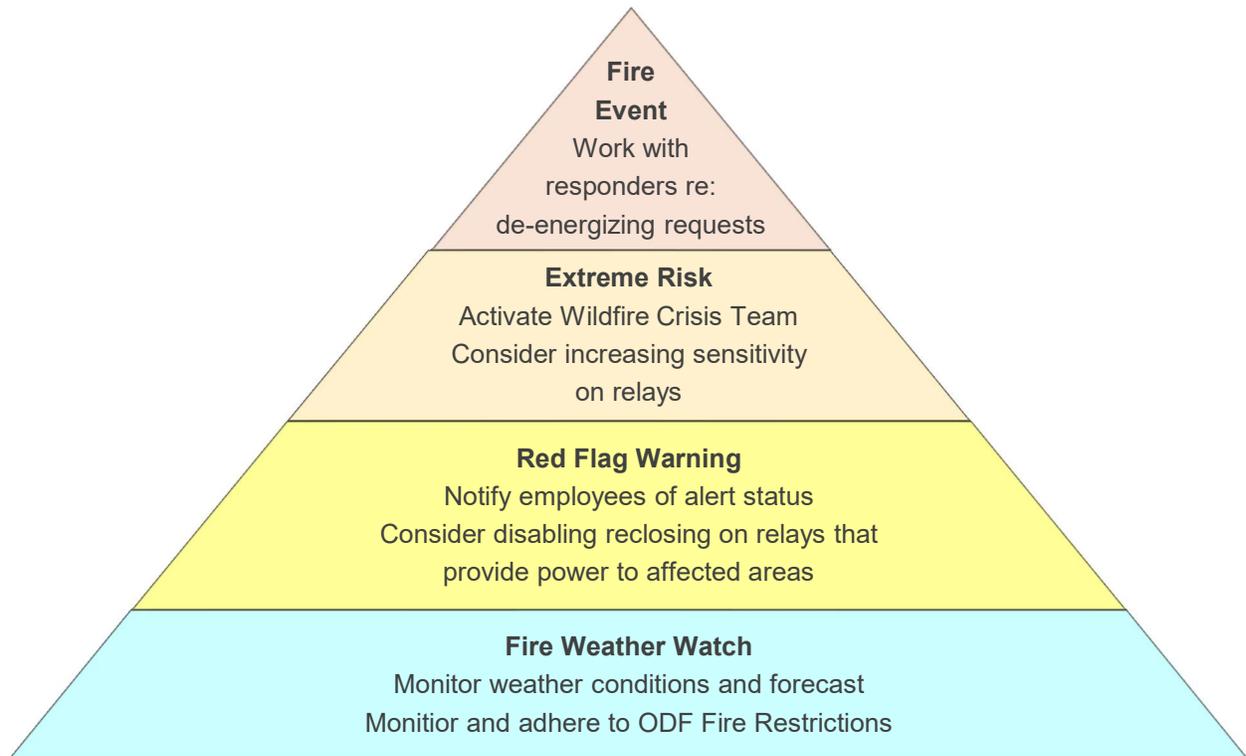


Figure 3 - Summary of District response activities

5. Conclusion:

This Plan is intended to help mitigate the risk of wildfires and is subject to review and approval by the District Board of Directors. The District will monitor the effectiveness of the Plan, as well as changes to regulations and new information from industry and trade groups, and evaluate potential changes that may improve the Plan. The District’s staff will recommend changes, if any, in the form of an updated Plan presented to the Board for review and approval.