



# **2022 WILDFIRE MITIGATION PLAN**

**April 11, 2022**



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# 1 Introduction/Executive Summary

Oregon has experienced some of the most devastating and catastrophic wildfires in the country. These unusually large wildfires are on the rise in the PNW with an increase in fires in west-side conifer forests. In the western U.S. region encompassing the PNW, the annual probability of very large fires is projected to increase by a factor of 4 in 2041-2070 compared to 1971-2000<sup>1</sup>.

As a result of this increased wildfire danger the Oregon legislature passed Senate Bill 762 which Gov. Kate Brown signed into law in 2021. SB 762 establishes new programs to fight and mitigate wildfires, bolster recovery, help communities adapt to smoke, and implement changes to the state's building code for structures within high-risk areas in the wildland-urban interface (WUI). It also requires consumer owned electric utilities develop risk-based wildfire mitigation plans and submit them to the Oregon Public Utility Council (OPUC) by June 30, 2022.

For the City of Forest Grove Light & Power (FGL&P), which aims to protect public safety and preserve the reliable delivery of electricity, wildfire mitigation is without question a top priority. While an electric utility can never fully eliminate the risk of fire, FGL&P is committed to taking all practical actions available to it to prevent the devastation that a wildfire could bring to the people and communities we serve. This wildfire mitigation plan lays out the steps we are taking to do so.

## 1.1 Purpose of the Plan

The Plan describes FGL&P's strategies, programs, and procedures to mitigate the threat of electrical equipment ignited wildfires, and addresses the unique features of its service territory, such as topography, weather, infrastructure, grid configuration, and areas most prone to wildfire risks. This includes the maintenance of its transmission and distribution (T&D) assets as well as the management of vegetation in the ROWs that contain these assets.

Forest Grove City Council reviews, and approves the Plan as needed, while the City Manager is responsible for its implementation. Primary accountability for plan implementation resides with the Light & Power Director.

## 1.2 Objectives of the WMP

The main objective seeks to implement an actionable plan to create increased reliability and safety while minimizing the likelihood that FGL&P assets may be the origin or contributing factor in the ignition of a wildfire. This plan was developed to be consistent with current industry best management practices and will comply with current Oregon State law, and National Electric Safety Code (NESC) regulations and guidelines. To help develop the Plan, FGL&P compared

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<sup>1</sup> Northwest Climate Adaptation Science Center

emerging technologies that not only reduce the likelihood of a service interruption, but also minimize the risk of ignition from the fault causing the outage.

The secondary objective is to measure, through the annual evaluation of certain performance metrics, the effectiveness of the specific wildfire mitigation strategies. Where a particular action, program component or protocol proves unnecessary or ineffective, FGL&P will assess whether modification or replacement is suitable.

### 1.3 Utility Profile and History

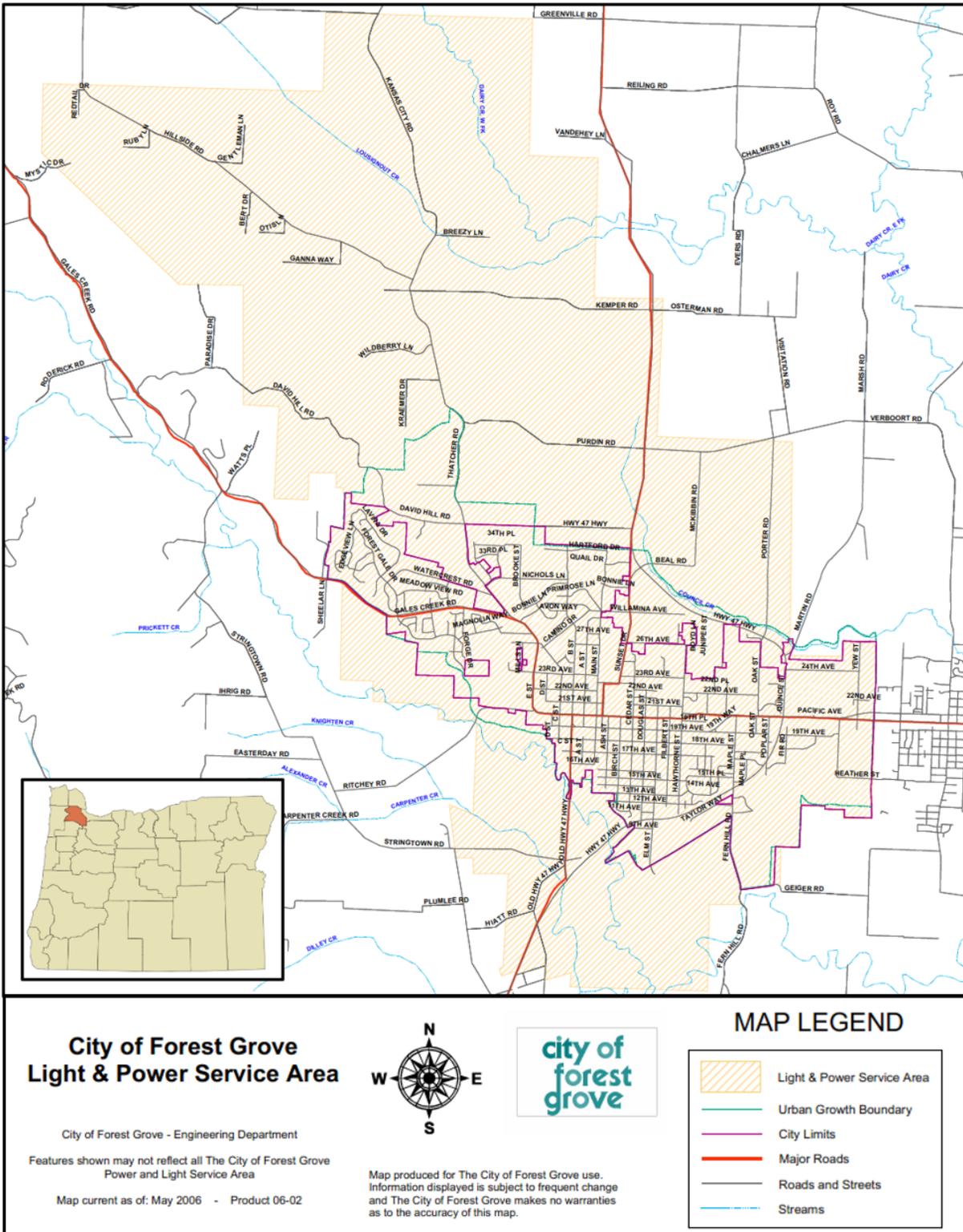
With an extensive prior history of establishment, the City of Forest Grove was incorporated in 1872. The City of Forest Grove Light & Power was founded in 1895 making it the third oldest municipal electric utility in the State of Oregon. Power was first generated by means of a small hydroelectric plant and later by steam and diesel generators. Since 1939, Forest Grove has purchased the majority of its power from Bonneville Power Administration (BPA). Forest Grove Light & Power serves over 10,000 customers in Forest Grove and the unincorporated area immediately surrounding the City. The City is led by the Mayor and City Council and managed by the City Manager, who reports to the Council. Forest Grove Light & Power is managed by the L&P Director who reports directly to the City Manager. FGL&P consists of twenty three dedicated team members and is supported by numerous other City employees.

### 1.4 The Service Area

FGL&P operates from one office and is supported by numerous other City employees housed at City Hall, both located near the downtown core. FGL&P has one satellite warehouse location and owns three substations that serve our 10,000+ customers. FGL&P's service territory encompasses approximately 25 square miles with the majority consisting of an urban environment. The unincorporated area that FGL&P serves is located on the western and northern portion of the service territory. This area consists of farmland and slight wildland urban interface with exposure to grassland and stands of Douglas Fir trees.

Forest Grove experiences summers that are short, warm, dry, and mostly clear and the winters are cold, wet, and overcast. Over the course of the year, the temperature typically varies from 36°F to 82°F and is rarely below 25° or above 93°.

**Figure 1. Service Area**



## 2 Overview of Utility’s Fire Prevention Strategies

This WMP integrates and interfaces with FGL&P’s existing operations plans, asset management, and engineering principles, which are themselves subject to change. Future iterations of the WMP will reflect any changes to these strategies and will incorporate new best management practices as they are developed and adopted.

Table 1 summarizes FGL&P’s five mitigation components with associated programs and activities that support FGL&P’s ongoing commitment to wildfire prevention and mitigation.

**Table 1. Mitigation Strategies/Activities**

<b>DESIGN AND CONSTRUCTION</b>
Strategic undergrounding of distribution lines
Strategic installation of covered “tree” wire
Increase overhead wire spacing to reduce wire to wire contact
Covered jumpers and animal guards
Non-expulsion fuses in select high-risk areas
Avian protection construction standards
Enhanced spacing and insulating of substation equipment and bus for wildlife fault protection
Substation perimeter fencing for security and protection
<b>INSPECTION AND MAINTENANCE</b>
Infrared inspections of substation equipment
Infrared inspections of field equipment
Wood pole intrusive inspection and testing
Enhanced T&D vegetation right-of-way maintenance

## **INSPECTION AND MAINTENANCE (cont.)**

Distribution system line patrols and detailed inspections

T&D system vegetation management program

Increased removal rate of undesirable trees on right-of-way's

Enhanced vegetation management prior to fire season

Enhanced line patrols during fire season

## **OPERATIONAL PRACTICES**

Work procedures and fire hazard training for persons working in locations with elevated fire risk conditions

Community outreach/wildfire safety awareness

Contractor/staff safety training and orientation for vegetation management work

Alternate recloser practices during fire weather

Fire suppression equipment on worksite during fire season

Provide liaison to city and state Offices of Emergency Services (OES) during fire event

## **SITUATIONAL AWARENESS**

Weather monitoring in the service area

Utility-owned weather station

Monitoring active fires in the Southwest

## **RESPONSE AND RECOVERY**

Pre-emptive de-energization protocols

Coordination with local Department of Emergency Management

Line patrols before re-energization

Emergency Restoration Plan

### 3 Utility Asset Overview

The City of Forest Grove is a full-service city with one asset being its municipal owned electric utility. With a supporting cast of city employees across several city-owned buildings, the Light & Power Department operates from one facility located at 1818 B Street in Forest Grove. FGL&P owns three electrical substations and one separate warehouse for material and equipment storage. FGL&P has no generation capabilities and its load is served primarily from the Bonneville Power Administration system as an NT preference customer. FGL&P’s 10,000+ customers are served with a parallel-capable redundant transmission line system operating at a voltage of 115(kV). Its customers are served at a distribution voltage of 12.47 (kV) through a heavily over-built, reliable system that is feeder redundant in most all areas. FGL&P’s three substations containing four power transformers can be operated at N1 redundancy conditions routinely and N2 under emergency situations.

Table 2 provides a high-level description of FGL&P’s T&D assets.

**Table 2. Asset Overview**

ASSET CLASSIFICATION	ASSET DESCRIPTION
<b>Transmission Line Assets</b>	Approximately 4 miles of conductor, transmission structures and switches at 115 kilovolt (kV).
<b>Distribution Line Assets</b>	Approximately 77 miles of overhead (OH) and 73 miles of underground (UG) conductor, cabling, transformers, voltage regulators, capacitors, switches, lined protective devices operating at or below 12kV.
<b>Substation Assets</b>	Major equipment such as power transformers, voltage regulators, capacitors, reactors, protective devices, relays, open-air structures, switchgear, and control houses in 3 substation/switchyard facilities.

### 4 Risk Analysis and Risk Drivers

In order to establish a baseline understanding of the risks and risk drivers involved, FGL&P looked at all aspects of FGL&P’s exposure to fire related hazards. Although there are inherent risks in the operation of an electric utility, it is possible to put in place strategies and

processes to better plan and manage them. The overall goal is to determine the residual risk level after all mitigation factors have been applied to the initial inherent risk.

#### 4.1 Fire Risk Drivers Related to Construction and Operations

FGL&P staff evaluated other utility's fire causes and applied its own field experience to determine the critical potential risk drivers. The categories listed below were identified as having the potential for causing powerline sparks and ignitions:

- Equipment/facility failure
- Foreign contact
- Vehicle impact
- Wire to wire contact
- Wildlife contact
- Standard expulsion fuses
- Vandalism

#### 4.2 Fire Risk Drivers Related to the Service Area

Within FGL&P's service area the following are additional risk drivers for wildfire:

- A shift to drier and hotter summers than normal
- Vegetation type
- Tree mortality/tree failure
- High winds
- Occasional lightning
- Red Flag warning conditions

Portions of the service area have steep and rugged terrain with thick vegetation. These factors, along with abnormal summer conditions, make these areas more vulnerable to wildfire than other areas of the system with less extreme urban topography. This can make access to remote sections of some distribution lines very difficult and time consuming. Fire-fighting activities in this type of terrain are also much more challenging.

#### 4.3 Key Risk Impacts

Ignitions caused by the aforementioned risk drivers (RD) have many possible outcomes. The list below outlines some of the worst-case scenarios and consequences:

- Personal injuries or fatalities to the public, employees, and contractors
- Damage to public and/or private property
- Damage and loss of FGL&P owned infrastructures and assets

- Impacts to reliability and operations
- Damage claims and litigation costs, as well as fines from governing bodies
- Damage to FGL&P's reputation and loss of public confidence

## 4.4 Wildfire History and Outlook

Through a climate change shift, the fire risk season has extended in Oregon. It is now typical to enter a higher risk of fire in June and can easily extend through October. Although FGL&P has never been the source any wildfires, the potential is present, and due to changing weather conditions, increasingly possible. Other utility caused wildfires have been ignited near FGL&P's service area, highlighting the fact that the risk is present.

### 4.4.1 Wildland Urban Interface

The United States Forest Service (USFS) defines the wildland urban interface (WUI) as a place where humans and their development meet or intermix with wildland fuel. Communities that are within 0.5 miles of the zone are included. According to the USDA Forest Service, the area considered WUI has expanded 39% in Oregon from 1990 to 2010, with the number of homes increasing by 53.6%<sup>2</sup>. There are now over 615,000 homes in Oregon located in the WUI<sup>3</sup>.

The WUI is composed of both interface and intermix communities. The distinction between these is based on the characteristics and distribution of houses and wildland vegetation across the landscape. Intermix WUI refers to areas where housing and wildland vegetation intermingle, while interface WUI refers to areas where housing is in the vicinity of a large area of dense wildland vegetation. Figure 2 illustrates the distribution of WUI areas in the service area.

The USFS has established five classes of WUI in its assessment:

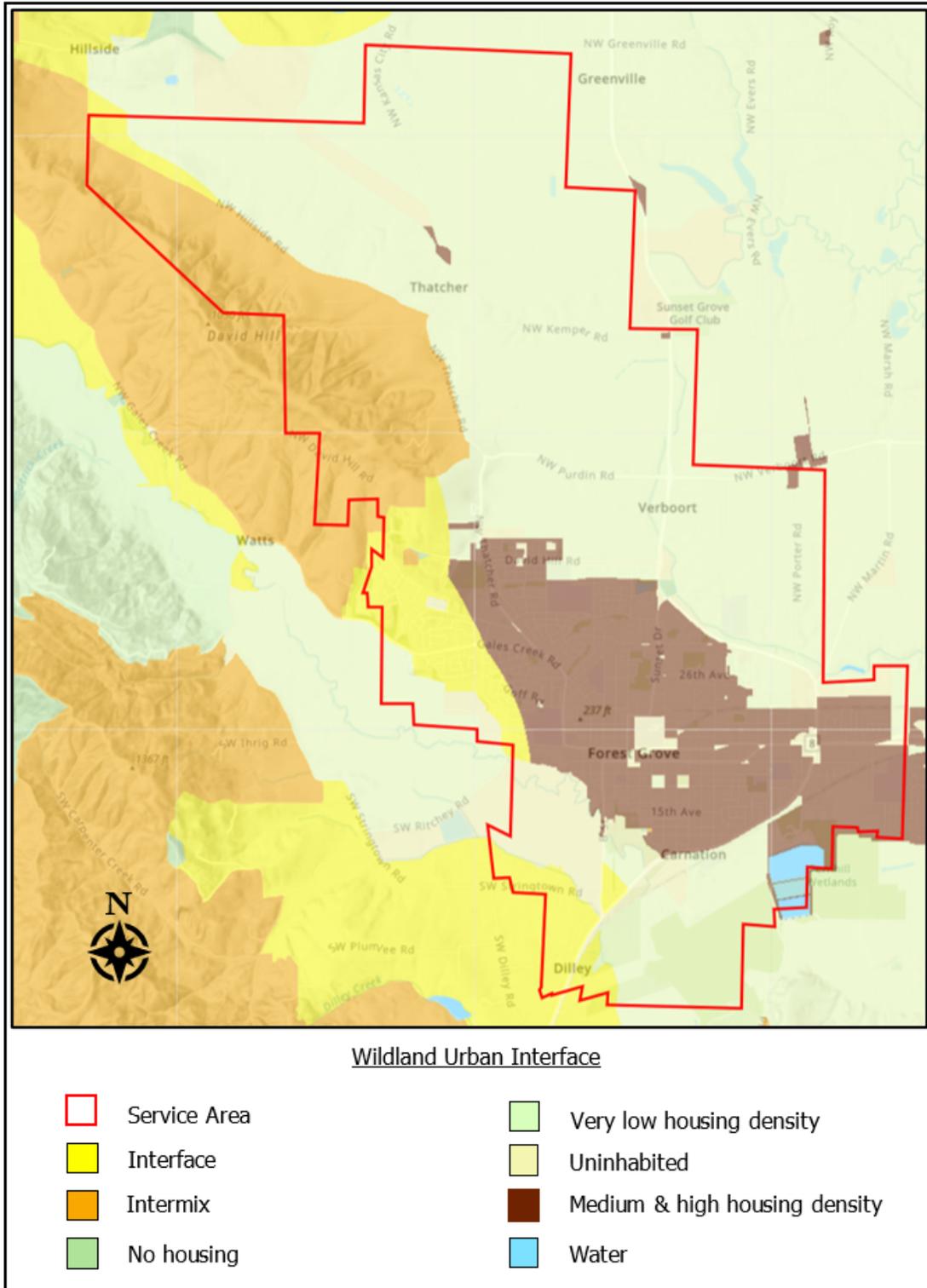
- **WUI Intermix:** Areas with  $\geq 16$  houses per square mile and  $\geq 50$  percent cover of wildland vegetation
- **WUI Interface:** Areas with  $\geq 16$  houses per square mile and  $< 50$  percent cover of vegetation located  $< 1.5$  miles from an area  $\geq 2$  square miles in size that is  $\geq 75$  percent vegetated

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<sup>2</sup> [https://www.nrs.fs.fed.us/data/wui/state\\_summary/](https://www.nrs.fs.fed.us/data/wui/state_summary/)

- **Non- WUI Vegetated (no housing):** Areas with  $\geq 50$  percent cover of wildland vegetation and no houses (e.g., protected areas, steep slopes, mountain tops)
- **Non-WUI (very low housing density):** Areas with  $\geq 50$  percent cover of wildland vegetation and  $< 16$  houses per square mile (e.g., dispersed rural housing outside neighborhoods)
- **Non-Vegetated or Agriculture (low and very low housing density):** Areas with  $< 50$  percent cover of wildland vegetation and  $< 128$  houses per square mile (e.g., agricultural lands and pasturelands)

**Figure 2. Wildland Urban Interface**



## 4.5 Fire Threat Assessment Mapping

The Wildfire Hazard Potential (WHP) risk map is derived from a 30-meter resolution raster geospatial product created by the USDA/USFS, Fire Modeling Institute. The specific dataset used is the Wildfire Hazard Potential<sup>4</sup> Version 2020, which is the third edition of the WHP product and depicts landscape conditions of the conterminous United States as of the end of 2014.

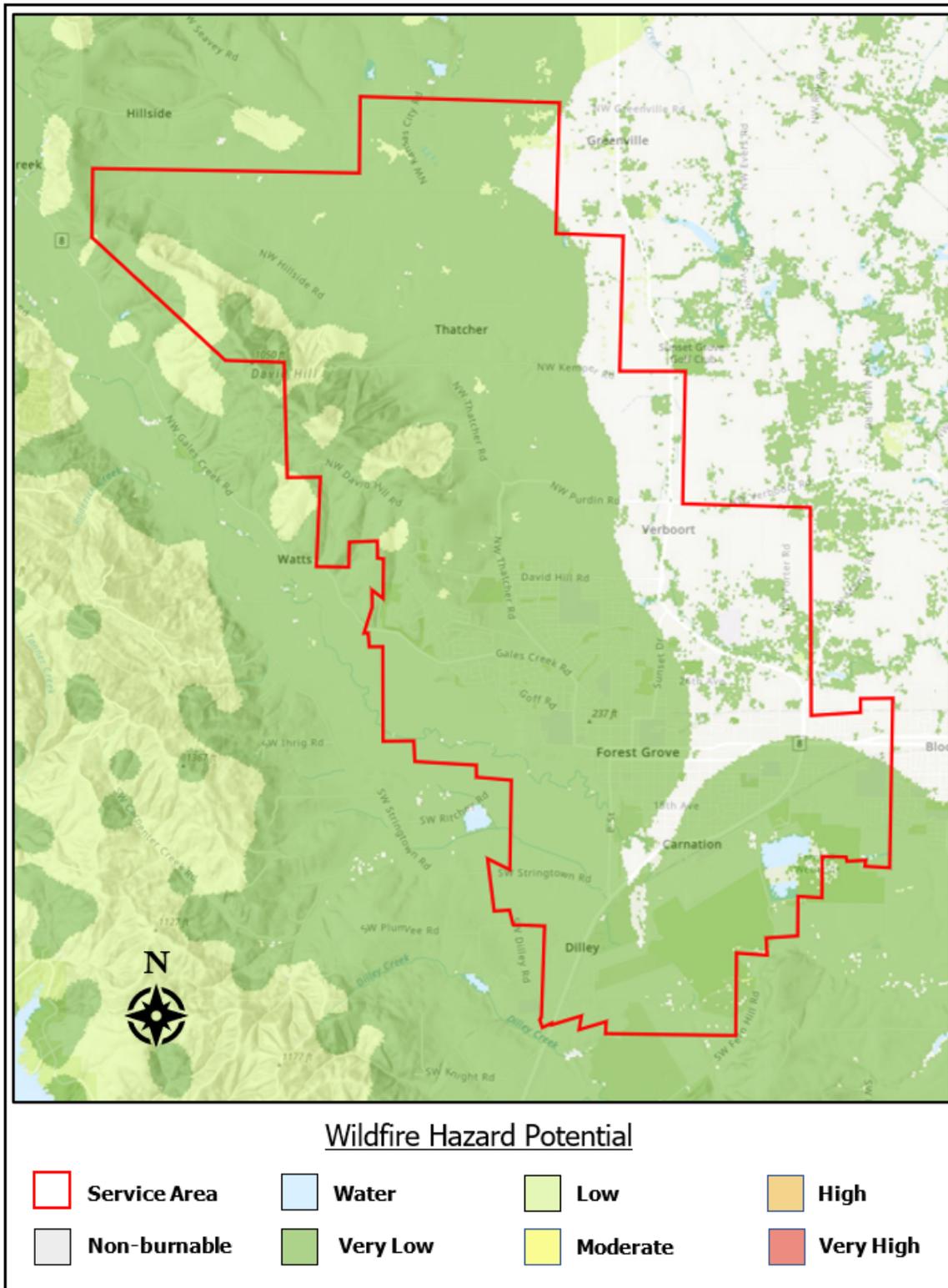
WHP was built upon spatial datasets of wildfire likelihood and fire intensity using the Large Fire Simulator (FSim), as well as spatial fuels and vegetation data from Landfire 2014, and point locations of historic fire occurrence (ca. 1992-2015). The objective of the map was to depict relative potential for wildfire that would be difficult for suppression resources to contain and for long-term strategic fuels management planning. On its own, WHP is not an explicit map of wildfire threat or risk, but when paired with spatial data depicting highly valued resources and assets such as structures or powerlines, it can approximate relative wildfire risk to those specific resources and assets.

The data described here are derived from wildfire simulation modeling, and their exact accuracy cannot be measured. They are intended to be relative measures of wildfire risk for planning purposes.

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<sup>4</sup> Product citation: *Dillon, Gregory K. 2015. Wildfire Hazard Potential (WHP) for the conterminous United States (270-m GRID), version 2020 classified. 3<sup>rd</sup> Edition. Fort Collins, CO: Forest Service Research Data Archive. <https://doi.org/10.2737/RDS-2015-0047-3>*

**Figure 3. Wildfire Hazard Potential**



## 5 Wildfire Prevention Strategy and Programs

- Public Safety Power Shutoffs (PSPS) protocols
- Recloser operational practices
- Inspection programs, including intervals, tracking, record keeping, etc.
- Pole testing
- Vegetation management
- Fire mitigation construction
- Emerging wildfire mitigation technologies

### 5.1 Transmission and Distribution System Operational Practices

#### 5.1.1 De-energization – 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. When considering de-energization, FGL&P examines the impacts on fire response, water supply, public safety, and emergency communications.

FGL&P considers the external risks and potential consequences of de-energization while striving to meet its main priority of protecting the communities and members we serve. They include:

- 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 periods of 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.
- 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, FGL&P reserves the option of implementing a PSPS when conditions dictate. While FGL&P 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 mitigation option in a potential crisis.

On a case-by-case basis, FGL&P has historically and will continue to consider de-energizing a

ASSET CLASSIFICATION	INSPECTION TYPE	FREQUENCY
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portion of its system in response to a known public safety issue or response to a request from an outside emergency management/response agency. Any de-energizing of the lines is performed in coordination with key local partner agencies, however, the final determination is made by FGL&P.

### 5.1.2 Recloser Operational Practices

FGL&P has identified circuits that are at higher risk of fire due to proximity of the circuit and the wildland urban interface. During high fire risk events, protective reclosers on these circuits are placed in a non-reclose setting. This will ensure that if a circuit fault is detected, the circuit recloser will open and not have the ability to auto-reclose. Manual closing of the recloser will only occur after a patrol of the circuit and any hazards identified have been isolated.

## 5.2 Infrastructure Inspections and Maintenance

Recognizing the hazards of equipment that operate high voltage lines, FGL&P maintains a formal inspection and maintenance program for distribution, transmission, and substation equipment which play an essential role in wildfire prevention. FGL&P currently patrols its system regularly and is increasing the frequency of inspections in high-risk areas.

Oregon Administrative Rules (OAR) 860-024-0011 provides inspection schedule requirements for electric distribution and transmission facilities. These standards require that an operator of electric supply facilities to:

- Construct, operate, and maintain its facilities in compliance with the Commission Safety Rules.
- Conduct detailed inspections on a prescribed schedule of its overhead facilities to identify violations of the Commission Safety Rules.

Table 3 summarizes the inspection schedule for all assets, while the following sections outline inspection practices for the utility.

### Table 3. Inspection Program Summary

<b>Transmission</b>	Routine Safety Patrol Inspection	50% per year
	Detailed Inspection	10% per year
	Wood Pole Testing	10% per year
<b>Overhead Distribution</b>	Routine Safety Patrol Inspection	50% per year
	Detailed Inspection	10% per year
	Wood Pole Testing	10% per year
<b>Underground Distribution</b>	Routine Safety Patrol Inspection	50% per year
	Detailed Inspection	10% per year
<b>Substation</b>	Routine Inspection	weekly
	Detailed Inspection	monthly

### 5.2.1 Definition of Inspection Levels

1. **Routine Safety Patrol Inspection:** A simple visual inspection of applicable utility equipment and structures designed to identify obvious structural problems and hazards. Patrol inspections may be carried out in the course of other company business.
2. **Detailed Inspection:** Individual pieces of equipment and structures are carefully examined visually, or through use of routine diagnostic testing.
3. **Intrusive Pole Inspection:** Inspections involving the movement of soil, taking samples of the wood pole for analysis, and/or using more sophisticated diagnostic tools beyond visual inspections.

### 5.2.2 Routine Safety Patrol Inspections

FGL&P meets or exceeds the routine safety inspection schedule established in OAR 860-0240-0011 (2) (c). This routine inspection is performed by FGL&P personnel trained in the identification of safety hazards and NESC rules associated with an electric utility's assets. These inspections are enhanced by trained FGL&P line crew members and other various personnel during routine tasks associated with their daily routine. Formal mapping records are retained of inspected areas to ensure complete coverage. Inspection of areas considered at higher fire risk near the wildland urban interface receive enhanced patrol on a biannual schedule.

Non-emergency issues found during these inspections are identified to Operations for routine correction. Immediate hazard issues identified prompts an immediate response and correction. A sample of items to check while performing these inspections include:

- Low clearance of primary conductor, secondary wires, service drops, or communication lines
- Objects too close or making contact with electric lines or equipment
- Vegetation too close to electric lines or equipment
- Encroachments
- Physical damage to facilities
- Deterioration of facilities

### 5.2.3 Detailed Inspections of Transmission and Distribution Lines

FGL&P meets or exceeds the detailed inspection schedule established in OAR 860-0240-0011 (b) (A). These detailed inspections are performed by FGL&P personnel trained in the identification of safety hazards and NESC rules associated with an electric utility's assets.

Detailed recordkeeping of areas inspected, violations or hazards identified, and corrections performed are retained in electronic and hard-copy format. These inspections are performed with a requirement of a minimum 10% of system coverage on an annual basis, but this is often

exceeded and inspections are performed at a higher percentage rate. Inspection of areas considered at higher fire risk near the wildland urban interface receive enhanced patrol on a biannual schedule. Infra-red inspections of all equipment and connections are performed as part of these detailed inspections in an attempt to proactively identify any assets nearing failure. All primary underground assets also receive a detailed inspection including a visual and infra-red inspection of internal components and connections.

Non-emergency issues found during these inspections are identified to Operations for routine correction. Immediate hazard issues identified prompts an immediate response and correction.

#### 5.2.4 Wood Pole Testing and Inspection

To maintain FGL&P's wood poles, a formal Wood Pole Assessment Plan was initiated with the goal to inspect 10% of the system each year. Wood pole inspections are carried out on a planned basis to determine whether they have degraded below National Electric Safety Code (NESC) design strength requirements with safety factors.

FGL&P personnel inspect and test all poles on a cycle meeting the interval recommended in RUS Bulletin 1730B-121. Circuits are identified, mapped, and scheduled for inspection and testing using latest industry standards and practices. If a pole must be replaced or reinforced for any reason, a priority code is assigned and entered into records for correction.

#### 5.2.5 Substation Inspections

FGL&P personnel meet or exceed the detailed substation inspection schedule established under OAR 860-024-0011 (2) (d). FGL&P's substations receive a routine inspection on a weekly basis and a detailed inspection on a monthly basis. Qualified personnel will use prudent care while performing inspections following all required safety rules to protect themselves, other workers, the general public, and the system's reliability.

The substation inspection involves a thorough look at the system to confirm that there are no structural or mechanical deficiencies, hazards, or tree trimming requirements. Individual pieces of equipment and or structures receive careful visual examination and routine diagnostic tests as appropriate.

#### 5.2.6 Prioritization of Repairs

FGL&P considers and prioritizes maintenance work by assessing the most urgent needs. The inspector will document the overhead and underground systems' condition, recording defects, deterioration, violations, safety concerns, or any other factors requiring attention on the inspection records. The inspection should focus on any hazards that could affect the system's integrity or the safety of line workers and the public.

Inspection data (overhead & underground) will be prioritized and issued as follows per OAR 860-024-0012<sup>5</sup> safety standards:

- **Priority # 1** – Immediate hazard: A violation of the Commission Safety Rules posing imminent danger to life or property must be repaired, disconnected, or isolated by the operator immediately after its discovery.
- **Priority # 2** – Non-emergency repair condition: Except as otherwise provided by this rule, the operator must correct violations of Commission Safety Rules no later than two years after discovery.
- **Priority # 3** – Non-emergency repair condition: An operator may elect to defer correction of violations of the Commission Safety Rules that pose little or no foreseeable risk of danger to life or property until the next major work activity.

## 5.3 Vegetation Management (VM)

### 5.3.1 Vegetation to Conductor Clearance

FGL&P has an operational and management responsibility and is required by state and federal agencies to maintain the right of way, under or around its power lines. FGL&P will meet the minimum standards for conductor clearances from vegetation to provide safety for the public and utility workers, reasonable service continuity and fire prevention.

VM operations are scheduled to ensure all lines are cleared of vegetation hazards on a two-year timeline. During tree work, FGL&P Line Clearance Tree Trimmers aim to achieve the clearance specifications described below, which meet or exceed OAR 860-024-0016 clearance guidelines.

- **OH Distribution:** 10 feet from the conductor
- **Roadside Transmission with distribution underbuild:** 10 feet from the conductor
- **Trees Under Conductors:** Trees that are under conductors should have crowns reduced to a height 10 feet below the primary conductors or be removed.
- **Overhanging Branches:** Removed to a height of 10 feet above all distribution conductors and from conductor to sky on all transmission lines.
- **Secondary Conductor:** Trees near open wire secondary are pruned to provide a minimum of 3 feet of clearance.
- **Service Wire:** Branches near service wires are pruned to provide a minimum of no contact, and a preferred clearance of 3 feet, or removed.
- **Pole Base:** A 3 foot radius area around the base of all poles is cleared of vegetation that would prevent the pole from being safely accessed and climbed.

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<sup>5</sup> Stat. Auth.: ORS 183, 756, 757 & 759 Stat. Implemented: ORS 757.035

### 5.3.2 Vegetation Trimming Standards

FGL&P Line Clearance Tree Trimmers follow American National Standards Institute (ANSI) A300 concepts and utility directional pruning, which supports proper pruning/tree health while achieving and maximizing the pruning cycle. The VM program was developed with RUS, ANSI A300, ANSI C2, and the National Electrical Safety Code (NESC)<sup>6</sup> and OAR 860-024-0017 requirements.

Work performed to the above guidelines provides reasonable service continuity, public safety, and guards against wildfire damage caused by supply conductors. Consideration is given to the impact of pruning on power line reliability, individual tree condition, and tree aesthetics. All work is conducted in a safe manner in accordance with the work rules set forth in OR-OSHA 1910.269 and FGL&P's Technical Guidelines.

### 5.3.3 VM Trimming and Inspection Schedule

FGL&P personnel perform annual, ground-based inspections of tree conductor clearances and hazard tree identification for FGL&P ROWs and easements. FGL&P employs a full-time tree trimming crew for year-round vegetation management work. FGL&P line crews also address vegetation concerns in response to service calls or field observations. Proactive maintenance during routine operations and prompt action during emergency events maintain system reliability, a safe work environment, and reduces fire danger. Any VM issues that cannot be immediately dealt with by the line crews are referred to the FGL&P Line Clearance Tree Trimmers for priority trimming. Scheduled patrols ensure all lines are inspected for vegetation hazards and systematically trimmed. On-going, year-round field patrols identify targeted areas for vegetation pruning or removal and ensure compliance with state and federal regulatory requirements.

### 5.3.4 Hazard Trees

A subset of Danger Trees<sup>7</sup>, A Hazard Tree is defined as any tree or portion of a tree that is dead, rotten, decayed, or diseased and which may fall into or onto the overhead lines or trees leaning toward transmission and distribution facilities. These trees are sometimes located beyond the easement or ROW. Any tree that is located outside of the ROW and is deemed a Hazard Tree will be removed or topped to make safe for conductors.

A Hazard Tree will have one or more of the following characteristics:

- Dead or dying - all dead or dying trees along, or outside the FGL&P right-of-way may be removed depending on the height of tree and the direction of the lean.

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<sup>6</sup> Rules 012,013 and 218

<sup>7</sup> As defined by ANSI 300 Part 7 standards

- Leaning trees - trees that have such a lean toward the right-of-way that they cannot be trimmed without removing the tops and slanting the tree back. Removal depends on height and species of the tree and direction of the lean.

### 5.3.5 Controlling Incompatible Vegetation

In addition to the annual patrols by FGL&P field staff observing and reporting on incompatible uses and encroachments, FGL&P makes efforts to educate public and private landowners about incompatible vegetation that can pose risks if planted under or near conductors. FGL&P's website provides guidance on "Right Tree/Right Place", as well as answers to tree trimming frequently asked questions.

## 5.4 Fire Mitigation Construction

FGL&P construction standards are designed for maximum spacing between conductors with tangent poles utilizing center phase "king-pin" construction. Standards also utilize enhanced spacing from OH conductors to apparatus providing extra spacing from grounded surfaces. Circuits located in proximity of the wildland urban interface areas are reviewed for possible upgrades from overhead conductor to underground cable replacement and/or overhead bare conductors to overhead covered "tree" conductor. These circuits are also reviewed as possible locations to utilize non-expulsion fusing.

### 5.4.1 Avian Protection Program

FGL&P construction standards include maximum spacing between conductors and apparatus providing as much clearance as reasonable. Standards also require installation of wildlife protection on all apparatus providing protection against wildlife phase to phase and wildlife phase to ground fault contacts

## 5.5 Emerging Technologies

FGL&P has initiated the use of various emerging technologies into its ongoing maintenance program. These technologies include, but are not limited to non-expulsion fuses, thermal imaging cameras, FGL&P-owned weather stations, and electronic reclosers. FGL&P reviews with its vendor's new technologies that may be applicable to the FGL&P system as they become available.

# 6 Emergency Response

## 6.1 Preparedness and Response Planning

FGL&P collaborates with the City of Forest Grove Emergency Operations Center (EOC) when conditions warrant the activation of the EOC. The EOC is operated under ICS protocol with the Fire Chief as the Command Lead. The FGL&P liaison to the EOC communicates with the FGL&P Operations Center for a coordinated response to emergencies. FGL&P concurrently activates its

emergency communication protocols interacting with other agencies. If State assistance is desired, FGL&P will also coordinate with the State of Oregon Office of Emergency Management ESF-12. As needed, FGL&P utilizes its emergency restoration of service procedures while also monitoring its list of critical care customers

### 6.1.1 Emergency Management Communication and Coordination

In response to active emergencies, FGL&P coordinates and collaborates with the State of Oregon Office of Emergency Management (OEM ESF-12) and relevant state agencies as peer partners. During such emergencies, FGL&P dedicates a single utility representative to ensure effective communication and coordination.

FGL&P's primary point of coordination is the City of Forest Grove Emergency Operations Center, which is administered by the City of Forest Grove Fire Department with the Fire Chief designated as the Command Lead. FGL&P's Director contacts the EOC and establishes themselves as the duty officer for coordination. FGL&P's Power Services Manager or Administrative Assistant acts as the communications officer during an emergency.

### 6.1.2 Public Agency and Customer Communications for Outages

FGL&P employs a defined plan of communications when responding to planned, or unplanned power outages. FGL&P's communications team is part of, and works closely with, the City of Forest Groves emergency communications team during events.

Forms of communication will be slightly different for planned versus unplanned events.

#### **Planned power outages**

- Review of critical care customer list for needed adjustments
- Minimum of 24 hours of notification whenever possible
- Personal door-to-door notifications
- Notice of planned outage form left if no contact made
- Contact made with communications providers
- Customer phone calls made if deemed appropriate
- Notice to internal communications team of planned power outage
- Social media pages noted if deemed appropriate
- Notice to city communications team if deemed appropriate

#### **Unplanned power outages**

- Internal communications team notified and outage protocols enacted
- City communications team notified and outage protocols enacted
- Contact made with communications providers
- Enhanced call takers placed for extra volume
- All social media outlets kept updated with latest information
- Constant interaction with Operations providing real-time information

### 6.1.3 Community Outreach

FGL&P coordinates closely with the City of Forest Grove Fire Department to educate Forest Grove residents on fire season preparation, planning, and emergency notifications. Power outage preparation and safety tips are provided along with preferred tree planting guidelines.

## 6.2 Restoration of Service

If an outside emergency management/emergency response agency requests a power shutdown, or if FGL&P elects to de-energize segments of its system due to extreme weather, FGL&P staff will patrol the affected portions of the system before the system can be re-energized. Suspect equipment or distribution lines that cannot immediately be patrolled will remain de-energized until FGL&P staff can do so. Poles and structures damaged in a wildfire must be assessed and rebuilt as needed prior to re-energization. Periodic customer and media updates of restoration status prior to full restoration will be made.

### 6.2.1 Service Restoration Process

After a wide-spread outage, FGL&P work crews take the following steps before restoring electrical service after a de-energization event. These measures intend to protect the worker, members, the public, and the system's reliability.

- **Patrol:** Crews patrol every de-energized line to ensure no hazards have affected the system during the outage. If an outage is due to wildfire or other natural disasters, as soon as it is deemed safe by the appropriate officials, crews inspect lines and equipment for damage, foreign contacts and estimate equipment needed for repair and restoration. Lines located in remote and rugged terrain with limited access may require additional time for inspection. FGL&P personnel assist in clearing downed trees and limbs as needed.
- **Isolate:** Isolate the outage and restore power to areas not affected.
- **Repair:** After the initial assessment, FGL&P staff meet to plan the needed work. Rebuilding commences as soon as the affected areas become safe. Repair plans prioritize substations and transmission facilities, then distribution circuits serving the most critical infrastructure needs. While the goal to reenergize all areas is as soon as possible, emergency services, medical facilities, and utilities receive first consideration when resources are limited. Additional crew and equipment are dispatched as necessary.
- **Restore:** Periodic customer and media updates of restoration status before full restoration are posted on social media platforms and FGL&P's website. After repairs are made, power is restored to homes and businesses as quickly as possible. Members, local news, and other agencies receive notification of restored electric service.

## 7 Performance Metrics and Monitoring

### 7.1 Plan Accountability

Staff responsibility for plan implementation and general communications is described below:

- The Forest Grove City Council makes policy decisions relative to the utility – they will be responsible for approving and adopting the Wildfire Mitigation Plan.
- The City Manager directs management staff responsible for operations, customer service and finance.
- The L&P Director supervises the General Foreman who Operations staff report to.
- The L&P Director is responsible for the overall execution the WMP. Staff will be directed as to their roles and responsibilities in support of the plan.
- The L&P Director and Power Services Manager are responsible for communicating with public safety, media outlets, public agencies, first responders, local Office of Emergency Management, and health agencies during an emergency or planned maintenance outages.
- The L&P Director determines when and how to notify outside agencies in cases of wildfire emergency events.
- The L&P Director will be responsible for monitoring and auditing the targets specified in the WMP to confirm that the objectives of the WMP are met, as well as the implementation of the plan in general.

### 7.2 Monitoring and Auditing of the WMP

The WMP will be reviewed annually for the purpose of updating the plan as needed to reflect knowledge gained in the preceding year and modified accordingly. A more formal review will be done every five years in coordination with FGL&P's business planning.

#### 7.2.1 Identifying Deficiencies in the WMP

The L&P Director will be responsible for ensuring that this WMP meets all public agency guidelines to mitigate the risk of its assets becoming the source or contributing factor of a wildfire. Staff responsible for assigned mitigation areas have the role of vetting current procedures and recommending changes or enhancements to build upon the strategies in the WMP. Either due to unforeseen circumstances, regulatory changes, emerging technologies or other rationales, deficiencies within the WMP will be sought out and reported to the Forest Grove City Council in the form of an updated WMP on an as-needed basis.

The L&P Director or their designee will be responsible for spearheading discussions on addressing any plan deficiencies and collaborating on solutions when updating the WMP. At any point in time when deficiencies are identified, L&P Supervisors or their delegates are responsible for making the appropriate policy adjustments. FGL&P staff and qualified stakeholders are encouraged to bring any potential deficiencies to the attention of the L&P Director. The L&P

Director, along with the appropriate staff, will evaluate each reported deficiency, and if determined to be valid, shall record the deficiency for further action.

### 7.3 Performance Metrics

FGL&P will perform an annual review of events that could affect the quality of this WMP. This review will benefit the decision-making for any needed plan changes.

A sample of items to annually review include:

- Number and duration of Red Flag Warning days
- Any utility caused ignitions
- Vegetation caused ignitions
- Foreign caused ignitions
- PSPS events

### 7.4 Programmatic QA/QC processes

#### 7.4.1 Transmission and Distribution System Inspection QC Process

FGL&P's General Foreman of Operations pre-checks all (100%) work tasks to be completed by Operations staff to identify any hazards or potential violations, and also offer input to engineering regarding construction types and methods. The General Foreman also performs QA/QC of all (100%) work that has been completed by Operations staff.

Detailed inspections of FGL&P facilities is performed yearly according to OAR 860-024-0111. FGL&P's General Foreman of Operations performs QA/QC of inspected areas at a minimum of 25% per year.

#### 7.4.2 Vegetation Management QC Process

FGL&P employs its own line clearance tree trimming crewmembers who strive to complete system clearance on a two-year, or less, basis. A minimum of 25% QA/QC review of annual trimming is performed by the General Foreman of Operations.

### 7.5 Plan Approval Process

#### 7.5.1 Public Comment

Although public input is welcomed and encouraged at any time, formal plan comment will be taken during the Forest Grove City Council plan presentation and approval process

#### 7.5.2 Board Presentation

Plan presentation and approval will be performed at a regularly scheduled Forest Grove City Council meeting. Meeting topic agenda and comment period announcements will follow normal Council protocols.

### 7.5.3 Situational Awareness

Situational assessment is the process by which current operating conditions are determined. Situational Awareness is the understanding of the working environment, which creates a foundation for successful decision making and the ability to predict how it might change due to various factors.

FGL&P's System Operators rely on various resources to monitor evolving fire weather and climatological conditions that may lead to fire events. Sources for weather information include, but are not limited to the following:

- **USFS-Wildland Fire Assessment System (WFAS):** For immediate and short-term situational awareness, mapping tools from the USFS-WFAS help determine daily and short-term forecasted risk, with daily or weekly fire weather status maps produced as needed to assess PNW wildfire conditions. (<https://www.wfas.net/index.php/fire-danger-rating-fire-potential--danger-32/fire-danger-subsets-fire-potential--danger-55>)
- **The National Weather Service (NWS):** The NWS provide on-line predictive fire weather forecasting tools in the form of a current fire-weather outlook, 2-day, and a 3-8 day outlook. ([https://www.spc.noaa.gov/products/fire\\_wx/](https://www.spc.noaa.gov/products/fire_wx/))
- **NOAA Weather and Hazards Data Viewer:** This on-line map provides historic or real-time surface observations including wind speed and direction, wind gust, dew point, relative humidity, and sea level pressure collected from remote automated weather stations (RAWS). Extreme-weather alerts such as fire weather watch, high wind watch, and red flag warning are provided from this resource. (<https://www.wrh.noaa.gov/map/?wfo=psr>)
- **FGL&P Weather Stations:** The City has installed its own weather station at the FGL&P headquarters. This station monitors remotely and provides temperature, wind speed, wind direction, barometric pressure, and relative humidity.

## Appendix A: Plan and Mapping Disclaimer

### **WILDFIRE MITIGATION PLAN DISCLAIMER**

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