WILDFIRE MITIGATION PLAN

May 2022

Prepared For:

Monmouth Power & Light
City of Monmouth, Oregon

Version: DRAFT 05/17/2022
FINAL **06/01/2022**

Prepared By:

Engineers: Jerry Witkowski, P.E.
Jiajia Song, P.E.
Martin Stoddard, P.E.

1600 Valley River Drive, Suite 380 ■ Eugene, OR 97401 ■ Phone (541)-228-9353

Table of Contents

SECTION 1: OVERVIEW

The Pacific Northwest has been experiencing large wildfire seasons over the last few years. Climate changes, low precipitation, and high temperatures have resulted in severe drought conditions which contribute to the increase in fire risk. According to the 2019 to 2021 *Northwest Annual Fire Reports* by Northwest Interagency Coordination Center (NWCC), as summarized in Table 1, Oregon's 2020 wildfire season became the most destructive in the state's history, burning about 1.15 million acres, which is 223% more than the 10-year average. The damage from the 2021 wildfire was not as severe as that of 2020 but still about 10 times that of 2019. Being prepared for the wildfire season is important in reducing the risk and impact of wildfires and can help save lives, properties, natural resources, and more. The process of reducing fire risk is an ongoing interagency effort and electric utilities play an important role.

Table 1: Oregon Fire Occurrences and Acres Burned
[Sources: Northwest Annual Fire Report – 2019, - 2020, and - 2021, via: https://gacc.nifc.gov/nwcc/admin/publications.aspx]

Year	Total Fires	Total Burned Acres	% Above 10-Year Average Acres
2019	2,293	79,732	28%
2020	2,215	1,141,613	223%
2021	2,202	828,778	125%

1.1 Regulatory Requirements

1.1.1 2021 Oregon Senate Bill 762

[Source: https://olis.oregonlegislature.gov/liz/2021R1/Measures/Overview/SB762]

2021 Oregon Senate Bill (SB) 762 is comprehensive legislation to help Oregon modernize and improve wildfire preparedness through three key strategies: creating fire-adapted communities, developing safe and effective responses, and increasing the resiliency of Oregon's landscapes.

Section 3 of SB 762 requires public utilities that provide electricity to have and operate a risk-based wildfire protection plan that has been filed with and evaluated by the Public Utility Commission (by December 31, 2021 as indicated in Section 5 of SB 762). The plan must be based on reasonable and prudent practices identified through workshops conducted by the commission pursuant to Section 2 of the Act and on commission standards adopted by rule. The public utility must design the plan in a manner that seeks to protect public safety, reduce risk to utility customers and promote electrical system resilience to wildfire damage. The Act also requires a public utility that provides electricity to regularly update the risk-based wildfire protection plan on a schedule determined by the commission. The plan must, at a minimum:

a) Identify areas that are subject to a heightened risk of wildfire and are:

   A. Within the service territory of the public utility; and

   B. Outside the service territory of the public utility but within a reasonable distance, as determined by the commission, of the public utility's generation or transmission assets.

b) Identify a means for mitigating wildfire risk that reflects a reasonable balancing of mitigation costs with the resulting reduction of wildfire risk.

c) Identify preventive actions and programs that the public utility will carry out to minimize the risk of utility facilities causing a wildfire.

d) After seeking information from regional, state and local entities, including municipalities, identify a protocol for the deenergizing of power lines and adjusting of power system operations to mitigate wildfires, promote the safety of the public and first responders and preserve health and communication infrastructure.

e) Describe the procedures, standards and time frames that the public utility will use to inspect utility infrastructure in areas that the public utility identifies under paragraph (a) of this subsection.

f) Describe the procedures, standards and time frames that the public utility will use to carry out vegetation management in areas that the public utility identifies under paragraph (a) of this subsection.

g) Identify the development, implementation and administration costs for the plan.

h) Identify the community outreach and public awareness efforts that the public utility will use before, during and after a wildfire season.

For consumer-owned electric utilities, Section 4 of SB 762 requires them to operate in compliance with a risk-based wildfire protection plan approved by the governing body of the Utility. The bill requires periodic updates of the plan and requires submission of the initial plan to the governing body no later than June 30, 2022, as indicated in Section 6 of SB 762. It also requires that the plan approved by consumer-owned electric utility governing body be submitted to the Public Utility Commission.

1.1.2 Public Utility Commission, Chapter 860, Division 300: Wildfire Mitigation Plans

[Source: https://secure.sos.state.or.us/oard/displayDivisionRules.action?selectedDivision=6618]

Oregon Public Utility Commission (OPUC) Charter 860-300-0020 lists filling requirements for Wildfire Mitigation Plans similar to what's presented in SB 762.

1.1.3 Oregon Executive Order No. 20-04

[Source: https://www.oregon.gov/gov/Documents/executive_orders/eo_20-04.pdf]

Executive Order (EO) 20-04 establishes Oregon State Governor's greenhouse gas emissions goals for Oregon and directs state agencies to identify and prioritize actions to meet those goals. EO 20-04 also provides specific directives to the Oregon Public Utility Commission (OPUC) regarding greenhouse gas emissions, impacted communities, and wildfire safety.

As EO 20-04 directs, OPUC must evaluate electric companies' risk-based wildfire protection plans and planned activities to protect public safety, reduce risks to utility customers, and promote energy system resilience in the face of increased wildfire frequency and severity, and in consideration of the recommendations made by the Governor's Council on Wildfire Response 2019 Report and Recommendations. OPUC is making related rules (Rulemaking AR 638) at present. The objective of the AR 638 rulemaking is to develop permanent administrative rules that address wildfire risk related to utility operations and services. In the short term, OPUC Staff proposes temporary rules related to Public Safety Power Shutoff (PSPS) Protocols and Ignition Reporting Requirements for the 2021 wildfire season.

In addition, OPUC shall convene periodic workshops for purposes of assisting electric companies, consumer-owned utilities, and operators of electrical distribution systems to develop and share best practices for mitigating wildfire risk. The requirement for periodically convened workshops for this purpose is directed in Section 2 of SB 762.

1.2 Purpose of This Effort

The City of Monmouth is located in Polk County in the Willamette Valley region of Oregon. The City consists of three major departments, Administration, Public Works, and Power and Light. The Monmouth Power and Light department provides services for electricity while the Public Works Department provides services for water and wastewater.

Monmouth Power and Light (MPL), as a public utility, is required to comply with all requirements specified in SB 762, as discussed in Section 1.1. The intent of this wildfire mitigation plan is to document and review MPL's existing wildfire policies and procedures and develop an up-to-date wildfire mitigation plan that meets all requirements of the 2021 SB 762 and Oregon Public Utility Commission. The overall objective of developing and executing a wildfire mitigation plan is to minimize possible sources of ignition, improve the resiliency of the electric network, and identify and correct ineffective procedures. The focus of this Wildfire Mitigation Plan effort is the electrical territory served by MPL.

This report is based on the minimum requirements of a Wildfire Mitigation Plan, as specified in Oregon SB 762, with the remaining sections of the plan organized as follows. Section 2 describes the MPL service area, electrical system, and existing fire mitigation programs. Section 3 presents the wildfire risk assessment of MPL's service territory and its surrounding area within a reasonable distance. Section 4 introduces the proposed wildfire mitigation strategies based on a review of MPL's existing program, electrical assets, wildfire risks, etc. Section 5 presents the mitigation plan from the perspective of public awareness and community outreach.

SECTION 2: SYSTEM AND EXISTING PROGRAM

2.1 The Service Area

Monmouth Power and Light's department is headquartered at 780 Ecols Street S. within the City limits. MPL distributes electric services within a five square-mile territory. The service territory and electrical feeder map are shown in Figure 1 and Figure 2. The vast majority of its 4,833 customers are served within the City limits. MPL supplied approximately 152.4 million kWh annual retail electric energy for the year ending December 31, 2021, with a 2021 winter peak demand of 35.1 MW and a summer peak demand of 37 MW. MPL owns and operates one distribution substation (MPL South Substation) with six (5) feeder circuit positions and one (1) spare position; and has one switch station (MPL North Switch Station) with two (2) normally open feeder circuit positions fed from the BPA Monmouth Substation east transformer bank, and one (1) normally closed feeder circuit fed from the BPA Monmouth Substation west transformer bank.

MPL's South Substation has power delivered from BPA over an MPL-owned 2.2 mile 115 kV transmission line tap off the BPA Albany-Adair to Monmouth 115 kV transmission line circuit. The BPA Monmouth Substation and tap to MPL South Substation are served from the BPA 115 kV transmission loop between BPA's Salem Substation and BPA's Albany Substation.

MPL's distribution system (12.47/7.2 kV) consists of 54 miles of overhead three-phase and single-phase primary circuitry; and 41 miles of three-phase and single-phase underground primary circuitry. The electric facilities serve 4,453 residential and 359 commercial and industrial customers.

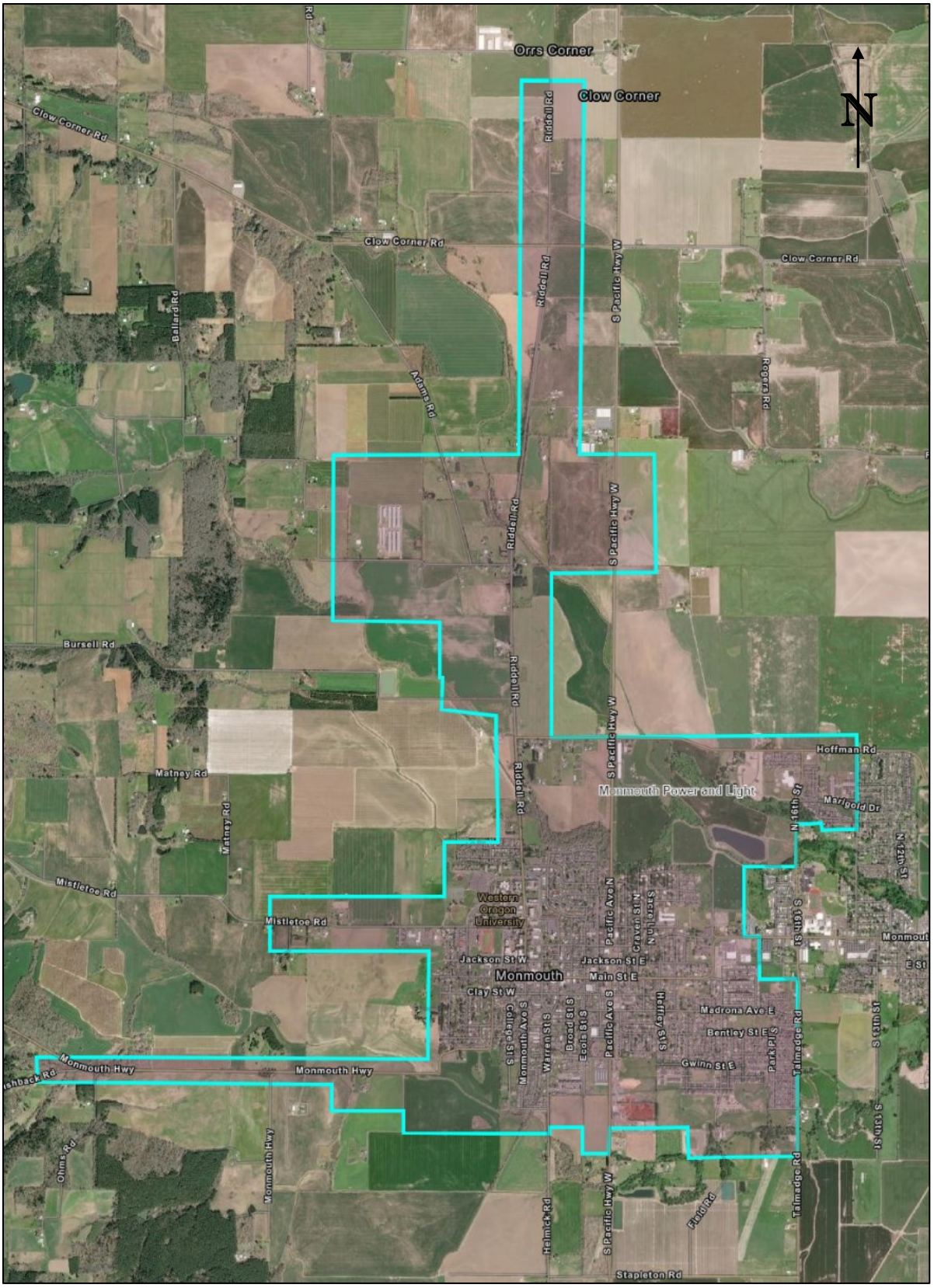


Figure 1: Monmouth Power and Light Service Territory
[Source: https://www.oregon.gov/energy/energy-oregon/pages/find-your-utility.aspx]

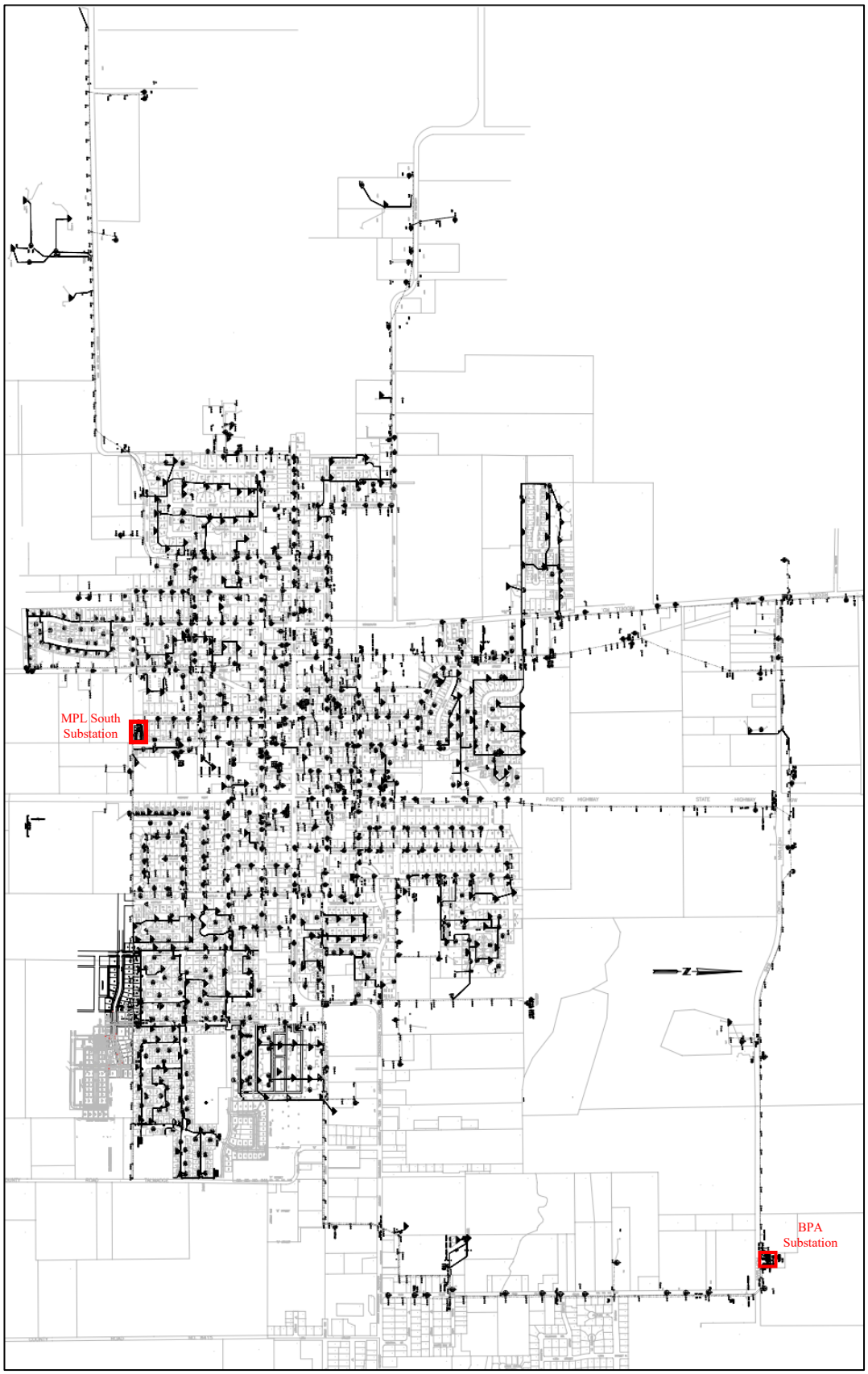


Figure 2: Monmouth Power and Light Electric Feeder Map – City Area

2.2 Existing Program

Currently MPL does not have a systematic formal program or policies in place regarding wildfire mitigation. However, MPL Power has implemented several procedures to directly or indirectly reduce wildfire risks. Specifically:

- MPL has increased the frequency of substation, switch station, and circuit inspections.
- MPL has an aggressive right-of-way vegetation management program, focusing on the prevention of vegetation contact with overhead conductors and the reduction of fuel within the right-of-way in compliance with IEEE C2, *National Electrical Safety Code* (NESC), and the requirements for public safety and fire prevention as defined in OPUC OAR 860.024.0016/0017. Crew personnel conduct right-of-way inspections routinely and increase inspections during heavy growth seasons. This includes identifying vegetation and fire risk concerns during routine maintenance or service calls and taking corrective action. Vegetation management and tree trimming that is beyond MPL crew's ability is contracted out.
- MPL has sectionalizing circuit breakers and circuit reclosers with reclosing relays installed for each feeder circuit. Although there is currently telemetry monitoring, the operation of reclosers is dependent on faulted conditions or manual control in case of a fire emergency. MPL plans to expand the telemetry system to include remote controls in the near future.

These existing programs alone are not sufficient to meet the minimum requirements in Oregon SB 762 for a risk-based wildfire mitigation plan. However, MPL is adopting this wildfire mitigation plan to comply with the new law. MPL is also considering additional measures to enhance its program and is open and willing to adopt advanced wildfire mitigation plans and other modern technologies in power system protection and fire monitoring to further reduce the potential for wildfires over time.

SECTION 3: WILDFIRE RISK EVALUATION

Typically, risk is a function of the probability of occurrence and the resulting cost/impact of the event. For a specific area, the overall wildfire risk depends on both the likelihood of a wildfire and the exposure and susceptibility of valued resources and assets combined. Within the MPL service territory and the surrounding areas, the primary risk drivers for wildfire are the following:

- Weather and drought due to climate changes
- Terrain
- Fire history
- Vegetation type & density
- Communities at-risk – population and housing density

The Oregon Wildfire Risk Explorer (OWRE) is an open-source tool providing useful information for a customized area of interest to support Community Wildfire Protection Plans and other plan and policy developments. Most of the following figures and tables are statistics and illustrations generated for the area highlighted in the box shown in Figure 3. The full report is attached in Appendix A. The focus of this Wildfire Mitigation Plan for MPL is primarily the electrical service area, which is mostly an urban area with an irregular shape as shown in Figure 1. Figure 3 covers not only the MPL service territory (boxed area) but also its surrounding area within a reasonable distance where wildfires are more likely to occur. The OWRE report provides statistics from the year 2008 to 2019 that can be used to develop an understanding of the wildfire risks within the area of interest.

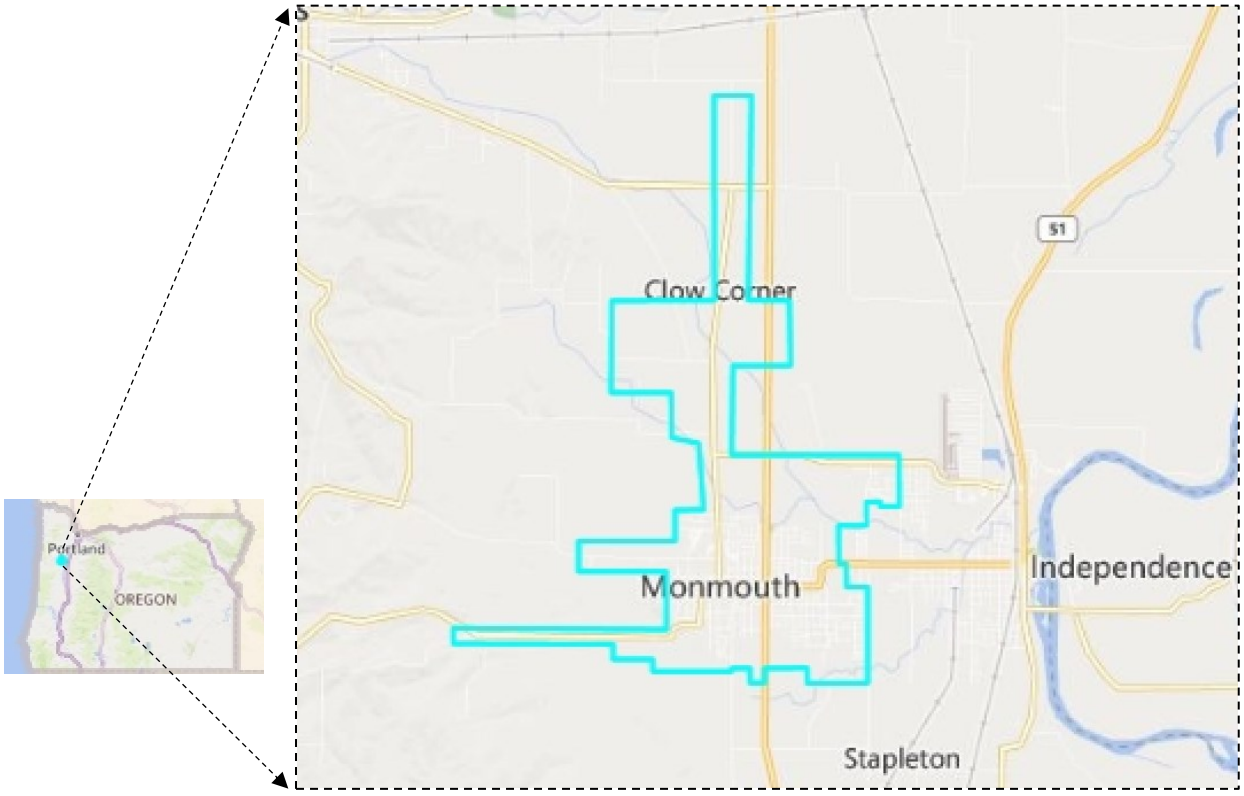
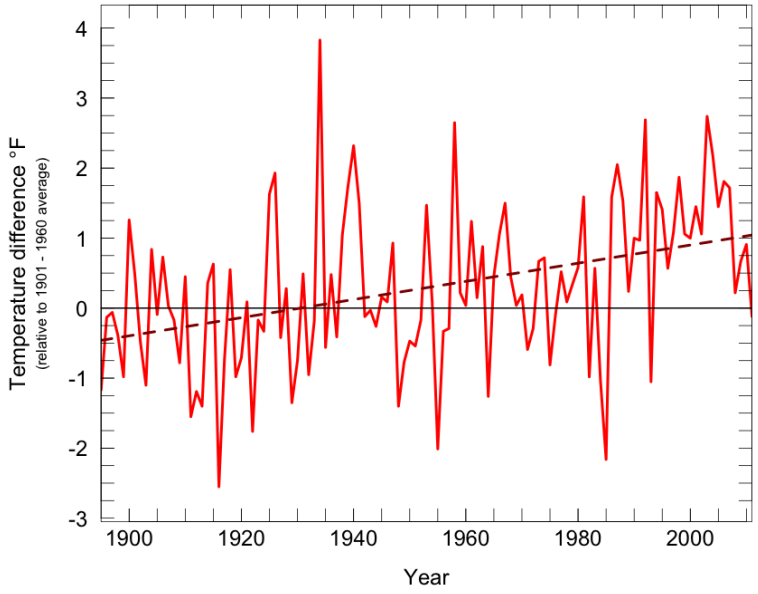


Figure 3: Monmouth Power and Light Wildfire Mitigation Plan – Area of Interest

3.1 Weather and Drought

In the past few years, the pacific northwest has experienced an increase in the occurrence and intensity of wildfires. There are a variety of factors including climate changes, topography, land and vegetation management, human activity in wildland, etc. that contribute to this trend. Global climate changes have caused increased temperatures and temperatures are projected to continuously increase for the remainder of the 21st century [Source: https://cig.uw.edu/learn/climate-change/]. According to the Climate Impact Group at the University of Washington, the Pacific Northwest warmed about +1.3°F (or +0.13°F/decade warming) between 1895 and 2011 (Figure 4) with statistically-significant warming occurring in all seasons except for spring. Figure 5 and Figure 6 show the monitored drought conditions in Oregon State and the Polk County, where the City of Monmouth is located in, from 2000 to present. The most intense period of drought occurred in August 2021, where D4 (Exceptional Drought) affected 26.59% of land in Oregon. D3 (Extreme Drought) and D4 (Exceptional Drought) have persisted into 2022 for Oregon. However, it appears that drought conditions for Monmouth and the surrounding area in Polk County are mostly D2 (Severe Drought) and D1 (Moderate Drought).



- The dashed line is the fitted trend;
- The solid horizontal line is the average temperature for 1901-1960;
- The red line is the average annual temperature

Figure 4: Rising temperatures in the Pacific Northwest.
[Source: https://cig.uw.edu/learn/climate-change/]

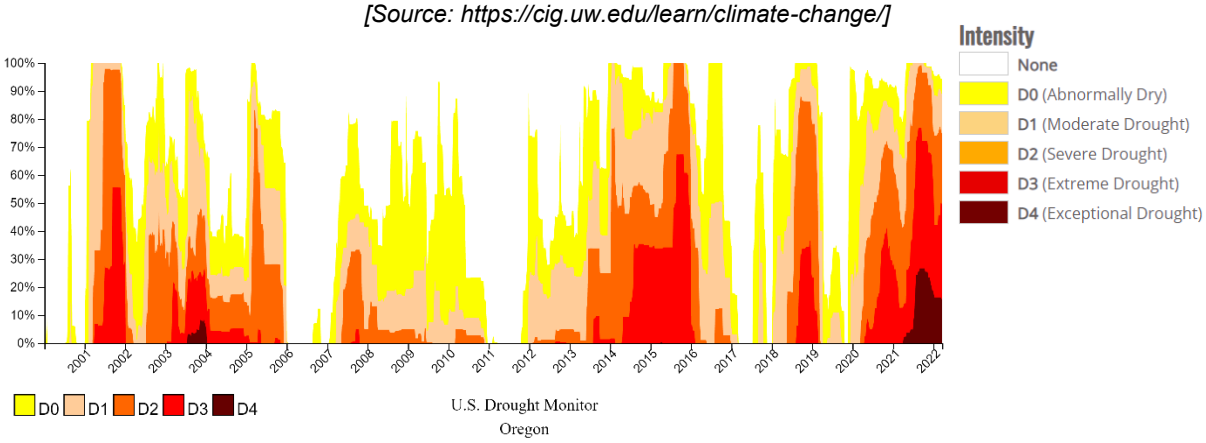


Figure 5: Drought in Oregon from 2000 to Present
[Source: https://www.drought.gov/states/oregon#historical-conditions]

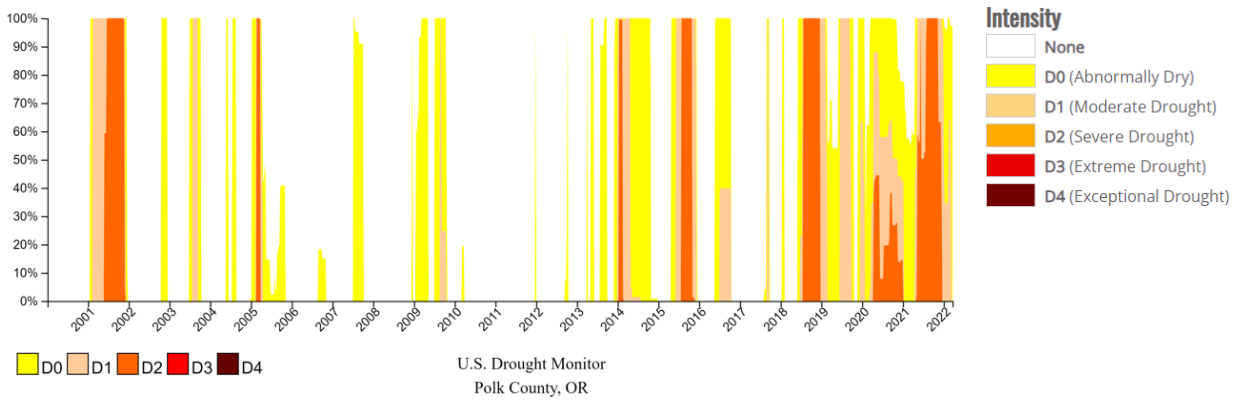


Figure 6: Drought in Polk County from 2000 to Present
[Source: https://www.drought.gov/states/oregon/county/polk]

3.2 Terrain

Although the City of Monmouth is essentially urban with populated residential neighborhoods, it is a relatively small community and is surrounded by agricultural and moderately wooded rolling hills (Figure 7). The MPL electric system does have some circuitry that enters wooded areas at the City limit outskirts. Detailed USGS topographical maps of the area can be found in Appendix B. Historically, because of the region's agriculture activities, the overgrowth of trees and ladder fuels needed to support fires are of moderate concern near facilities and infrastructure.

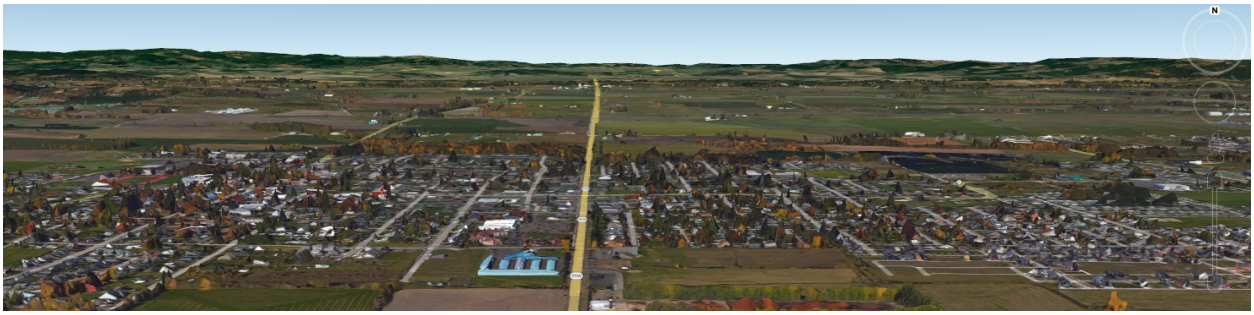


Figure 7: Google Earth 3D View at HWY 99 Towards North Direction

3.3 Fire History

Knowing locations of higher risk and the probable causes of fires is important in developing awareness, prevention, and mitigation. Figure 8 illustrates the number of fire ignitions and their associated locations from 2008 to 2019 in the proximate area of the City of Monmouth. There is no fire incident within MPL's service territory during this time period. However, the wooded area a few miles west of MPL's service territory has significantly more records and the majority of these fires were human-caused. None of them were considered large wildfires (>250 acres in one fire that is classified as a wildfire threat). According to the Oregon Department of Fire, 71% of fires recorded in Oregon are human-caused, and many of these fires are near populated areas. Lightning caused fires are about 29% of fire starts but tend to have more damage as they are often located in rural areas. However, lightning does not appear to be a major cause of wildfire in this area.

MPL has responded to one fire incident in the last 11 years and it was to the west of Monmouth in the neighboring utility's service territory. MPL responded promptly to ensure MPL facilities were protected.

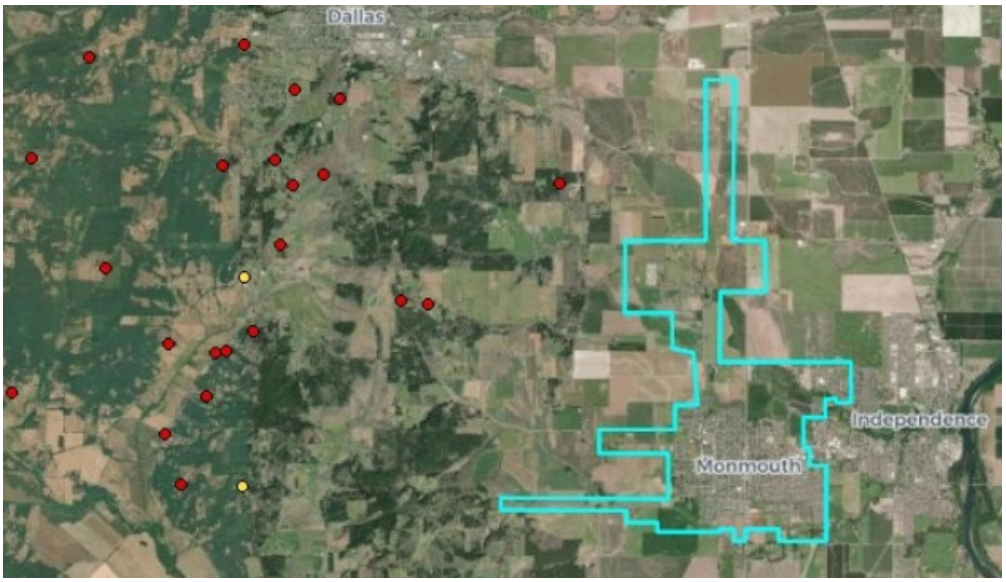


Figure 8: Number and Location of Fire Ignitions From 2008 to 2019
[Source: Appendix A "Oregon Wildfire Risk Explorer- Advanced Report"]

3.4 Vegetation

Vegetation has important influences on potential wildfire behavior and understanding the dominant vegetation type in an area is helpful in understanding the corresponding historical fire regime, which is the pattern, frequency, and intensity of the bushfires and wildfires that prevail in an area over long periods. Within the MPL service territory (Figure 9), about 57% of the vegetation is agricultural and about 40% is developed area. The timbered area is mainly conifer and located to the west of the City'. The vegetation type is one of the impacting factors in wildfire risks and fuel models, and forms the fire-carrying materials that make up surface fuels. Detailed fire model groups for this area can be found in Appendix A.

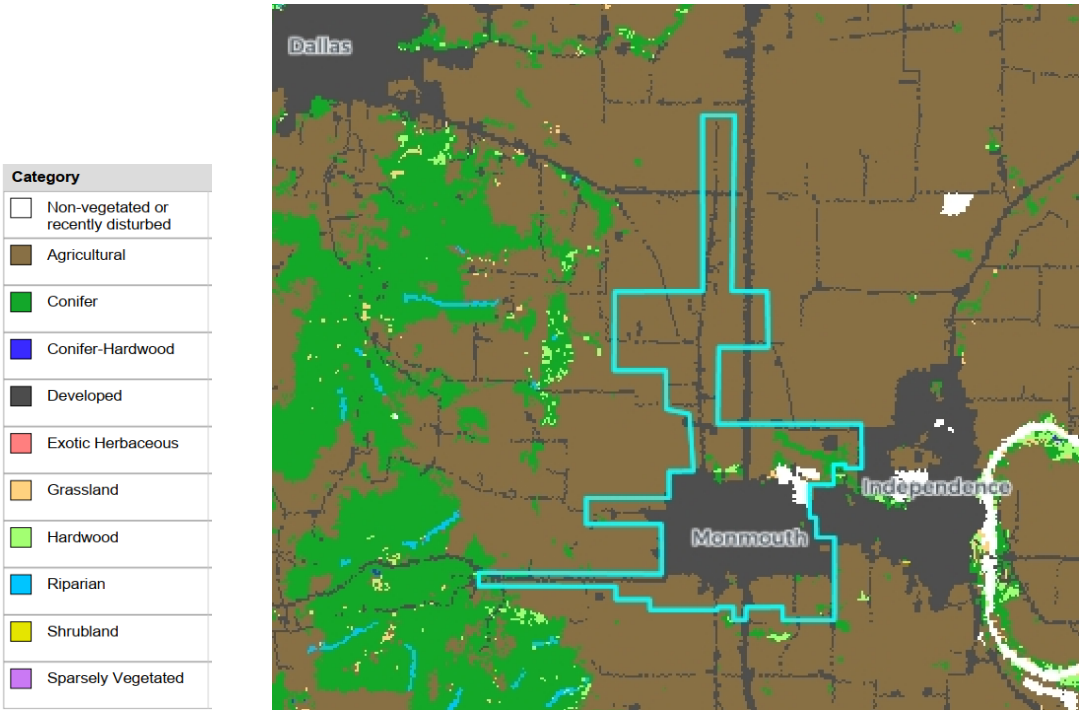


Figure 9: Vegetation Types [Source: Appendix A]

3.5 Housing Density

Population density or housing density is one of the major concerns when evaluating wildfire risk. It is especially critical in areas where houses and other developments meet or mix with undeveloped natural areas, for example in locations where houses and infrastructure are close to flammable wildland vegetation. Within the area of interest for this wildfire mitigation plan, the majority of the houses and populations are located in or near the City limits with an average household size of 2.5 persons.

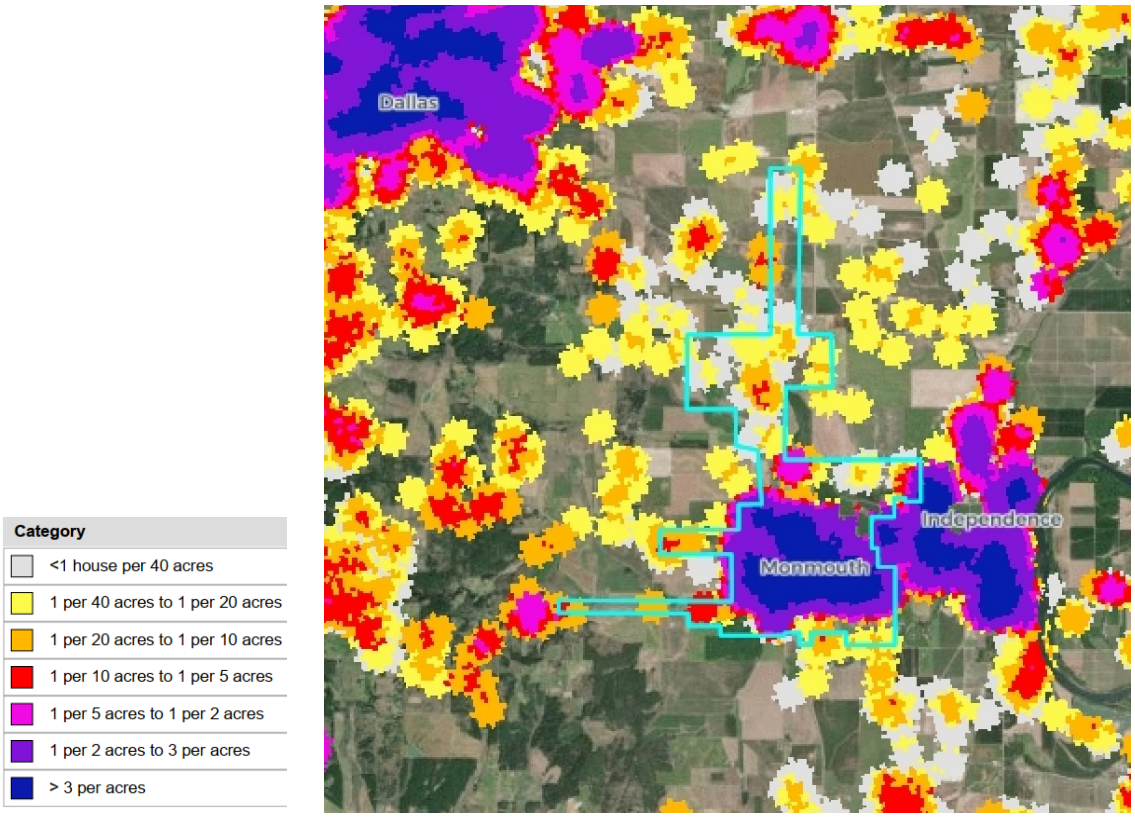


Figure 10: Housing Density [Source: Appendix A]

3.6 Wildfire Risk Evaluation

As discussed previously the overall wildfire risk depends on both the exposure and susceptibility of valued resources and assets combined and the likelihood of a wildfire. The OWRE database provides information about the wildfire's potential impact on people and property, as well as critical infrastructures in this area.

3.6.1 Potential Impact

Potential Impact information classifies exposure and susceptibility only and does not include the possibility of an area burning. Wildfire potential impact on people and property is classified with a range of impacts from very high to low negative consequences. Positive benefits of wildfire are not included assuming that any impact of wildfire on people's assets and infrastructure is negative.

Figure 11 illustrates wildfire's potential impact or consequence of wildfire on people and property including housing unit density and USFS private inholdings (private land within the boundaries of publicly owned land). Considering that the City's core urban area is more of a controlled environment covered by the City's Fire Department and Emergency Operations Plan, the wildfire's potential impact on the urban area

is not significant. Figure 12 represents the exposure or consequence of wildfire on highly valued infrastructure, developed recreation, housing unit density, sawmills, and historic structures.

Category	Description
Very High	Wildfire risk is very highly negative to people and property (top 5%).
High	Wildfire risk is highly negative (80-95th percentile).
Moderate	Wildfire risk is moderately negative (50-80 percentile).
Low	Wildfire risk is slightly negative (0-50 percentile).
No Data	There are no highly valued resources or assets mapped in the area, or it is considered non-burnable.

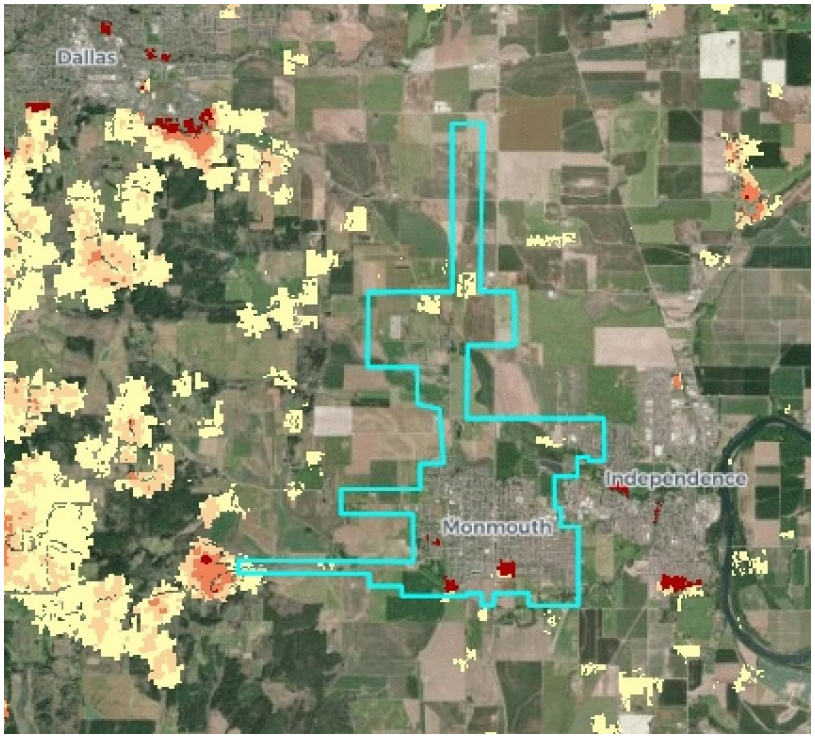


Figure 11: Wildfire Potential Impact on People and Property [Source: Appendix A]

Category	Description
Very High	Potential impact is very highly negative (top 5%).
High	Potential impact is highly negative (80-95th percentile).
Moderate	Potential impact is moderately negative (50-80th percentile).
Low	Potential impact is slightly negative (0-50th percentile).
No Data	There is no infrastructure mapped in the area or it is considered non-burnable (urban, agriculture, barren, etc.).

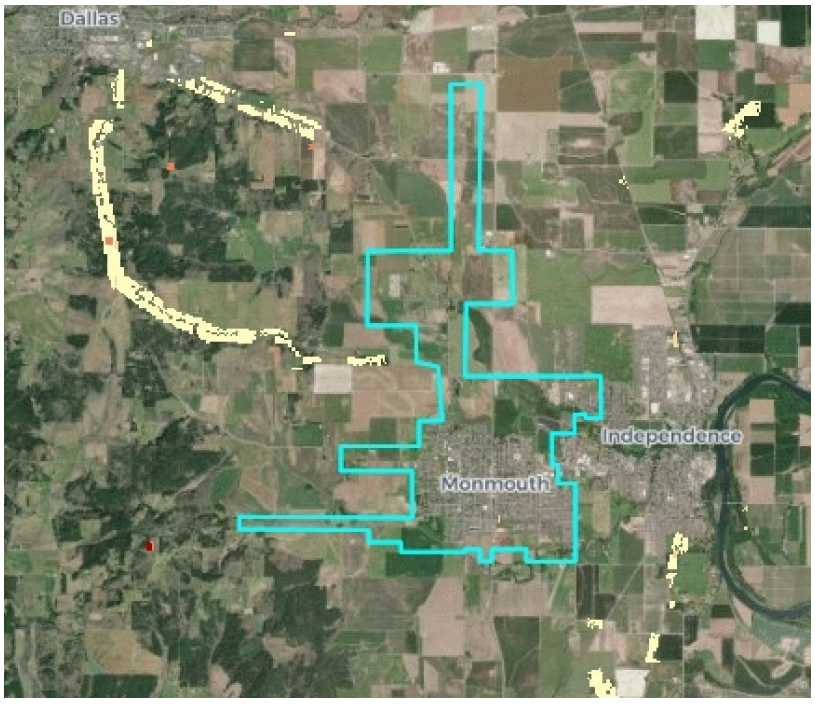
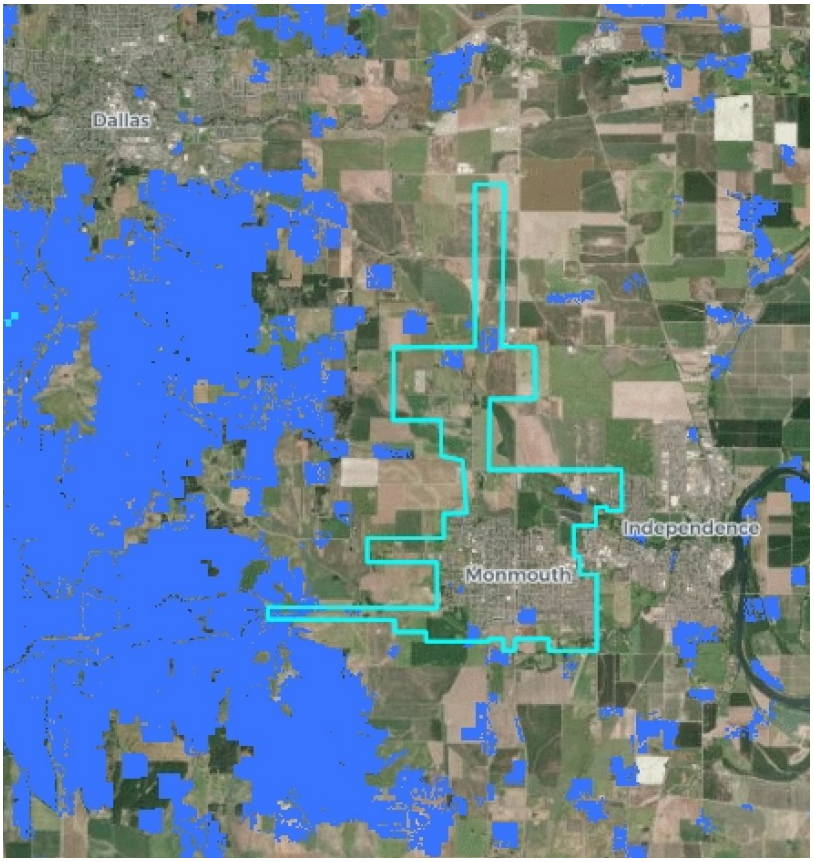


Figure 12: Potential Impact on Infrastructure [Source: Appendix A]

3.6.2 Burn Probability

Burn probability in Figure 13 shows the annual possibility of occurrence of a wildfire greater than 250 acres in size, and considers various factors including weather, topography, fire history, and fuels (vegetation). Only large wildfires are included because they are the most influential on the landscape. Smaller fires have a low impact on the broader landscape, but they can have significant impacts in areas with human activity and infrastructure. In this area all the fire occurrences in the past 10 years are less than 250 acres, and the burn probability is relatively low.

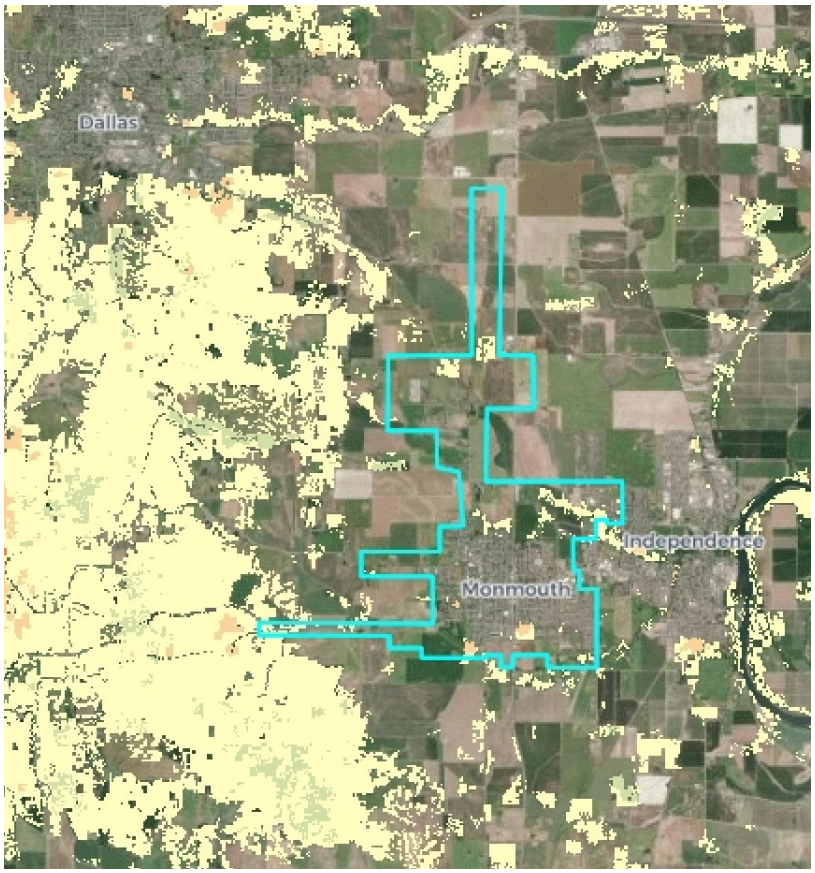


Burn probability	
Very High	Greater than 1 in 50 chance of a wildfire >250 acres in a single year (>96th percentile).
High-Very High High	Between 1 in 500 and 1 in 50 chance of a wildfire >250 acres in a single year (29th to 96th percentile).
Moderate-High Moderate	Between 1 in 5,000 and 1 in 500 chance of a wildfire >250 acres in a single year (11th to 29th percentile).
Low-Moderate Low	Less than approximately 1 in 5,000 chance of a wildfire >250 acres in a single year (up to the 11th percentile).
Non-burnable	This area contains non-burnable fuel types such as water, urban, agriculture, barren rock, etc.

Figure 13: Burn Probability or Likelihood of Large Wildfire [Source: Appendix A]

3.6.3 Overall Wildfire Risk

Figure 14 shows the overall wildfire risk, which combines both the probability of a wildfire and the expected impacts of a wildfire on highly valued resources and assets. Overall wildfire risk also reflects the susceptibility of resources and assets to wildfires of different intensities and the likelihood of those intensities. As indicated, wildfire risk in the MPL's service territory is minimum and there are no High and Very High wildfire risks in the surrounding area. The relatively more wooded areas to the west of the City are mostly in the Low-risk zone.



Overall wildfire risk: Legend	
Very High	Wildfire risk is very highly negative (top 5% of values).
High	Wildfire risk is highly negative (80th to 95th percentile).
Moderate	Wildfire risk is moderately negative (50th to 80th percentile).
Low	Wildfire risk is slightly negative(29th to 50th percentile).
Low Benefit	Wildfire is slightly beneficial (14.5 to 29th percentile).
Benefit	Wildfire is beneficial overall (0-14.5th percentile).
Non-burnable	There are no highly valued resources or assets mapped in the area, or it is considered non-burnable (urban, agriculture, etc).

Figure 14: Overall Wildfire Risk [Source: Appendix A]

SECTION 4: WILDFIRE MITIGATION STRATEGIES

The ultimate goal of the development and implementation of a wildfire mitigation plan is to protect people's life, property, infrastructure, and resources within and around the MPL service area by reducing wildfire risk. MPL can work towards this goal through the following perspectives.

- Minimize the source of the ignition while reducing or at least managing the fuel (vegetation) for the high-risk areas. This will require a series of wildfire mitigation strategies, which are built upon various asset management programs, vegetation management programs, equipment condition evaluation and upgrades, etc. to maintain a more safe, reliable, and resilient electrical system from the perspective of wildfire risk mitigation. These strategies will help not only reduce the number of wildfires caused by electric systems, but also prevent the spread of wildfires.
- React rapidly when electrical faults or fires occur by improved situational awareness, operational readiness, public safety power shutoffs, communication, crew training, etc. to minimize fault or fire duration. Interact with other emergency management agencies within and near the City's service area to consolidate the City's emergency response to wildfires.
- Maintain the developed wildfire mitigation plan. The plan should be evaluated and updated periodically regarding its effectiveness, and new industry practices and technologies that provide better risk reduction should be evaluated and added to the plan when necessary. This will help ensure the wildfire mitigation plan remains relevant and effective.

This wildfire mitigation plan defines the MPL's strategies for reducing fire risk such as situational awareness, defining a fire precautionary season, asset inspection and maintenance programs, system improvement plans, vegetation management, operational practices (e.g., reclosing relay setting protocols, restoration of service), and public safety power shutoff plans. These strategies can be organized in a hierarchical structure, as shown in Figure 15, with consideration for both the effectiveness and relative cost and impact of each strategy. Public Safety Power Shutoff is considered the last resort due to its disruptive impact. Detailed costs should be evaluated by the MPL depending on specific activities MPL elects to perform. Additionally, the plan outlines roles and responsibilities for its implementation, performance metrics, deficiency identification, and an audit process.

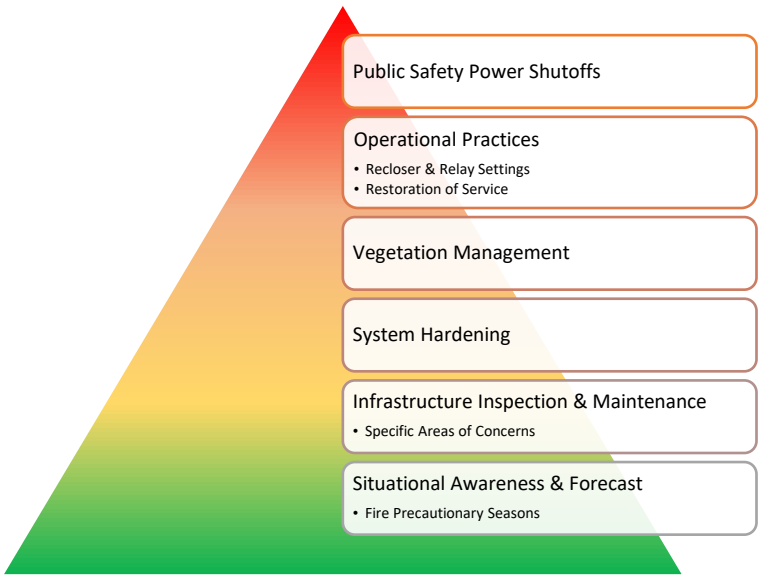


Figure 15: Wildfire Mitigation Strategy Hierarchy

4.1 Situational Awareness and Forecast

May is Wildfire Awareness Month in Oregon. MPL utilizes various operational and situational awareness means to determine when de-energization or alternative operational practices are appropriate. These situations include:

- Weather data such as wind speed, wind direction, air temperature, barometric pressure, and relative humidity.
- Oregon Wildfire Response & Recovery
- Oregon Real-time Wildfire Mapping
- US Forest Service – Wildland Fire Assessment System.
- Red Flag Warning Map
- National Weather Service
- National Oceanic and Atmospheric Administration, Fire Weather Outlook

Fire Precautionary Season

Historically, western Oregon's fire season occurs between July and September, with mid-August to late-September producing the most vulnerable conditions for elevated fire risk. This wildfire mitigation plan considers the Fire Precautionary season to range from April 1st to November 1st of any year.

During the Fire Precautionary Season the MPL crews shall:

- Observe the requirements of the wildfire mitigation plan to patrol and prevent fires caused by vegetation management activities.
- Take steps necessary to ensure employees and subcontractors prevent ignitions directly or indirectly during work activities.
- Permit and assist with periodic testing and inspection of required fire equipment and certify compliance with specific fire precautionary measures of the wildfire mitigation plan prior to beginning operations during the Fire Precautionary Season, including certification updating when operations change.
- All fuel storage, service, and parking areas shall be cleared of flammable materials and debris within a radius of 15-feet unless otherwise specified.

4.2 Infrastructure Inspections and Maintenance

MPL performs periodic inspections on its distribution facilities, which have an essential role in wildfire prevention. In recognition of the hazards possible from equipment that operates high voltage lines, MPL maintains a formal inspection and maintenance program for distribution and switch station equipment. It currently patrols the system regularly and has increased the frequency of inspections in high-risk areas.

Service Area Concerns

Some areas of the MPL circuits toward the City outskirts are constructed beyond the City limits, in addition these circuits extend into agricultural and wooded regions that could be susceptible to fire concerns. These areas include:

- Circuit out of BPA's Monmouth Substation serving west along Hoffman Road, Highway 99, and continuing along Riddell Road north.
- Circuit S5 out of MPL South Substation serving west along Church Street and on to Mistletoe Road.

- Circuit S5 out of MPL South Substation serving west along Ackerman Street to Monmouth Highway and on toward Fishback Road.

Inspections and Maintenance Schedule

The following table outlines inspection practices for the MPL facilities. It summarizes the inspection schedule for all assets and provides inspection requirements for electric facilities. The schedule requires that an operator of electric facilities:

- Construct, operate, and maintain its facilities in compliance with the NERC, OPUC, OAR, and ORS wildfire mitigation rules.
- Conduct detailed inspections of its overhead facilities to identify violations of the safety rules.

Table 2: Asset Inspection Schedule

INFRASTRUCTURE ASSET	INSPECTION TYPE	INSPECTION FREQUENCY
Overhead Transmission	Safety Patrol Inspection	Annually
	Detail Inspection	Once every 5 years
	Intrusive Pole Test	Every 10 years
Overhead Distribution	Safety Patrol Inspection	Every 2 years
	Detail Inspection	Once every 5 years
	Intrusive Pole Test	Every 10 years
Underground Distribution	Safety Patrol Inspection	Every 2 years
	Detail Inspection	Once every 5 years
Substation and Switch Station	Detail Inspections	Monthly

NOTES:
1.) Safety Patrol Inspections: consist of visual inspections of structures and equipment intended to discover any obvious physical problems and safety hazard concerns and can occur at the frequency noted above or during other electric department activities.
2.) Detailed Inspections: consist of careful examination of individual structures and equipment using specific site inspection tables, including device diagnostic testing as appropriate.
3.) Intrusive Pole Testing: consist of excavation and inspection of pole base to a depth of 18”, inspections of pole exterior for decay and sound, and bore testing to determine voids with treatment to prolong life as appropriate.

4.3 System Hardening

MPL has already begun to take measures toward system hardening of the electric facilities. The following fire mitigation measures have been recently performed by MPL toward the implementation of a wildfire mitigation plan:

- MPL has increased the frequency of substation, switch station, and circuit inspections.

MPL may prioritize the following fire mitigation measures to aid in expanding their approach toward greater implementation of a wildfire mitigation plan:

- The installation of wildfire detection devices at specific locations, such as the MPL substation and switch station, and on poles situated in areas that could be prone to wildfires. These unmanned devices continuously monitor the surrounding area, and ensure fast wildfire detection and notification, including weather data. They support both cellular and satellite communications and can be solar-powered. One such device is the Lindsey Firebird System.

- The installation of compact modular reclosers, breakers, or self-resetting vacu-fuse interrupters on three-phase and single-phase feeders that have circuits extending toward the City's outskirts or beyond the city limits, into areas where the line crosses fields or timbered areas. Example products are presented in Appendix E. These additional devices would allow one-shot operation in areas of high risk while allowing the more reliable reclose operation to continue for the remainder of the circuit not located in high-risk areas.
- MPL uses Type T expulsion style fuses for tap line protection and transformer protection. These are typical protective fusing for distribution systems. Expulsion fuses are fire-safe per the manufacturers' catalog. However, their primary characteristic is that they are vented devices in which, after their fuse element melts and arcs, the expulsion effect of the gases produced by the interaction of the arc with other parts of the fuse results in the current interruption in the circuit. The molten metal combined with ventilated gas could be a source of ignition for fire. These fuses are not a good choice in areas that have high fire risks. Non-expulsion fuses or current-limiting fuses (CLF) are recommended in the high-risk area. Note: for large and rural electrical systems, the current-limiting feature of the CLF may not be triggered due to low fault currents, but the non-expulsion feature is what provides the most benefit with regard to wildfire mitigation.
- The installation of surge arresters with an arc protection system to eliminate the potential of molten metal ignition on ground cover in areas prone to wildfires.
- The application of an intumescent coating at the base of wood poles in areas prone to potential fire hazards. Such as Genics CobraTM SHIELD II a versatile and effective wood pole fire retardant product. The intumescent coating reacts to the fire or heat by expanding many times the original dry thickness limiting heat and oxygen to wood pole surfaces.
- The installation of flame retardant (FR) insulators on all new distribution construction. The insulators selected, such as Hendrix FR, should be tested in accordance with UL 94.
- Ensure that line construction conforms with NESC required component grade strengths and standards.
- Ensure that line construction conforms with NESC clearances and right-of-way requirements. However, in heavily wooded areas MPL may want to consider the installation of insulated 'tree-wire' and 'transformer riser wire' for primary, secondary, and transformer connections where limited right-of-way space is available to prevent contacts.
- Consider the use of fiberglass cross-arms. The utility industry offers a wide variety of fiberglass cross-arms with built-in UV and fire resiliency protection for power systems. These levels of protection significantly extend the cross-arms life in harsh environments and formulated resins give cross-arms a V-0 fire-resistant rating.
- Wood poles treated with preservatives remain the choice for most utilities, and there is no data available that compares the fire resistance of alternate galvanized steel, concrete, or fiber-reinforced poles. Poles of any material have wildfire risk minimized when vegetation is kept a safe distance away from the pole, regulations vary but maintaining 6-10 feet horizontal clearance around poles is suggested.
- A 10-year system planning study to analyze conditions and capacity of the existing electric system, identify areas of concern and provide improvement options. This planning study includes load forecast, evaluation of transmission, substation, and distribution equipment, power flow analysis, fault analysis, and protective device coordination. MPL could use this as capital improvement plan to gradually improve the reliability and resiliency of MPL's electrical system.

4.4 Vegetation Management

MPL has an aggressive right-of-way vegetation management program, focusing on prevention of vegetation contract with overhead conductors and the reduction of fuel within the right-of-way in compliance with IEEE C2, *National Electrical Safety Code* (NESC), and the requirements for public safety and fire prevention per OPUC OAR 860.024.0016/0017. The approach consists of contracting out the

application of herbicide spraying, with MPL crews performing hand-cutting vegetation and dangerous trees in and along the outskirt edges of the right-of-way to prevent re-growth. Crew personnel conduct right-of-way inspections annually and increase inspections during heavy growth seasons. This includes identifying vegetation and fire risk concerns during routine maintenance or service calls and taking corrective action.

Vegetation in proximity to power lines is trimmed with work performed to the noted guidelines to provide reasonable service continuity, public safety, and guard against forest fire damage caused by supply conductors. When conducting routine maintenance of power lines and equipment, MPL crews also identify and remove high-risk fuel sources, plus address vegetation concerns during routine service calls to remove at-risk vegetation.

The crews perform scheduled ground-based inspections of tree and conductor clearances and hazard tree identification to ensure all lines are inspected for vegetation hazards and trimmed on a regular annual basis. The inspections target areas for vegetation pruning or removal to ensure compliance with state and federal regulatory requirements and standards in OAR 860-024. The objective is to achieve up to 10-feet of clearance during tree work, and includes vegetation removal from secondary voltage, service drops, and pole climbing space performed to conform with *the American National Standards Institute* (ANSI) A300 concepts and utility pruning.

Tree trimming that is beyond the MPL crew's capability is contracted out to professional tree trimming contractors.

4.5 Operational Practices

As fire season approaches each year, fire precaution levels increase. MPL should adjust work practices and system operations accordingly. These adjustments are coordinated with Industrial Fire Precaution Levels (IFPL) and escalate with increasing wildfire danger. Some practices are intended to mitigate the risk of fire ignition and others are in place to control and extinguish any accidental fire before it grows out of control. During the Fire Precautionary, MPL crews shall:

- Comply with the wildfire mitigation plan requirements and responsibility for patrolling and preventing fires caused by vegetation activities.
- Ensure MPL employees and subcontractors prevent ignitions directly or indirectly during their work activities.
- Update certification with periodic testing and inspection of required fire equipment.
- Ensure equipment service areas, parking areas, gas/oil storage areas are cleared of flammable material for a safe radius of at least 10-feet.
- Coordination with other entities that work to minimize the possibility for the electric utility to cause a wildfire.

Proactive, day-to-day actions include safety training and involvement in emergency management planning. Measures to mitigate wildfire risks are taken to ensure preparedness in high-risk situations, such as dry and windy climatological conditions.

Recloser Operational Practices

There are circuit breakers and circuit reclosers with reclosing relay capability on the MPL distribution feeders, which help to keep the circuits energized after momentary faults and trip a circuit off when a permanent fault occurs. MPL does not typically disable automatic reclosing functions at its substation or switch station due to weather-related conditions. However, before line work or field operations work begins, reclosers are set to the ‘one-shot’ alternate setting (or Hot-Line Tag) to block the reclosing

function. In addition, the configuration of a circuit determines the reclosing cycle. For example, for a fully undergrounded circuit, reclosing should not be enabled; while for a partially undergrounded circuit, the reclosing cycle is carefully set to provide proper protection for the circuit. Similar considerations apply if any feeder goes into the heavily wooded area.

In accordance with the wildfire mitigation plan, MPL's personnel will assess resetting reclosers serving high-risk areas to Hot-Line Tag mode when conditions suggest a potential for fire danger. By placing reclosers in Hot-Line Tag mode, they become sensitive to line disruptions and protect the system with rapid disconnect/de-energization of power lines. See additional discussion on this topic in Section 4.3: System Hardening.

Restoration of Service

After a fault MPL shall not restore service until the area of trouble is fully patrolled, repaired or isolated, and tested by following MPL's operation and maintenance procedures. MPL should follow this same protocol in the event of a wildfire.

4.6 Public Safety Power Shutoffs

One of the most effective and highly scrutinized mitigation measures is the public safety power shutoff (PSPS). PSPS is the proactive de-energization of power lines that are forecasted to be in the path of critical fire weather conditions. For utilities that strive to provide reliable electric energy to customers 100% of the time, intentionally turning off the power is the last resort. However, removing these vulnerable lines from service eliminates the risk of ignition. While effective in protecting customers, first responders, and property, PSPS events are extremely disruptive to customers' lives.

Electric utilities are undertaking risk-based initiatives to limit the scope, duration, and frequency of PSPS events to minimize impacts. These initiatives include system hardening, installing additional sectionalizing devices, installing weather stations, high-definition cameras, and using data to predict high fire threat areas and areas of increased risk of fire spread.

This wildfire mitigation plan details the MPL electric utility initiatives and activities for reducing the risks of its circuits and equipment from igniting wildfires in high fire risk areas of the utilities' service territory. These risks associated with equipment vary depending upon several factors: age and condition, population density (ingress and egress), surrounding climate, terrain and vegetation, voltage class, type of construction, and policies and regulations around land/forest management.

Newer technologies and increased data capture enable utilities to perform risk analysis at the asset level, allowing them to prioritize activities and develop initiatives for specific circuits and equipment. This provides for more effective and efficient mitigation.

PSPS is a recent development in the strategies used by electric utilities to help keep the public and communities safe. A PSPS proactively de-energizes power circuits during high wind events combined with hot and dry weather conditions. MPL in consultation with the local Public Safety Providers will evaluate the value of a PSPS. When considering a PSPS, MPL will also examine the impacts on fire response, water supply, public safety, and emergency communications. In addition, MPL will consider the external risks and potential consequences of a PSPS while striving to meet its main priority of protecting the communities it serves. These include:

- Potential loss of water supply to fight wildfires due to loss of power at wells and pumping facilities.
- Negative impacts on emergency response and public safety caused by power outages and disruptions to the internet and phone services.
- Loss of community infrastructure services that occurs during power outages.

- Medical emergencies for the community requiring powered medical equipment or refrigerated medication needs, plus the loss of air conditioning impact on medically vulnerable community.
- Negative impacts on medical facilities.
- Traffic disruption and congestion from de-energized areas resulting in reduced response times for emergency providers.
- Economic impacts on businesses due to closure during an outage.
- Inconveniences to community due to the loss of electric facilities during a wildfire event that can lead to injuries and fatalities.

The risks and potential consequences of initiating a PSPS are significant and extremely complex. Based on the considerations noted previously, MPL reserves the option of implementing a PSPS when conditions dictate. While MPL 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 fallback option that can be implemented during an extreme high risk condition.

On a case-by-case basis, MPL has historically and will continue to consider de-energizing a portion of its system in response to public safety issues or in response to a request from outside emergency management agencies. If conditions on the ground indicate that a wildfire threat is imminent, MPL has the authority to de-energize select distribution circuits. A decision is based on multiple initiations accompanied by MPL's unique understanding, including any risks involved. MPL relies on weather data from various sources, including the National Weather Service, NDFRS, and the City's weather station data. Criteria that can cause a potential to de-energize circuits include:

- Imminent fire danger
- Crucially dry vegetation that could serve as fuel for a wildfire
- High temperatures along with low humidity levels
- Red Flag Warning declaration by the National Weather Service
- Forecast high wind events in high-risk areas
- Agency Incident Command mandated fire orders
- MPL's crew or other agency field staff on-the-ground observations
- Active wildfire in the service area

MPL should advise customers that PSPS could occur without any action taken by MPL, since power is purchased and transmitted over transmission lines owned by others. And MPL shall continue to monitor the evolution of PSPS implementation in Oregon and the Northwest by other electric utilities to continue to refine its strategies for wildfire mitigation.

4.7 Roles and Responsibilities

The developed and adopted Wildfire Mitigation Plan should be reviewed and updated every five years to meet the updated code requirements and potentially use better system components or other technologies.

Monmouth Power and Light is governed by the City Council and managed by the Electric Superintendent responsible for daily operations. The City and MPL's staff that has responsibilities for wildfire prevention activities include:

- **City Manager**: Assumes overall responsibility for the City's planning and mitigation activities, including maintaining compliance with state and federal safety and operating requirements. The City Manager is responsible to the City Mayor and governing council.

- **Electric Superintendent**: Responsible for the safe operation of MPL's substation, switch station, distribution system, equipment, and service.
    - The Electric Superintendent manages the Power and Light Line Crew and is primarily responsible for ensuring that all electric circuits and equipment are inspected and maintained.
    - The Electric Superintendent is also responsible for the reliable operation of the utility's 12.47/7.2 kV distribution feeder circuits.
    - The Electric Superintendent is responsible for safety programs, including wildfire prevention training, evaluation, and installation of new protective and system hardening equipment to reduce fire risk.
    - The Electric Superintendent maintains compliance with federal, state, and local fire management personnel to ensure that appropriate preventive measures are in place.

SECTION 5: PUBLIC AWARENESS

5.1 Public Awareness

As required by Section 2 of SB 762, OPUC shall convene periodic workshops for purposes of assisting electric companies, consumer-owned utilities, and operators of electrical distribution systems to develop and share best practices for mitigating wildfire risk. Meanwhile, it is significantly important for MPL to be proactive in building and increasing public awareness of wildfire risk. This helps the City's residents to better understand how to prepare for outages and wildfires and how to report an observed incident and/or potential hazard that can cause a fire.

The City presently has web pages containing useful information including the City zoning map (Figure 16), contact means, etc. The City has been proactive in planning for emergencies and developed an Emergency Operations Plan in 2011. According to FEMA in terms of emergency management, "local government must act first to attend to the public's emergency needs. Depending on the nature and size of the emergency, State and Federal assistance may be provided to the local jurisdiction. The local EOP focuses on the measures that are essential for protecting the public. These include warning, emergency public information, evacuation, and shelter." We recommend MPL work with the City to review and improve the existing emergency management program in accordance with present FEMA requirements.

Upon acceptance of this WMP by City Council MPL will also develop brochures, training lectures & videos, plus implement other interactive media to assist in public awareness of wildfire hazards and mitigation strategies.

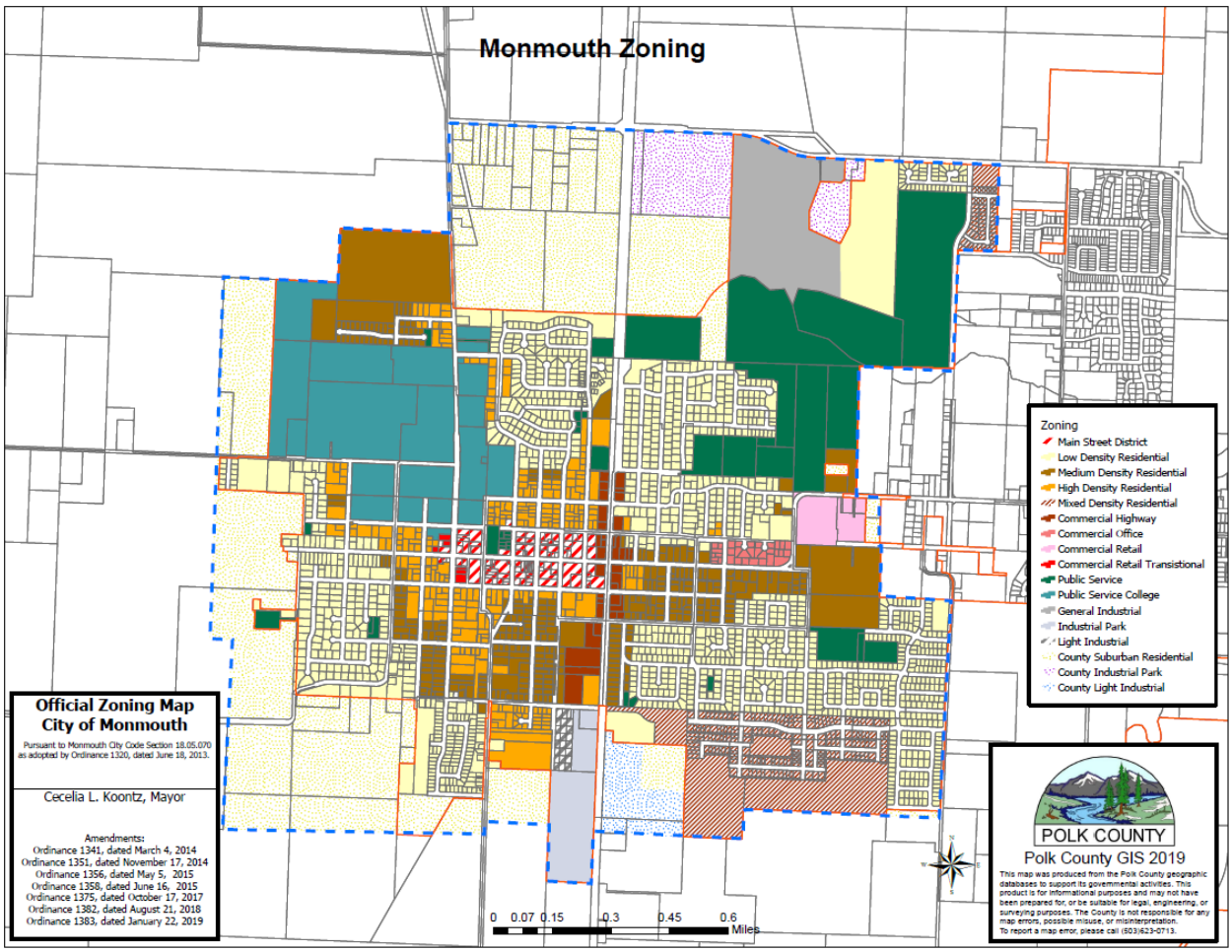


Figure 16: City of Monmouth Zoning Map
[Source: https://www.ci.monmouth.or.us/files/documents/MonmouthZoningMap1741071133043019PM.pdf]

5.2 Agencies

MPL coordinates with local emergency response agencies and other relevant local and state agencies as affiliates. In response to emergency events, MPL collaborates with the Polk County Office of Emergency Management (OEM) to ensure effective communication and coordination.

5.2.1 Fire Report

The reporting of fires requires the MPL dispatch call 911 and then notify the fire department and if applicable the Forest Service of any fires in the operating area or along the roads used by the operators. All fires must be reported as soon as possible to the personnel listed below.

- **Name**: Polk County Fire Department, Fire Chief, Ben Stange
  Emergency Area: City and Rural Fire
  Telephone: Emergency 911, non-emergency 503-838-1510

When reporting a fire the City crew or Contractors are to provide the following information:

Report A Fire			
Name:		Agency:	
Title:		Call-back Phone No.:	
Fire Location:			
Fire Information:	Including approximate acreage, rate of spread, and wind conditions.		

After the initial notification, the following list of emergency services should be notified of the wildfire event.

- **Agency**: Monmouth Police Department
  Contact/Title: Isaiah Haines / Police Chief
  Telephone: 503-838-1109
  Address: 450 Pacific Highway North, Monmouth, Oregon 97361
- **Agency**: Polk County Sheriff's Office
  Contact/Title: Mark Garton / Sheriff
  Telephone: 503-623-9251
  Address: 850 Main St. #106, Dallas, Oregon 97338
- **Agency**: Polk County Emergency Management
  Contact/Title: Dean Bender / Coordinator
  Telephone: 503-831-3495
  Address: 850 Main St., Dallas, Oregon 97338

MPL has adopted a policy of proactive planning and coordinating closely with local government, critical agencies, and first responders. The following list identifies key agencies and franchises in the service area that should receive fire danger notification:

Table 3: Key Agencies and Franchises in The Service Area

Stakeholder Group	Description
Critical Agencies	• Central School District 503-838-0030 • Western Oregon University Campus Public Safety, 503-383-8481 • City of Monmouth, Public Works 503-838-2173 • Polk County, Public Works 503-623-9287

Stakeholder Group	Description
Communications	• MINET, 503-837-00700 • Century Link, 800-244-1111 • Charter, 866-731-5420 • Oregon Public Broadcasting Station 800-241-8123 • Local News, The Statesman Journal, Salem, OR 503-399-6611 • Local News, KOIN TV, Portland, OR 503-464-0600
First Responders	• Bureau Of Land Management, Northwest Oregon District 503-375-5646
Local Government	• City of Monmouth, City Hall 503-838-0722 • City of Dallas, City Hall 503-623-2338 • City of Independence, City Hall 503-838-1212
Utilities	• Consumers Power Inc. 800-827-9063 • Pacific Power 888-221-7070 • NW Natural Gas, 800-523-7661
Safety Councils	• Polk County, Oregon, Forest Wildfire Protection Contact, Jeff Classen 503-934-8155 • Polk County, Oregon, Natural Hazard Mitigation Plan Director, Austin McGuigan 503-623-9237

SECTION 6: APPENDIX

6.1 Appendix A – Oregon Wildfire Risk Explorer- Advanced Report

Attached externally

6.2 Appendix B – City of Monmouth Terrain Map

Attached externally

6.3 Appendix C – MPL Substation One-Line Diagram

Attached externally

6.4 Appendix D – MPL Electric System One-Line Diagram

Attached externally

6.5 Appendix E – Reference Product Cut Sheets

Attached externally