

# WILDFIRE MITIGATION PLAN

## MAY 2022

Prepared For:



City of Milton-Freewater, Oregon

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Prepared By:



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

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# 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](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 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 Milton-Freewater is located in Umatilla County, Northeast Oregon. The City provides all City utilities, including electric service. Milton-Freewater City Light & Power is the oldest municipal electric utility operating in the State of Oregon and also offers one of the lowest power rates in the northwest.

Milton-Freewater City Light & Power, 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 the City'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 the Oregon Public Utility Commission. The overall objective of developing and executing a wildfire mitigation plan is to minimize possible sources of ignition, improve the system resiliency of the electric network, and identify and correct ineffective procedures. The focus of this Wildfire Mitigation Plan effort is the electrical service area by the Milton-Freewater City Light & Power.

Based on the minimum requirements of a Wildfire Mitigation Plan as specified in Oregon SB 762, the rest of the plan is organized as follows. Section 2 describes the City's service area, electrical system, and existing fire mitigation programs. Section 3 presents the wildfire risk assessment of the City's service territory and its surrounding area within a reasonable distance. Section 4 introduces the proposed wildfire mitigation strategies based on a review of the City'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

The Milton-Freewater City Light & Power (or Electric Department) is headquartered at City Hall and includes an Operations Center located at 501 Lamb Street. Both locations are within the Milton-Freewater City limits. The City distributes electric service within a two-square-mile territory. The service territory is shown in Figure 1 and the vast majority of the 4,550 customers are served within the City limits.

The City's electric system supplied approximately 109.181 million kWh annual retail electric energy for the year ending December 31, 2021, with a 2021 winter peak demand of 26.6 MW and a summer peak demand of 21.2 MW. The City owns and operates two distribution substations, Freewater Substation serving seven (7) distribution feeder circuits plus one spare position, and Milton Substation serving six (6) distribution circuits.

The City's substations have power delivered from BPA at 69 kV to Freewater Substation, with transmission service to Milton Substation normally through a City-owned 6.64 mile long 69 kV transmission line routed east of the City. An alternate, normally open, BPA transmission source, routed west of the City, is available to serve from Freewater Substation to Milton Substation. The City also owns Lagoon Substation, located west of the City, which does not provide service to the community and only serves the City water treatment facilities.

The City's distribution system (13.2/7.62 kV) consists of 81 miles of overhead three-phase and single-phase primary circuitry; and 4.3 miles of three-phase underground primary circuitry and 11.2 miles of single-phase underground primary circuitry. The electric facilities serve 3,652 residential and 602 commercial and industrial customers.

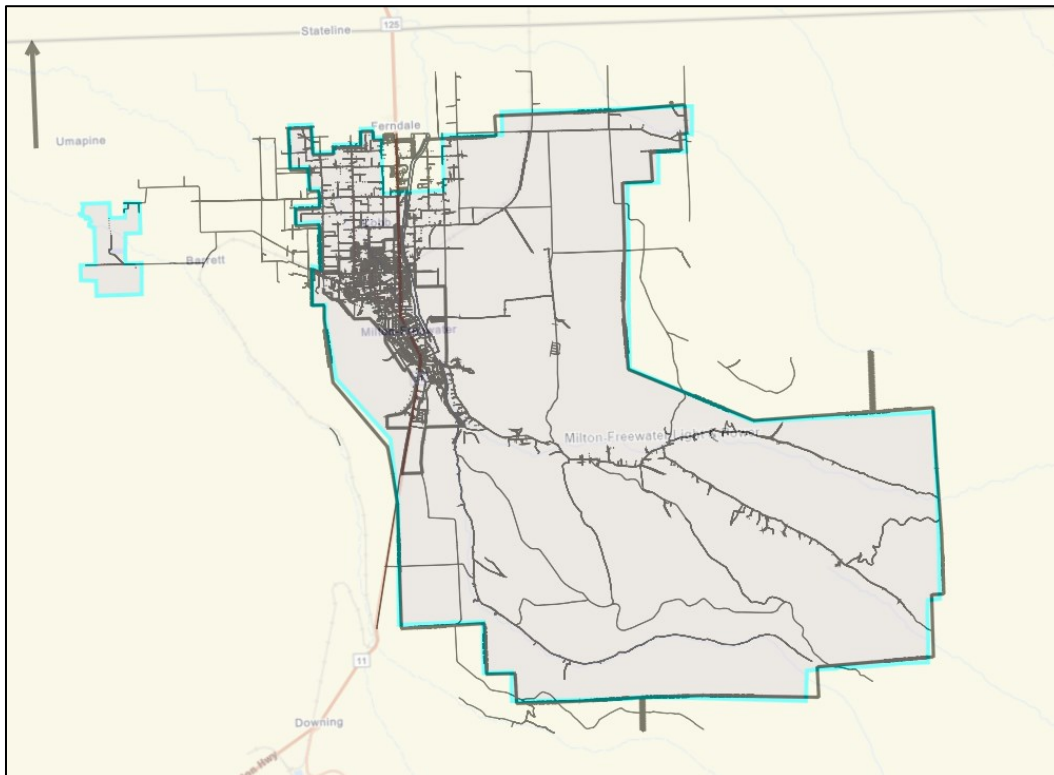


Figure 1: Milton-Freewater Light & Power Service Territory, Overlaid with City's Electrical Map  
[Source: <https://www.oregon.gov/energy/energy-oregon/pages/find-your-utility.aspx> ]

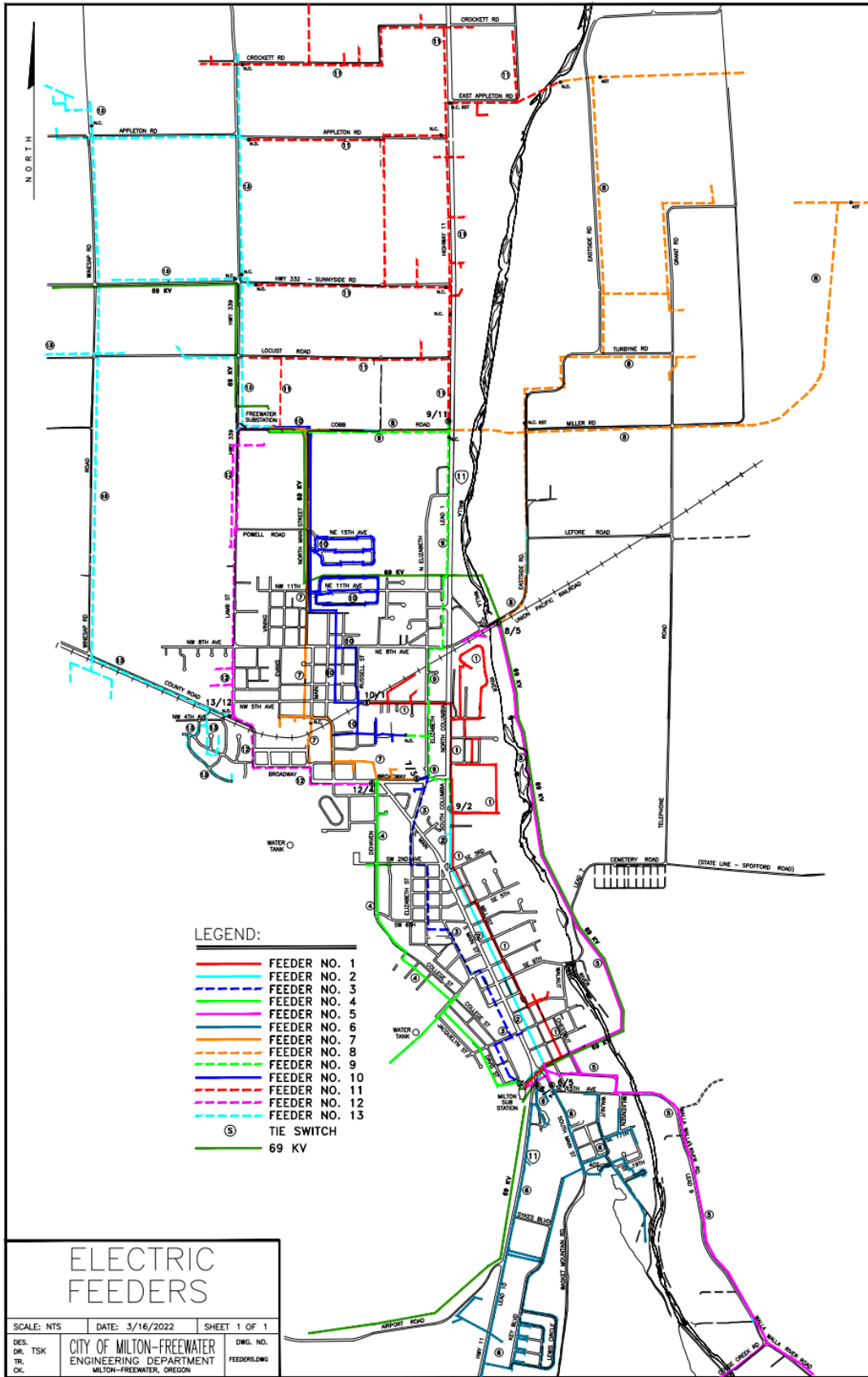


Figure 2: City of Milton-Freewater Electrical Feeder Map – City Area Only

## 2.2 Existing Program

Currently Milton-Freewater City Light & Power does not have a systematic program or policies in place regarding wildfire mitigation. However, Milton-Freewater City Light & Power has implemented several procedures, as shown below, to directly or indirectly reduce wildfire risks.

- The City recently purchased three back-pack water sprayer systems that are now carried on the department crews' trucks and a water tank that is carried on the foreman's truck.
- The City recently implemented a drone technology inspection program that includes drones equipped with high-resolution cameras that allow detailed equipment inspections of components not visible from the ground. This includes raptor nesting sites and infrared thermal imaging of electrical equipment to identify hot connections allowing for quick corrective follow-up action.
- The City has begun spraying a vegetation deterrent with a 10-foot radius around the base of transmission line poles to eliminate brush accumulation and the potential for fire danger.
- The City 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 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.
- The City has breakers with reclosing relays installed for every feeder in Milton Substation and Freewater Substation and has integrated the recloser controls with a centralized SCADA system. The SCADA system is capable of displaying fault alarms from all substation relays and feeder relays and provides the ability to remotely operate all breakers. This allows the City to disconnect any feeder quickly in case of a fire emergency.
- The City is proactive in planning for emergencies and has developed an *Emergency Operations Plan (Appendix E)* for City emergency conditions including fires, and *Home Fire Prevention Checklist* for residential customers [Link: <https://www.mfcity.com/fire/page/home-fire-prevention-checklist>]. The plan includes emergency evacuation routes and shelter locations, which is discussed in Section 5.1.

These existing programs are not sufficient to meet the minimum requirements in Oregon SB 762 for a wildfire mitigation plan. However, the City is adopting additional measures to bring its program into compliance 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.



## 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 City's 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 the Milton-Freewater City Light & Power is primarily the electrical service area, which is mostly an urban area and has an irregular shape as shown in Figure 1. The boxed area in Figure 3 covers not only the City's service territory 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: Milton-Freewater 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 21<sup>st</sup> 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 City of Milton-Freewater from 2000 to present. These figures show that the most intense period of drought occurred in August 2021, where D4 (Exceptional Drought) affected 26.59% of land in Oregon and 45% of the Milton-Freewater and surrounding area. D3 (Extreme Drought) and D4 (Exceptional Drought) have persisted into 2022.

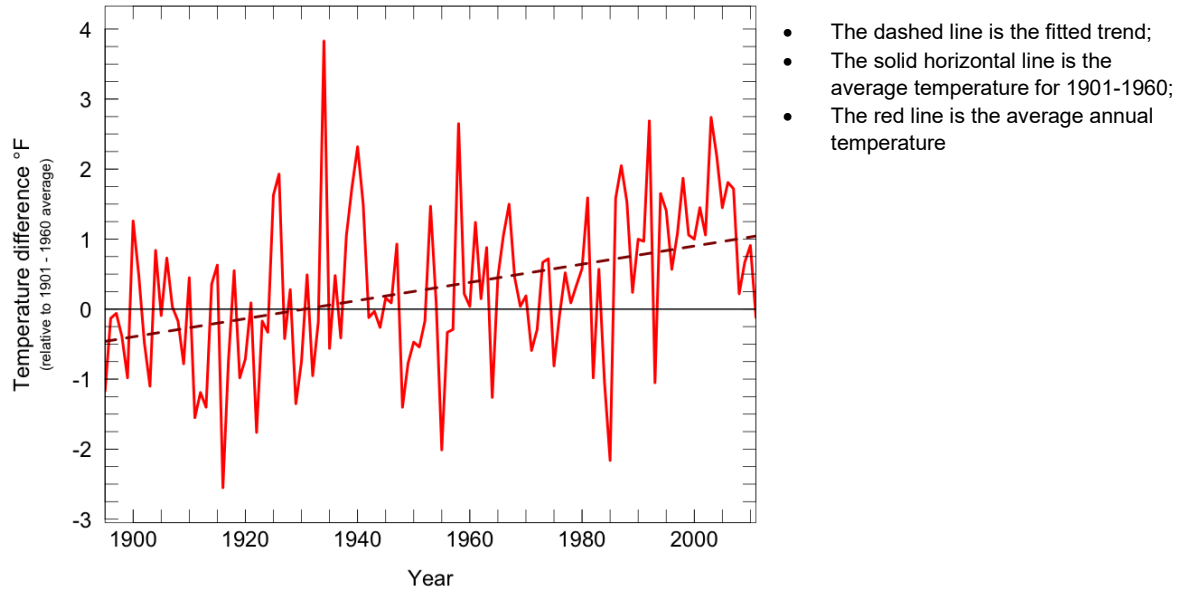


Figure 4: Rising temperatures in the Pacific Northwest.  
[Source: <https://cig.uw.edu/learn/climate-change/>]

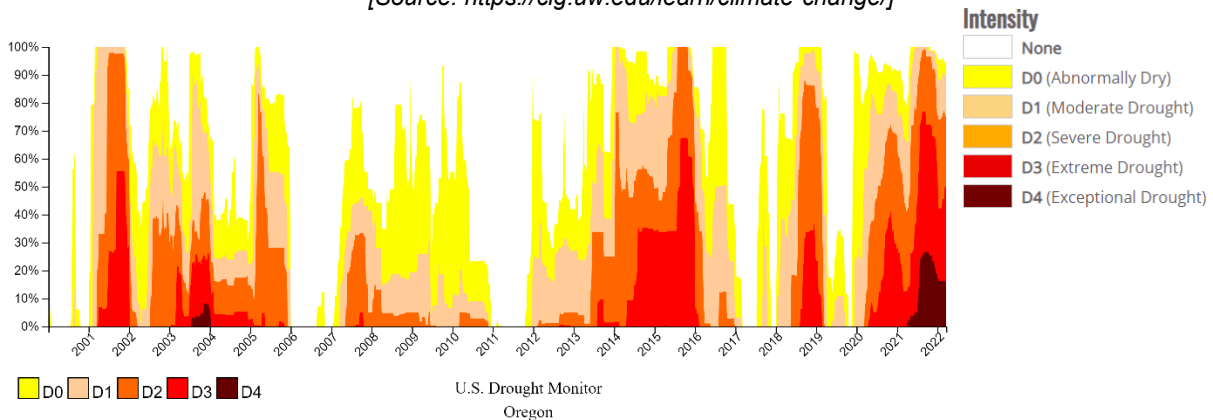


Figure 5: Drought in Oregon from 2000 to Present [Source: <https://www.drought.gov/states/oregon#historical-conditions>]

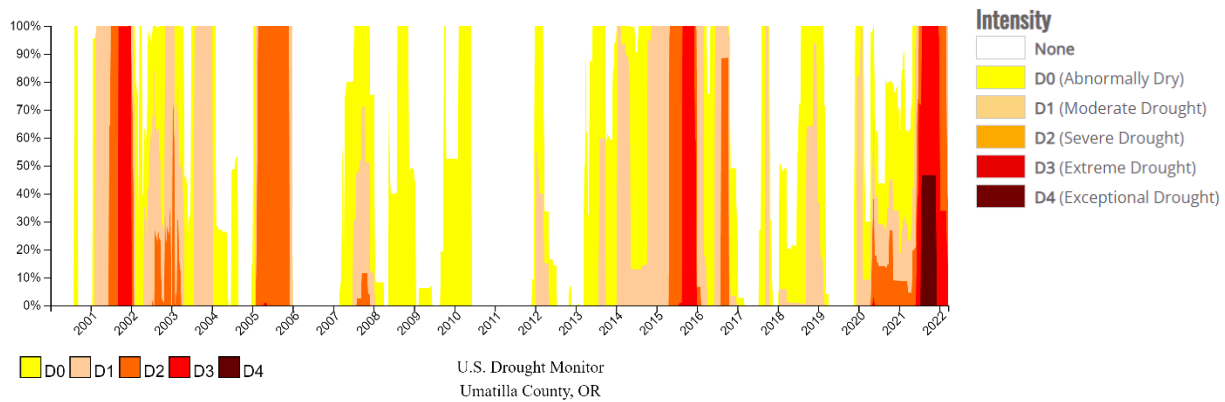


Figure 6: Drought in Milton-Freewater from 2000 to Present [Source: <https://www.drought.gov/location/Milton-Freewater%2C%20Oregon> ]

### 3.2 Terrain

Although the City of Milton-Freewater is essentially urban with populated residential neighborhoods, it is a small community and is surrounded by open space consisting of gentle rolling hills predominately made up of farmland (Figure 7), the majority of which are wheat fields with some orchards and vineyards. The electric system does have some circuitry that enters wooded areas, the most obvious of which is the circuit along the Walla Walla River. Detailed USGS topographical maps of the area can be found in Appendix B. Historically, because of the region’s agricultural activities, the overgrowth of trees and ladder fuels needed to support fires are minimal near facilities and infrastructure.

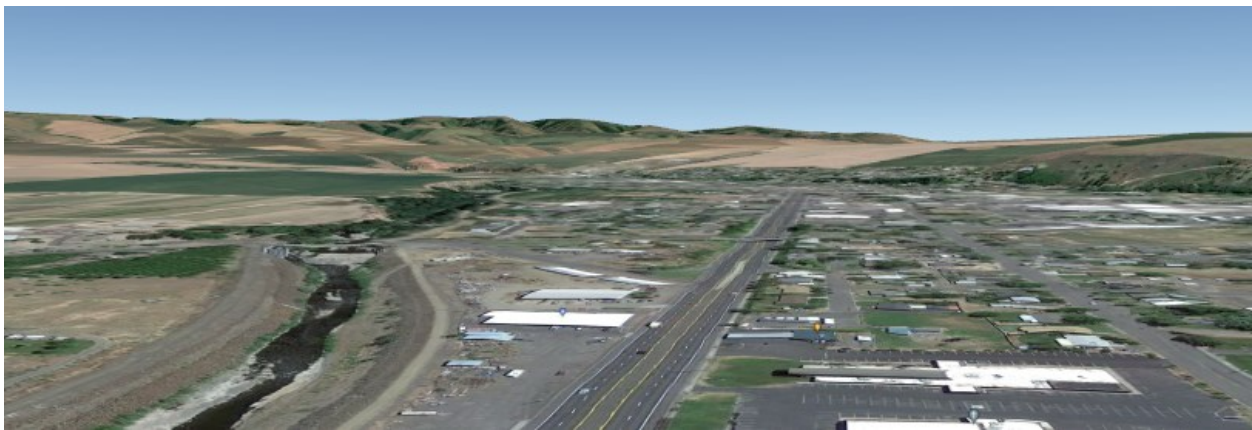
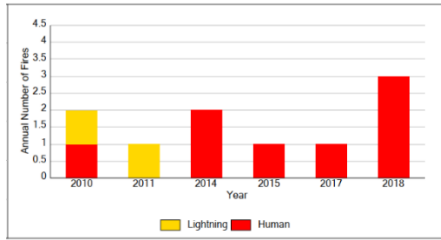


Figure 7: Google Earth 3D View from HWY 11 Toward Southeast Direction

### 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 Milton-Freewater. There were ten fires in that period and none of them were considered large wildfires (>250 acres in one fire that is classified as a wildfire threat). Among these ten fires, eight are human-caused and two are lightning-caused. 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.



**WF fire starts between 2008-2019**

Total Acres Burned	1,059
Total Number of Fires	10
Average Acres Burned Per Year	106
Average Fires Per Year	1
Percent Lightning Caused	20%
Percent Human Caused	80%



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 area of interest (Figure 9), 72% of the vegetation is agricultural and located in the northwest of the area; 11% of the vegetation is shrubland and 6% is conifer, mostly located in the southeast of the area. The vegetation type is one of the impacting factors in fuel models, which describe the fire-carrying materials that form surface fuels. Detailed fire model groups for this area can be found in Appendix A.

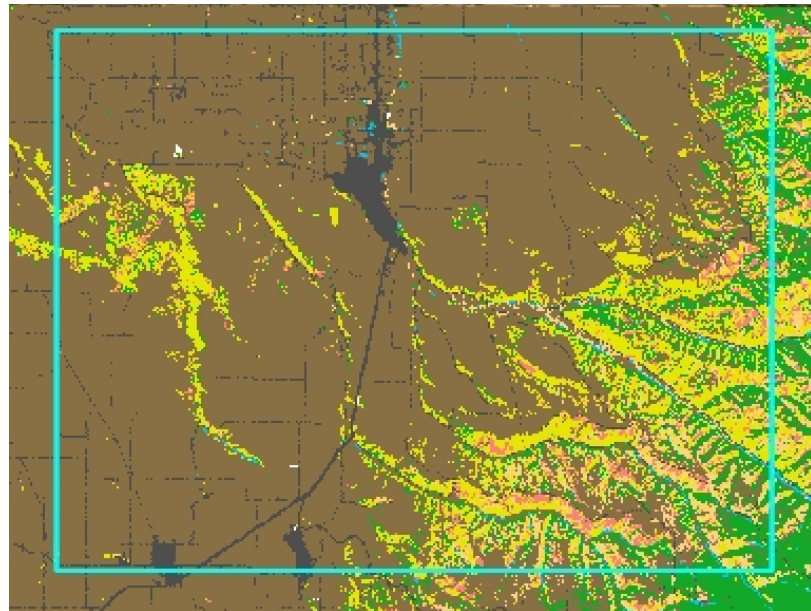
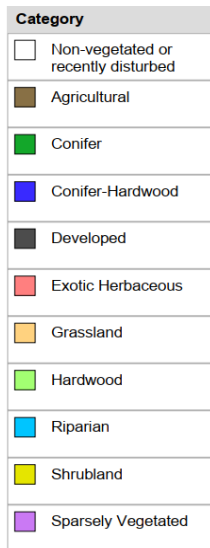


Figure 9: Vegetation Types [Source: Appendix A]

### 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 of Milton-Freewater, and along the Walla Walla River Road. The average household size is about 2.88 persons in this area.

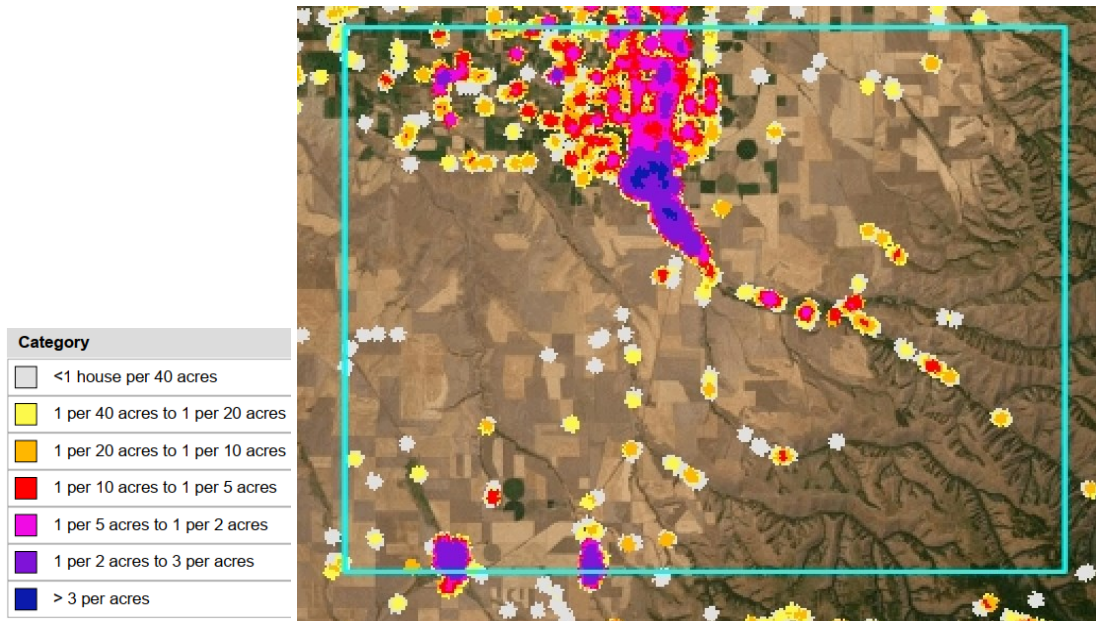


Figure 10: Housing Density [Source: Appendix A]

### 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. As can be seen in the legend, the data values reflect 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. 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 shown. Figure 12 represents the exposure or consequence of wildfire on highly valued infrastructure, developed recreation, housing unit density, seed orchards, 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 a wildfire greater than 250 acres in size occurring, considering various factors including weather, topography, fire history, and fuels (vegetation). Only large wildfires are included because they are the most influential on the landscape. Most fire occurrences are less than 250 acres. Smaller fires have a low impact on the broader landscape, but they can have significant impacts in areas with human activity and infrastructure.

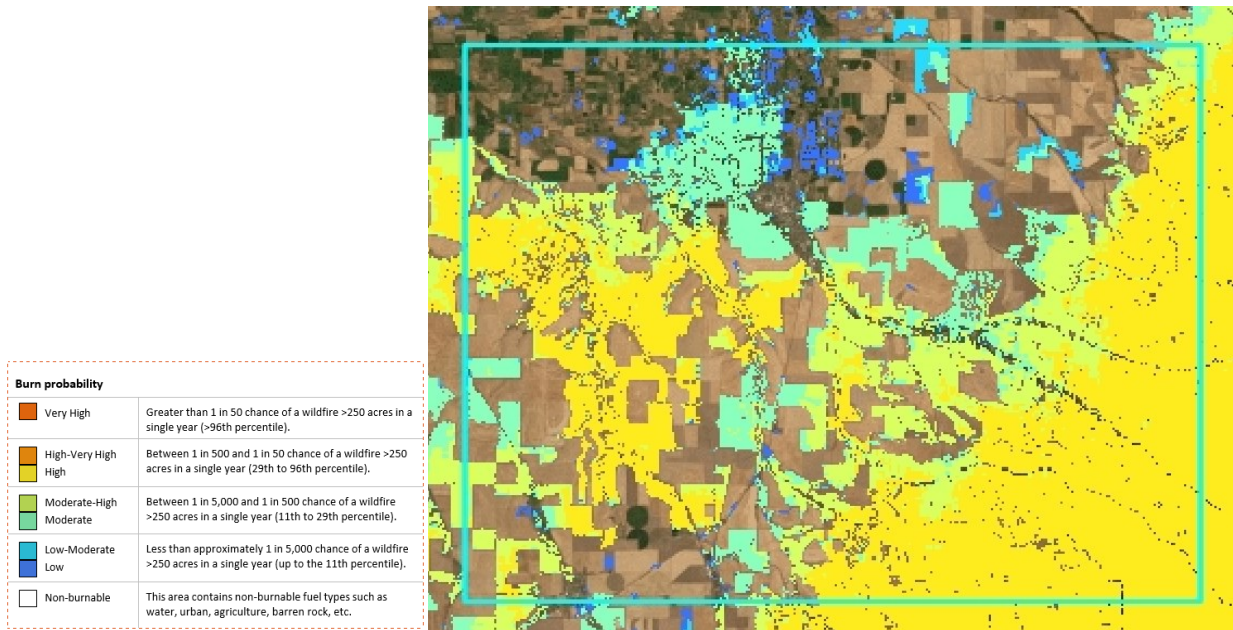


Figure 13: Burn Probability or Likelihood of Large Wildfire [Source: Appendix A]

### 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, the High and Very High wildfire risk areas are located around the borders of the core city area, as well as the areas that have highly valued infrastructures, such as the railway along the County 643 Road, and properties and facilities along Walla Walla River. The rest of the areas are classified more as Moderate or Low risks.

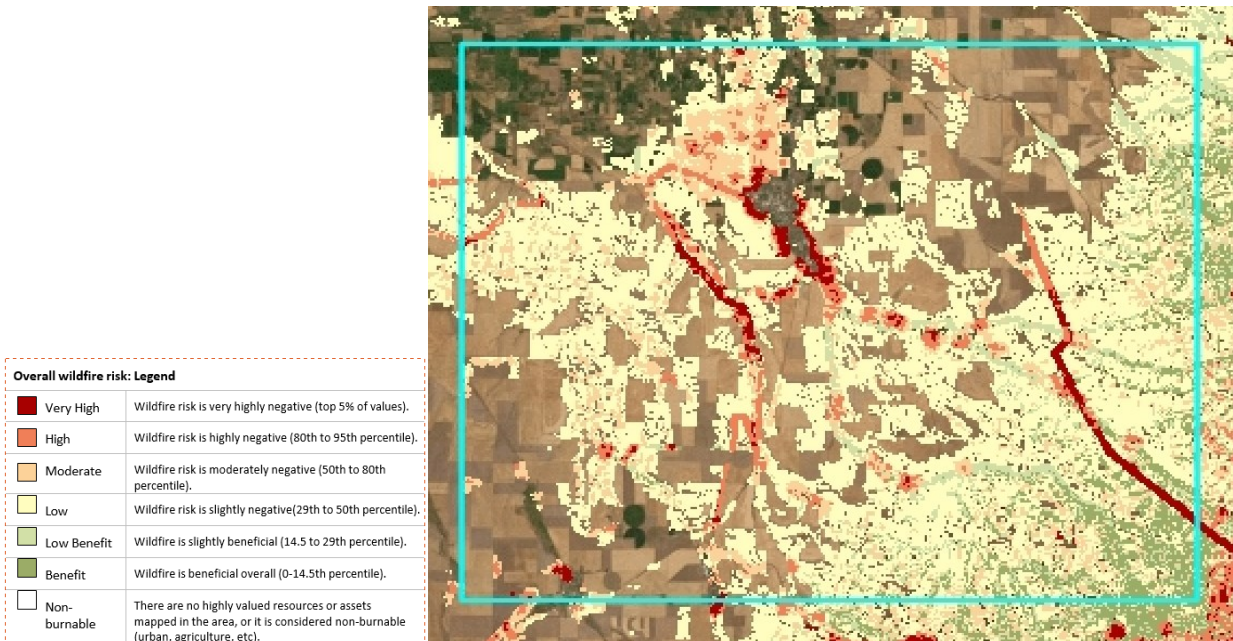


Figure 14: Overall Wildfire Risk [Source: Appendix A]

## SECTION 4: WILDFIRE MITIGATION STRATEGIES

The ultimate goal of the development and deploying wildfire mitigation plan is to protect people's life, property, infrastructure, and resources within and around the City's service area by reducing wildfire risk. The City 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 area. 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 fault or fire occurs 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 increases the accountability of the wildfire mitigation plan.

This wildfire mitigation plan formalizes the City's situational awareness, fire precautionary season, asset inspection and maintenance, system improvement, vegetation management, operational practice (e.g., reclosing relay setting protocols, restoration of service), and public safety power shutoffs. 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 need to be evaluated by the City depending on specific activities the City elects to perform. Additionally, the plan outlines roles and responsibilities for its implementation, performance metrics, deficiency identification, and an audit process.

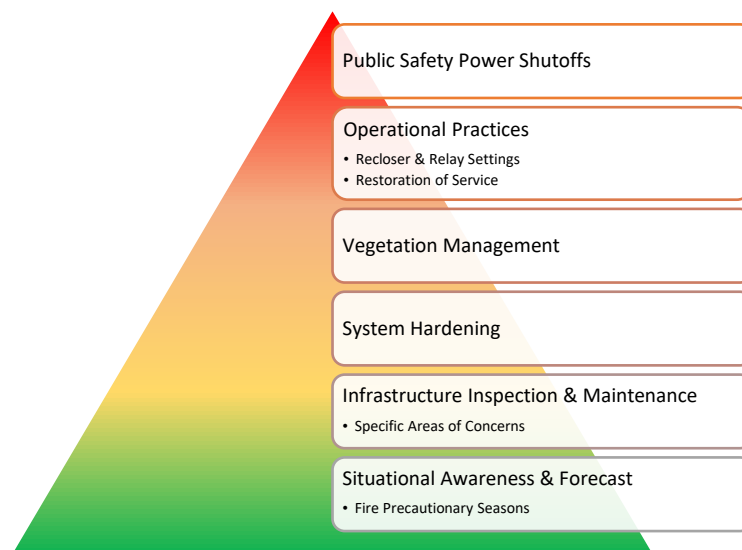


Figure 15: Wildfire Mitigation Strategy Hierarchy



## 4.1 Situational Awareness and Forecast

May is Wildfire Awareness Month in Oregon. Milton-Freewater City Light & Power 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.
- City's SCADA system
- 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, Northeast 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 Milton-Freewater City Light & Power 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

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

### Service Area Concerns

A City-owned 6.64 mile long, 69 kV transmission line runs between terminals at Freewater Substation and Milton Substation. The transmission circuit route is primarily located along wheat field farmland. The wildfire potential can be minimized with the installation of weather monitoring devices where the circuit enters heavy vegetation areas. The detection of potential fire danger can then activate sectionalizing devices at each substation. Milton Substation contains a City-owned sectionalizing Circuit Trans-Rupter which can be operated through the City's SCADA system, and Freewater Substation contains two (2)

City-owned secondary main sectionalizing Circuit Breakers which can also be operated through the City's SCADA system.

Milton Substation is prone to tumbleweed debris accumulation from extensive farmland toward the west. The debris collects on substation fencing and winds can carry it over the fence into the substation and equipment. Although no major problems have occurred to date the potential does exist for a fire hazard, equipment damage and outage. While there is no easy solution to prevent the debris from accumulating, this situation can be improved with the installation of wildfire detection devices that can monitor the substation and report site conditions through a weather data monitoring device or the department SCADA system.

Freewater Substation's Feeder 8 extends eastward along City limit outskirts and out into areas of farmland with extensive wheat fields. This wildfire potential can be minimized with the installation of weather monitoring and sectionalizing devices where the circuit enters heavily wooded areas.

Milton Substation's Feeder 4 extends westward along SW 8th Street to the City limit outskirts and middle reservoir, an area of farmland with extensive wheat fields. This wildfire potential can be minimized with the installation of weather monitoring and sectionalizing devices where the circuit enters heavy vegetation areas.

Milton Substation's Feeder 5 extends eastward along Walla Walla River Road, an area that encroaches heavily treed and wooded terrain. This wildfire potential can be minimized with the installation of weather monitoring and sectionalizing devices where the circuit enters heavily wooded areas.

Lagoon Substation feeds the City's water treatment reservoir and does not serve any other city loads. It is located in flat terrain surrounded by farmlands and has a low wildfire risk.

### Inspections and Maintenance Schedule

The following table outlines inspection practices for the Milton-Freewater City Light & Power 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

Substations	Detail Inspections	Monthly
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**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

The Milton-Freewater City Light & Power has already begun to take measures toward system hardening of the electric facilities. These measures include system inspections, 10-year system planning study for upgrades, fault response, protective device coordination, and the implementation of fire-resistive treatments and equipment installations.

The following fire mitigation measures have been recently performed by the Milton-Freewater City Light & Power toward the implementation of a wildfire mitigation plan:

- The City recently purchased three back-pack water sprayer systems that are now carried on the department crew's trucks and a water tank that is carried on the foreman's truck.
- The City recently implemented a drone technology inspection program that includes drones equipped with high-resolution cameras that allow detailed equipment inspections of components not visible from the ground. This includes raptor nesting sites and infrared thermal imaging of electrical equipment to identify hot connections allowing for quick corrective follow-up action.
- The City has begun spraying a vegetation deterrent with a 10-foot radius around transmission line pole bases to eliminate brush accumulation and the potential for fire danger.

The Milton-Freewater City Light & Power may want to consider 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 substations 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 beyond the city limits and/or in areas where the line crosses farmland, especially wheat fields. Example products are presented in Appendix D. 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.
- The City uses both Type T and K expulsion style fuses for tap line protection and transformer protection. They 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 Cobra™ 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 and RUS required component grade strengths and standards.
- Ensure that line construction conforms with NESC and RUS clearances and right-of-way requirements. However, in heavily wooded areas the City 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.

#### **4.4 Vegetation Management**

The City has an aggressive right-of-way vegetation management program, focusing on 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 per OPUC OAR 860.024.0016/0017. The approach consists of hand-cutting vegetation and dangerous trees in and along the outskirt edges of the right-of-way plus the application of herbicides 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, Milton-Freewater City Light & Power 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 an 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.

## 4.5 Operational Practices

As fire season approaches each year and fire precaution levels increase. The Milton-Freewater City Light & Power 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, the Milton-Freewater City Light & Power crews shall:

- Comply with the wildfire mitigation plan requirements and responsibility for patrolling and preventing fires caused by vegetation activities.
- Ensure City 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 relays on the City's distribution feeders, which help to keep the circuits energized after momentary faults and trip a circuit off when a permanent fault occurs. The City does not typically disable automatic reclosing functions at its substations 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, the Milton-Freewater City Light & Power 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 below under System Hardening.

### Restoration of Service

After a fault the Milton-Freewater City Light & Power shall not restore service until the area of trouble is fully patrolled, repaired, or isolated, and tested by following the City's operation and maintenance procedures. The City 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 City's 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. The Milton-Freewater City Light & Power in consultation with the local Public Safety Providers will evaluate the value of a PSPS. When considering a PSPS, the City will also examine the impacts on fire response, water supply, public safety, and emergency communications. In addition, the City 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 result 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, the City reserves the option of implementing a PSPS when conditions dictate. While the City 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 means option during a crisis.

On a case-by-case basis, the Milton-Freewater City Light & Power 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, the City has the authority to de-energize select distribution circuits. A decision is based on multiple initiations accompanied by the Milton-Freewater City Light & Power's unique understanding, including any risks involved. The City 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
- City crews or other agency field staff on-the-ground observations
- Active wildfire in the service area

The City 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.

The City Light & Power (Electrical Department) is governed by the City Council managed by the City Manager with daily operations handled by the Electric Superintendent. City 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 the Milton-Freewater City Light & Power's distribution system, equipment, and service.
  - The Electric Superintendent supervises the Milton-Freewater City Light & Power Engineers, Line Foreman and Line Crew and is primarily responsible for ensuring that all circuits and equipment are inspected and maintained.
  - The Superintendent is also responsible for the reliable operation of the Milton-Freewater City Light & Power's 69 kV transmission system and two distribution substations.
  - 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 Superintendent maintains compliance with federal, state, and local fire management personnel to ensure that appropriate preventive measures are in place.

## SECTION 5: PUBLIC AWARENESS

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### 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 the City 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 currently has web pages for Electric Department and Fire Department, which contain useful information including the City zoning map (Figure 16), contact means, emergency management plans, a checklist for home fire prevention, emergency evacuation routes (Figure 17), shelter locations (Figure 18), a checklist for handicapped people, etc. The City's Fire Department does not allow debris burning inside the city limits and has developed *Home Fire Prevention Checklist* for residents. The City may also want to consider developing brochures, training lectures & videos, and other interactive media to assist in public awareness of wildfire hazards and mitigation strategies.



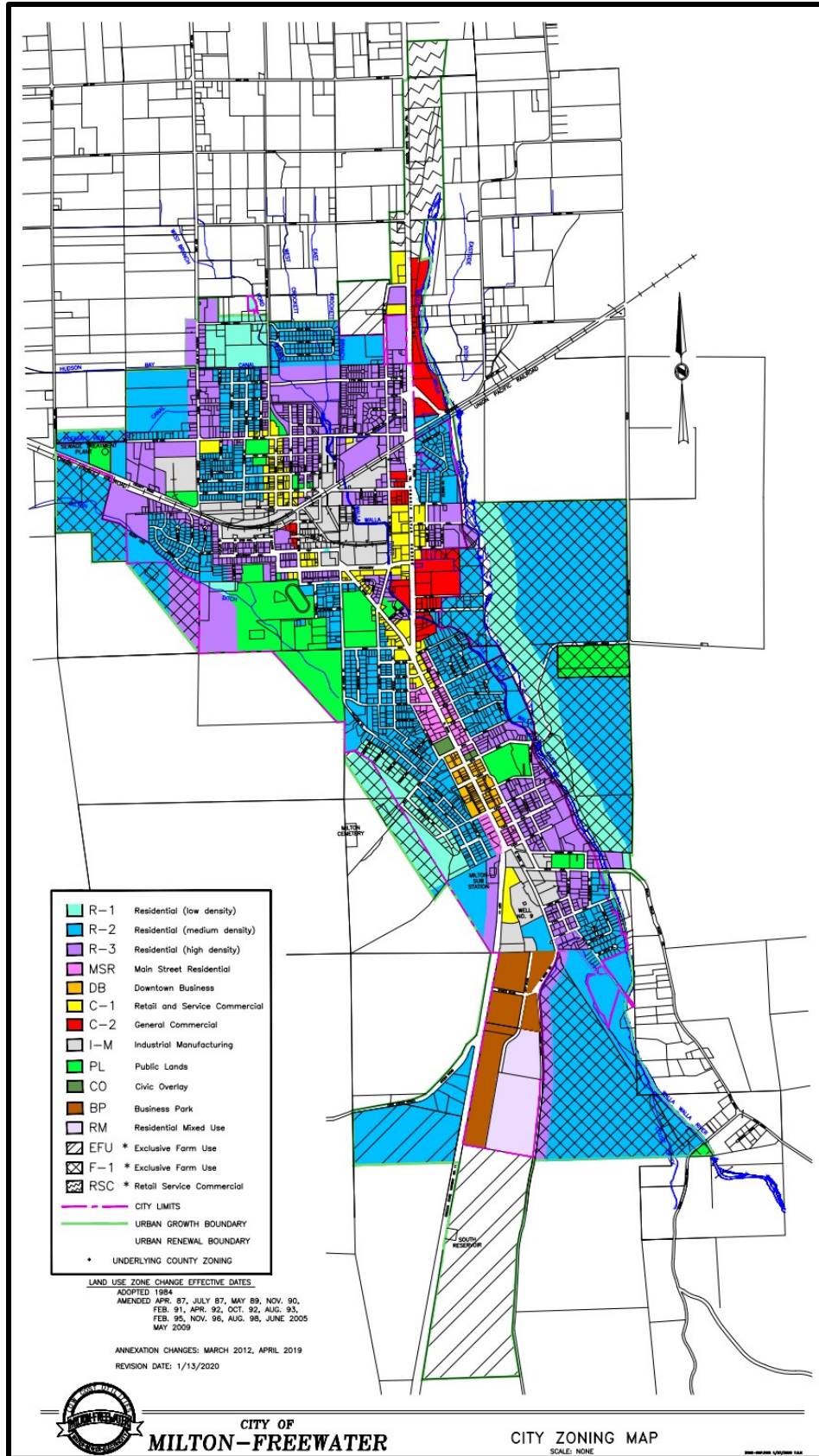


Figure 16: City of Milton-Freewater Zoning Map [Source: <https://www.mfcity.com>]

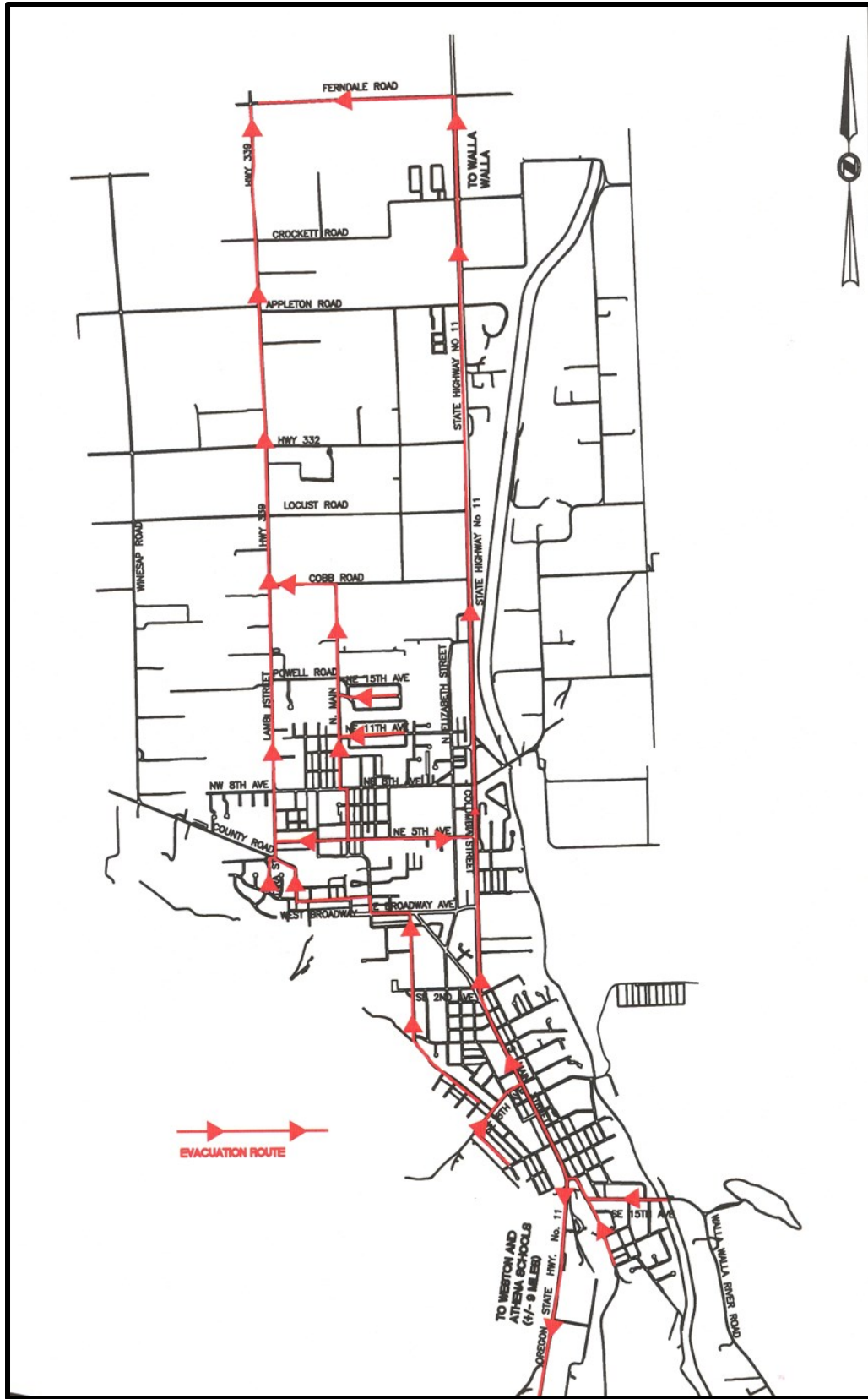


Figure 17: City of Milton-Freewater Emergency Evacuation Routes  
 [Source: <https://www.mfcity.com/fire/page/emergency-management>]

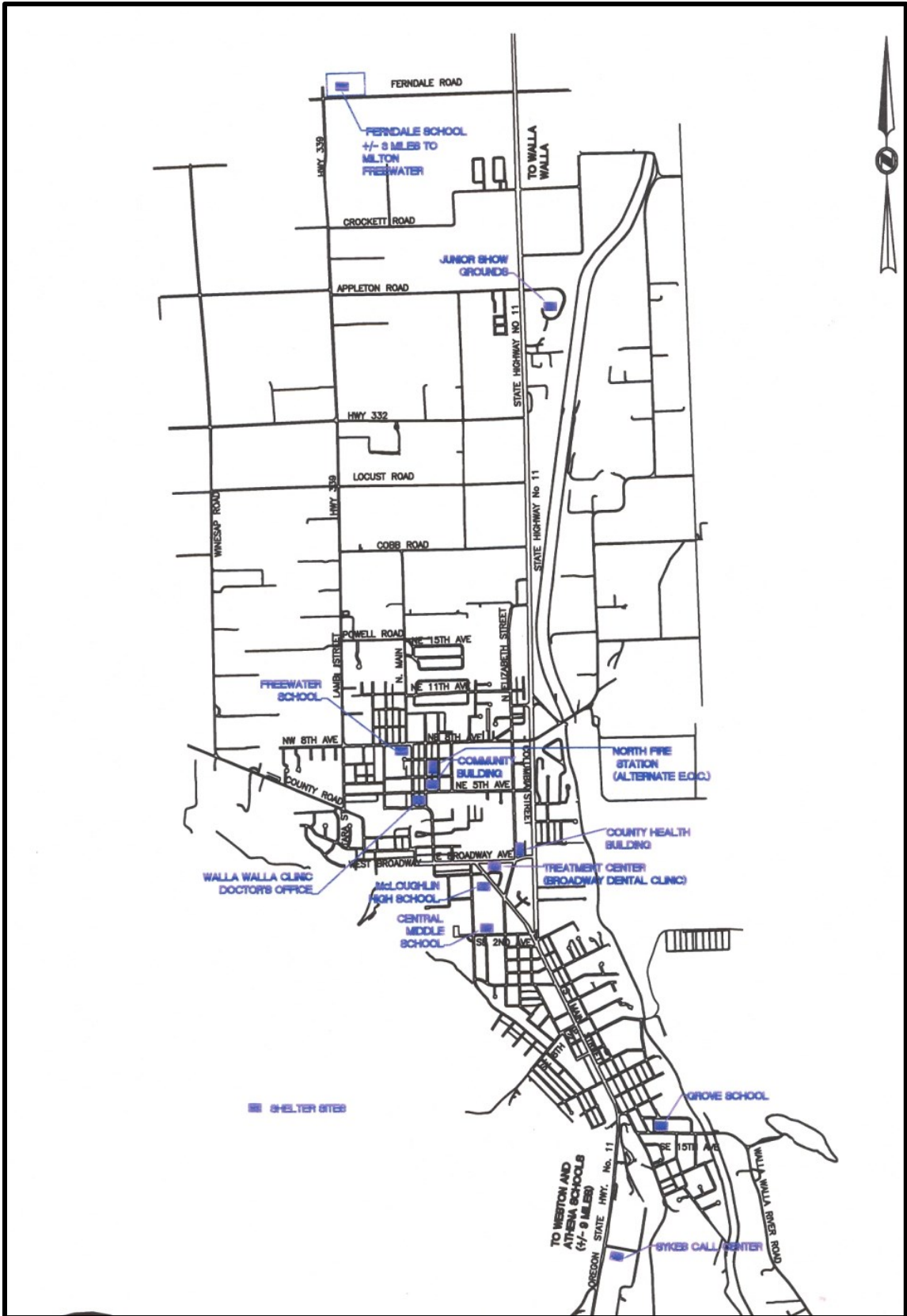


Figure 18: City of Milton-Freewater Emergency Shelter Locations [Source: <https://www.mfcity.com/fire/page/emergency-management>]

## 5.2 Agencies

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

### 5.2.1 Fire Report

The reporting of fires requires the City 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: City of Milton-Freewater Dispatch Center  
 Emergency Area: City and Rural Fire  
 Telephone: 541-938-5511

When reporting a fire Milton-Freewater City Light & Power crews 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: Umatilla County Sheriff Office  
 Contact/Title: Thomas Roberts / Emergency Manager  
 Telephone: 541-966-3607  
 Address: 4700 NE Pioneer Place, Pendleton, OR 97862

The City 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	<ul style="list-style-type: none"> <li>• Milton-Freewater Electric Department Electric Superintendent: Mike Watkins, 541-938-8231</li> <li>• Milton-Freewater Unified School District Superintendent: Aaron Duff, 541-938-3551</li> <li>• Milton-Freewater Police Department Chief of Police: Doug Boedigheimer, 541-938-5511</li> <li>• Milton-Freewater City Hall, 541-938-5531</li> <li>• Milton-Freewater Public Works Department, 541-938-8270 Superintendent: Brian Steadman, 541-938-8272</li> <li>• Milton-Freewater, Water Department, 541-938-8270</li> <li>• Milton-Freewater Fire Department and Emergency Management Fire Chief: Shane Garner, 541-938-8235</li> <li>• Milton-Freewater, Rural Fire Department, 541-938-7146</li> </ul>
Communications	<ul style="list-style-type: none"> <li>• Telecommunication company – Spectrum 888-907-1315</li> <li>• Oregon Public Broadcasting Station, Pendleton, OR 800-241-8123</li> <li>• Local News, Eastern Oregonian, 800-522-0255</li> </ul>
First Responders	<ul style="list-style-type: none"> <li>• USFS, Pendleton, OR, 541-278-3716</li> <li>• USFS, Walla Walla, WA 509-522-6290</li> <li>• Bureau Of Land Management, South Fork Walla Walla River, 541-523-1256</li> </ul>
Local Government	<ul style="list-style-type: none"> <li>• Pendleton, OR, City Hall 541-276-1811</li> <li>• Walla Walla, WA, City Hall 509-527-4522</li> </ul>
Utilities	<ul style="list-style-type: none"> <li>• Cascade Natural Gas, 888-522-1130</li> <li>• Pacific Power, 877-508-5088</li> </ul>
Safety Councils	<ul style="list-style-type: none"> <li>• Umatilla, Oregon Natural Hazard Mitigation Plan, 541-278-6252</li> </ul>

## **SECTION 6: APPENDIX**

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### **6.1 Appendix A – Oregon Wildfire Risk Explorer- Advanced Report**

Attached externally.

### **6.2 Appendix B – Milton-Freewater Terrain Map**

Attached externally.

### **6.3 Appendix C –Substation One-Line Diagrams**

Attached externally.

### **6.4 Appendix D – Reference Product Cut Sheets**

Attached externally.

### **6.5 Appendix E – Emergency Operations Plan**

Attached externally.