

SPRINGFIELD UTILITY BOARD WILDFIRE MITIGATION PLAN

VERSION 1.0

April 2022

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TABLE OF CONTENTS

I.	Introduction	3
A.	Policy Statement	3
B.	Purpose	3
C.	Objectives	3
II.	Electric utility profile	3
A.	Electric system service area	3
B.	Asset overview	4
C.	Fire protection zones	4
III.	Risk profile	5
A.	Wildfire definition	5
B.	Identified risks	5
IV.	Risk assessment	7
V.	Risk mitigation strategies	7
A.	System inspection and maintenance	7
B.	Vegetation management	7
C.	System hardening	7
D.	System protection	8
E.	Operational tools and practices	8
F.	Interagency collaboration	9
VI.	Response strategies	9
A.	Situational awareness	9
B.	Employee readiness	9
C.	Operational response	9
D.	Public safety power shut off (PSPS)	10
E.	Interagency coordination	10
VII.	Plan evaluation	11
VIII.	Plan management	11

I. INTRODUCTION

In recent years, the west has experienced exceptional wildfire seasons in terms of both intensity and duration. In Oregon, not only has the wildfire season increased from five months to seven months in the last two decades, but wildfires are becoming more frequent and severe. In 2020, fueled by a combination of drought, high temperatures, low humidity, and easterly winds, Oregon experienced catastrophic and deadly wildfires throughout the state.

In this new era of wildfire risk, Oregon utilities are keenly aware that they must document their assessment, mitigation, and response strategies for potential fire risk, as well as, adopt new approaches and tools to address this growing concern. This Wildfire Mitigation Plan (“Plan”) attempts to document those efforts for Springfield Utility Board (SUB).

A. POLICY STATEMENT

SUB’s mission is to provide safe, reliable, and cost-effective utility related services to the residents and businesses of the Springfield community. To that end, SUB strives to design, construct, operate, and maintain its electrical lines and equipment in a manner that reduces the risk of wildfire.

B. PURPOSE

The purpose of this Wildfire Mitigation Plan is to demonstrate consistency with SUB’s mission while reducing the risk of sparks from SUB electric infrastructure igniting a wildfire.

C. OBJECTIVES

The primary objectives of this Wildfire Mitigation Plan are to:

- Continue designing, constructing, operating, and maintaining hardened and resilient electric systems, which results in minimized potential for fire ignitions.
- Minimize the impacts of a wildfire to utility and communities served through enhanced situational awareness, operational readiness, and effective response strategies.

II. ELECTRIC UTILITY PROFILE

A. ELECTRIC SYSTEM SERVICE AREA

Springfield Utility Board was founded in 1949 and is an independently operated municipal electric and water utility governed by a locally-elected board. The service area is 25+ square miles in and around the city of Springfield, Oregon.

SUB is one of five electric distribution utilities in the Eugene/Springfield area, and the operational response procedures developed as part of this Plan are based on SUB’s service area.

B. ASSET OVERVIEW

Asset	Quantity
Substations – includes power transformers, disconnect switches, circuit breakers, capacitors, voltage regulators, protective devices, relays, and communication equipment	8
Transmission and Distribution Pole Structures – includes cross arms, braces, insulators, distribution transformers, and other overhead electric infrastructure	8,504
Surface Structures – includes pad mount transformers, pad mount switches, and distribution vaults	3,785

Asset	OH Circuit Miles	UG Circuit Miles
115kV Transmission	24	0
Primary Distribution	190	146

C. FIRE PROTECTION ZONES

The Oregon Department of Forestry (ODF) establishes Industrial Fire Precaution Level (IFPL) zones. While SUB’s service area is not situated within any of the designated zones, it is bordered by Zone EL-1 and WT-1.

IFPL restrictions are primarily based on climatic conditions (temperature, wind speed, relative humidity, and likelihood of lightning) as well as topography, fuel (vegetation), and wildfire resource availability. Each precaution level specifies those activities that are permitted, as well as prohibited, and are labeled as:

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

During wildfire season, the IFPL restrictions may change daily. SUB’s operations supervisors, field personnel, and contractors are aware of the changing restrictions and shift work protocols as required by the zone authority. For situational awareness, operations supervisors communicate and coordinate with the ODF Western Lane District Office in Veneta office for Zone WT-1 and the Eastern Lane Unit Office (South Cascade District) in Springfield for Zone EL-1.

III. RISK PROFILE

A. WILDFIRE DEFINITION

In Oregon, “Wildfire” means a fire that originated on land used or capable of being used for growing forest tree species regardless of the existing use of the land. (ORS 477.089)

B. IDENTIFIED RISKS

Springfield Utility Board categorizes the potential causes for electric system sparks and ignitions from its overhead system into four general areas:

- Contact from Objects (including vegetation)
- Equipment Failure
- Wire to Wire Contact
- Other

Contact with Objects

SUB’s overhead power lines are installed as bare wire on top of insulated poles and structures. Depending on the voltage level and other design criteria, the power lines are kept at a specified distance from the ground, from each other, and from adjacent objects, in order to prevent contact consistent with the National Electric Safety Code (NESC).

Vegetation. Vegetation contacts, as a result of tree failure, tree growth, and wind-blown branches, are a potential cause of outages. Trees from inside and outside of the right of way come in contact with power lines and can potentially cause sparks or arcs. In most cases, wet conditions prevent fire ignition. However, there are instances where the contact is large enough to cause a conductor or pole to fall, leading to wires

falling to the ground and creating a potential for fire ignition. In other instances, a tree or branch may lean or grow into the power line resulting in a continual burn at the point of contact.

Vehicles. Vehicular contact with poles or supporting guy wires can damage or break the pole. The heavy, broken pole in turn can put stress on conductor or cross arms and cause wires to break and fall to the ground, potentially causing sparks and arcs.

Wildlife, Kites and Balloons. Birds and animals, as well as highly conductive kites and Mylar balloons, are all objects that can make contact with the power lines and cause sparks and arcs. While protection equipment such as circuit breakers, recloses and fuses are installed to isolate the faults, there are time delays (fraction of a second) from when the equipment senses the fault and isolates the faulted section. In that time delay, sparks may be emitted or burnt objects dropped to the ground causing fire ignition near the pole or under the power line.

Equipment Failure

SUB employs a robust maintenance program for system and field equipment to ensure reliability at all times. However, the inherent aging of equipment, as well as environmental conditions, wear on the utility's equipment and can eventually cause it to fail.

Failed equipment components such as connectors and insulators can result in wire failure, causing the energized conductor to fall to the ground, and potentially emit sparks prior to the breaker or fuse tripping. Other equipment such as transformers can have internal shorts, causing the fuse to open which can produce sparks and could ignite a fire under the right conditions.

Wire-to-Wire Contact

Overhead transmission and distribution lines are generally constructed using up to four conductor wires. When two or more energized conductors make wire-to-wire contact, sparks can occur prior to the breaker or fuse tripping, creating the potential for fire ignition.

Wire-to-wire contact caused by trees falling into a conductor can cause two lines to touch resulting in sparks and arcs. A vehicle hitting a pole can also put two conductors in contact and create the potential for fire ignition.

Other

Fire ignitions involving SUB's power lines can be caused by contacts from property owner equipment and/or contractors. Even though property owners and contractors take precautions, their equipment can come into contact with power lines and cause sparking. The unintentional contact may cause damage to power lines, poles and supporting equipment, which may in turn cause sparks and fire ignition.

SUB vehicles and tools can be a source of sparks or fire ignition. Crews driving vehicles over dry grass or brush can cause the vegetation to ignite. Crews using gas powered tools can also cause sparks if dry conditions exist.

SUB's equipment and power lines can also be vandalized and damaged. Depending on the extent of the damage, the damaged equipment can cause sparks, arcs or fire ignition.

IV. RISK ASSESSMENT

Like other small utilities, SUB is aware of the need to act on wildfire risk management planning despite the lack of an industry framework and operational specifics. SUB assesses its distribution and transmission maintenance programs as necessary, with wildfire risk being considered. SUB opts to use in-house experienced personnel to complete its initial distribution and transmission wildfire risk assessments.

V. RISK MITIGATION STRATEGIES

This section describes the proactive measures Springfield Utility Board uses to reduce the potential for wildfire ignition by the electric system. The mitigation strategies for wildfire prevention intersect with the utility's engineering principles and operating policies for overall system resiliency.

A. SYSTEM INSPECTION AND MAINTENANCE

SUB complies with Oregon Public Utility Commission (OPUC) Division 24 Safety Standards in the construction, maintenance, and inspection of electric facilities. More specifically, SUB constructs and maintains the overhead and underground electric systems in compliance with the National Electric Safety Code (NESC). Inspection programs for the overhead, underground, and substation facilities are consistent with the level of detail and frequency required by these standards.

B. VEGETATION MANAGEMENT

SUB has implemented a vegetation management program focused on keeping rights-of-way clear. The program includes tree trimming and removal, vegetation mowing and trimming, and the application of herbicides.

Tree Trimming

Distribution Lines. Trees near SUB overhead electric infrastructure are systematically trimmed on a four-year cycle, with fast growing areas being addressed more frequently.

Transmission Lines. Areas near transmission lines are inspected and assessed annually. Trimming, mowing, treating, and hazard tree removal are completed as needed.

C. SYSTEM HARDENING

System hardening is a description of the design, construction, and operational practices that make a system more resistant to severe weather and wildfire risk.

The utility's system hardening strategies include:

- SUB's new transmission construction designs consider burn resistant materials such as hot-dipped galvanized steel poles.
- SUB's new or reconstructed overhead 12.47kV circuits are over insulated which reduces tracking and potential fire ignition.
- SUB's secondary and service wire are insulated. The insulated wire is designed to withstand inadvertent contact with vegetation or other objects.
- Placing overhead lines underground is considered in areas prone to repeated outages due to weather related events.
- Perimeter fencing is installed at all sites for substation security and public safety.
- Relays are standardized for ease of operation, maintenance, and integration with other devices.
- A fiber optic network connects all transmission and distribution breakers with SCADA-enabled control and high-speed communication between devices.

D. SYSTEM PROTECTION

Non-Reclose Settings

Under normal operating conditions, the utility's distribution breakers are set to open and close two times for incidental faults (such as a tree branch falling into the line) before remaining open for a more permanent fault. For SUB's transmission lines there are no automatic breaker reclose operations for a fault.

SUB has the capability to disable the reclose function for distribution breakers.

Non-Expulsion Devices

Fuses protect the distribution system from faults and damaged lines and equipment. Conventional fuses, when operated, expel hot particles and gases, which can ignite fires. SUB primarily uses conventional expulsion fuses to protect its overhead circuits and where overhead transitions to underground. As specific areas in SUB's system are identified as high wildfire risk, engineering review of alternative protection methods will be considered.

E. OPERATIONAL TOOLS AND PRACTICES

- The Supervisory Control and Data Acquisition (SCADA) system is used to monitor, and is capable of operating and remotely controlling substation breakers to isolate a line.
- Weather is monitored using a variety of sources including the National Weather Service/NOAA.

- SUB uses a system-wide fixed radio repeater system for back-up communications between field personnel and office staff.

F. INTERAGENCY COLLABORATION

- SUB collaborates with local fire departments, county emergency management services, county fire councils, Oregon Department of Forestry, Bonneville Power Administration, and neighboring utilities through meetings, forums and exercises throughout the year to prepare for high fire-risk events.
- SUB has mutual assistance agreements with Lane County utilities, American Public Power Association, Western Region Mutual Assistance Group and the Bonneville Power Administration.

VI. RESPONSE STRATEGIES

A. SITUATIONAL AWARENESS

SUB Staff receive inclement weather notices from community partners.

SUB receives notices regarding IFPL restrictions, which share relevant operational information. Operations supervisors notify field personnel and contractors of the changing restrictions in each zone and shift work protocols to meet each precaution level.

National Weather Service/NOAA red flag warnings are monitored by management and operational steps are taken based on an evaluation of the risk of SUB's electric infrastructure becoming a hazard.

B. EMPLOYEE READINESS

Incident Command System

SUB's emergency response protocols reflect the national Incident Command System (ICS) framework. Emergency events impacting the utility are managed using ICS.

The utility's overarching *Emergency Operations Plan* specifies the roles and responsibilities for each ICS position and is tailored to SUB's organizational structure and operations. The *Emergency Operations Plan* identifies operational status levels.

C. OPERATIONAL RESPONSE

SUB understands that the availability of electricity is critical. In an emergency event, supporting water and public critical facilities are a priority. For those times when the potential for wildfire is high, the utility monitors for operational impacts.

Field Work

Work procedures are adjusted to mitigate for potential fire ignitions in high wildfire risk areas. Crews carry firefighting tools and extra water as well as refrain from using equipment that may spark. Upon completion of work, crews remain in the area for a prescribed amount of time to ensure there are no ignitions as a result of their work.

System Monitoring

During normal operations, SUB has an after-hours supervisor-on-call (SOC) that receives urgent SCADA alarms for both the transmission and distribution systems.

De-energizing Lines

Under normal operating conditions, management has the authority to proactively de-energize sections of transmission and distribution lines to make safe for employee/contractor work as well as during isolated emergency events when requested by local law enforcement or fire officials to ensure public safety. In the event of a wildfire, SUB's management will de-energize at the request of the jurisdiction's unified Incident Command.

D. PUBLIC SAFETY POWER SHUT OFF (PSPS)

The potential for proactive de-energization of power to Springfield Utility Board customers in order to mitigate for fire ignition is extremely remote. However, Bonneville Power Administration (BPA) has added a public safety power shutoff (PSPS) procedure to its wildfire mitigation efforts. In the unlikely event that the utility is directed or compelled to shut off power to any section of its service territory, SUB's goal is to provide as much advance notice as possible.

PSPS Protocol

If a decision is made to proactively de-energize, the Incident Command Team will execute the plan including:

- Notification to local emergency services, law enforcement, fire departments, other public partners, and key customers. Customers will be notified using social media, utility website, and local media outlets.
- Crews will patrol each line section prior to re-energizing. If there are more lines to patrol than the utility has resources to complete the inspections in a timely manner, SUB may call for mutual assistance from other utilities. Requests for assistance will go to neighboring utilities first and SUB will utilize its established mutual assistance agreements.

If conditions abate, the proactive de-energization event will be canceled and local emergency services, law enforcement, fire departments, other public partners, and key customers will be notified.

E. INTERAGENCY COORDINATION

During a wildfire event, SUB leverages the connections formed throughout the year with emergency management personnel, first responders, fire chiefs and forestry staff. SUB may also send a liaison to represent the utility at another entity's Emergency Operations Center consistent with SUB's *Emergency Operations Plan*. The utility's use of the Incident Command System to interface with first responders, agencies and local governments is key to two-way communication, effective coordination and a successful overall response.

VII. PLAN EVALUATION

Springfield Utility Board will track two metrics to measure the performance of this Plan:

- Number of vegetation related outages using existing definitions and parameters, including location by feeder.
- Number of wire down events and causes (vegetation, equipment failure, car hit pole, etc.)

SUB acknowledges that it may be difficult in the initial years to draw meaningful conclusions regarding the effectiveness of this Plan based on the limited data gathered. However, as the data collection becomes more robust, the utility will be able to identify areas of its operations that require evaluation for potential improvement. Additionally, staff will evaluate modifying the metrics or adding new metrics in future years as more data becomes available and situational awareness continues to improve.

VIII. PLAN MANAGEMENT

This Wildfire Mitigation Plan is subject to review and approval by the SUB Board of Directors. Mitigating for wildfire risk is the primary objective of this document. Staff have the role of vetting current procedures and recommending changes or enhancements to build on strategies to meet the objective. Deficiencies due to industry developments, technology adoption, modified operational practices, or unforeseen circumstances, will be addressed in the form of an updated Plan and presented to the Board on an annual basis. The annual review will align with the utility's existing planning process.