BENTON RURAL ELECTRIC ASSOCIATION

2024 WILDFIRE MITIGATION PLAN

DATE: October, 2024

PROJECT: BREA24-001

REVISION: V0

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1 Executive Summary

Unusually large wildfires are on the rise in the Pacific Northwest. Although naturally occurring wildfire is necessary for healthy forests and ecosystems, Washington State has seen an increase in acres burned as well as a lengthening of the fire seasons. In the western U.S. region encompassing the Pacific Northwest, the annual probability of very large fires is projected to increase by a factor of four from 2041 to 2070 compared to 1971 to 2000 data[1]. As a result of this growing risk, legislation was enacted requiring utilities to put practices in place aimed at reducing the risk of wildland fire, damage, and losses resulting from those fires through the development of Wildfire Mitigation Plans (HB-1032). In April 2024, the Department of Natural Resources (DNR) published a template and list of recommended elements for electric utility Wildfire Mitigation Plans (WMP). This plan shall adhere to those guidelines and will be revised every three years going forward.

Benton Rural Electric Association (BREA) believes the development of a thorough WMP is a prudent and responsible effort to prepare for increased wildfire conditions in Washington. For BREA, which aims to protect public safety and preserve the reliable delivery of electricity, wildfire mitigation is a top priority. While an electric utility can never fully eliminate the risk of fire, BREA is committed to taking practical actions to reduce the devastation that a wildfire could bring to the people and communities we serve. This Wildfire Mitigation Plan lays out the steps we are taking to do so.

[1] Northwest Climate Adaptation Science Center

WILDFIRE MITIGATION PLAN DISCLAIMER

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Table 1. Version Tracker

Date	Version	Author	Revision Description
Oct. 2024	V0	BKI	Original document adopted and submitted in 2024

2 Wildfire Mitigation Plan Overview

2.1 Purpose of the Wildfire Mitigation Plan

Reducing the risk of utility-caused wildfire plays an essential role in BREA's operational practices. Its existing policies, programs, and procedures are intended to directly or indirectly manage or reduce the risk of its utility infrastructure becoming the origin of a catastrophic wildfire.

The overarching goal of the Wildfire Mitigation Plan (WMP or Plan) is to ensure that the construction, operation, and maintenance of BREA's electrical system proactively minimizes and mitigates the risk of a BREA-sourced ignition by implementing programs that adapt to evolving fire-related conditions, incorporate emerging technological advances, and improve operational practices to reduce the potential for ignitions and more effectively respond to increasing wildfire risk conditions.

The BREA WMP takes an active approach to reduce fire-related risks for its customers while allowing for retooling and improvement over time. The Plan describes BREA's ongoing vegetation management (VM), asset inspection and maintenance, de-energization, communication plans, and restoration of service processes. Additionally, the WMP outlines roles and responsibilities for its implementation, performance metrics, deficiency identification, and the audit process.

2.2 Description of Where the WMP Can Be Found Online

The BREA WMP will be available through the co-op website at the following link: https://bentonrea.org/outages-and-safety/wildfire-mitigation-plan/

2.3 Best Practices Cross-reference Table

Table 2. Best Practices Cross-reference Table

Standard or Best Practice Name and Description	Section & Page Number
HB 1032 – By October 31, 2024, and every three years thereafter, each Investor-owner and Consumer-owned Utility must review, if appropriate revise, and adopt its wildfire mitigation plan	

3 Utility Overview

Table 3. Utility Context Setting Information

General Utility Information	
Service Territory Size (sq miles)	2,053
Service Territory Make-up [ ]% Urban [ ]% Agriculture [ ]% Barren/Other [ ]% Conifer Forest [ ]% Conifer Woodland [ ]% Desert	[ ]% Hardwood Forest [ ]% Hardwood Woodland [ ]% Herbaceous [ ]% Shrub [ ]% Water [X] NA / Not tracked (see section 3.2)
Service Territory Wildland Urban Interface	4.09% Wildland Urban Interface 1.46% Wildland Urban Intermix
Consumers Served	16,089
Account Demographic *[provide as % of total customers served]*	[ ]% Residential [ ]% Agricultural [ ]% Commercial/Industrial [X] NA / Not tracked
Utility Equipment Make-up *Calculated using GIS data*	Overhead Distribution: 1,163 mi Overhead Transmission: 27 mi Underground Distribution: 628 mi Underground Transmission:0 mi Substations: 20
Has the utility developed protocols to pre-emptively shut off electricity in response to elevated wildfire risks?	Yes: [X] No: [ ]
Has the utility previously implemented a PSPS in response to elevated wildfire risk?	Yes: [ ] No: [X]

3.1 Utility Description and Context Setting

Operating from the main office in Prosser, with an additional office in West Richland, BREA serves approximately 16,000 residential, commercial, agricultural and industrial accounts in portions of Benton, Yakima, and Lewis Counties. The electric system comprises roughly 1,163 miles of overhead and 628 miles of underground distribution lines. A transmission system is also owned consisting of 27 miles of 115kV line and 20 substations.

The primary power sources are hydroelectric, and wind purchased from the Bonneville Power Administration (BPA), and wheeled over Benton PUD, Pacific Corp, and Yakima Power lines.

3.2 The Service Area

BREA serves a variety of areas and landscapes including suburban areas, such as the City of West Richland, rural areas with intensive agricultural activity in the Yakima Valley, and winter recreation areas located in White Pass. The 2,053-square mile service territory (Figure 1) goes from West Richland to the top of White Pass, and from Hanford to the Columbia River

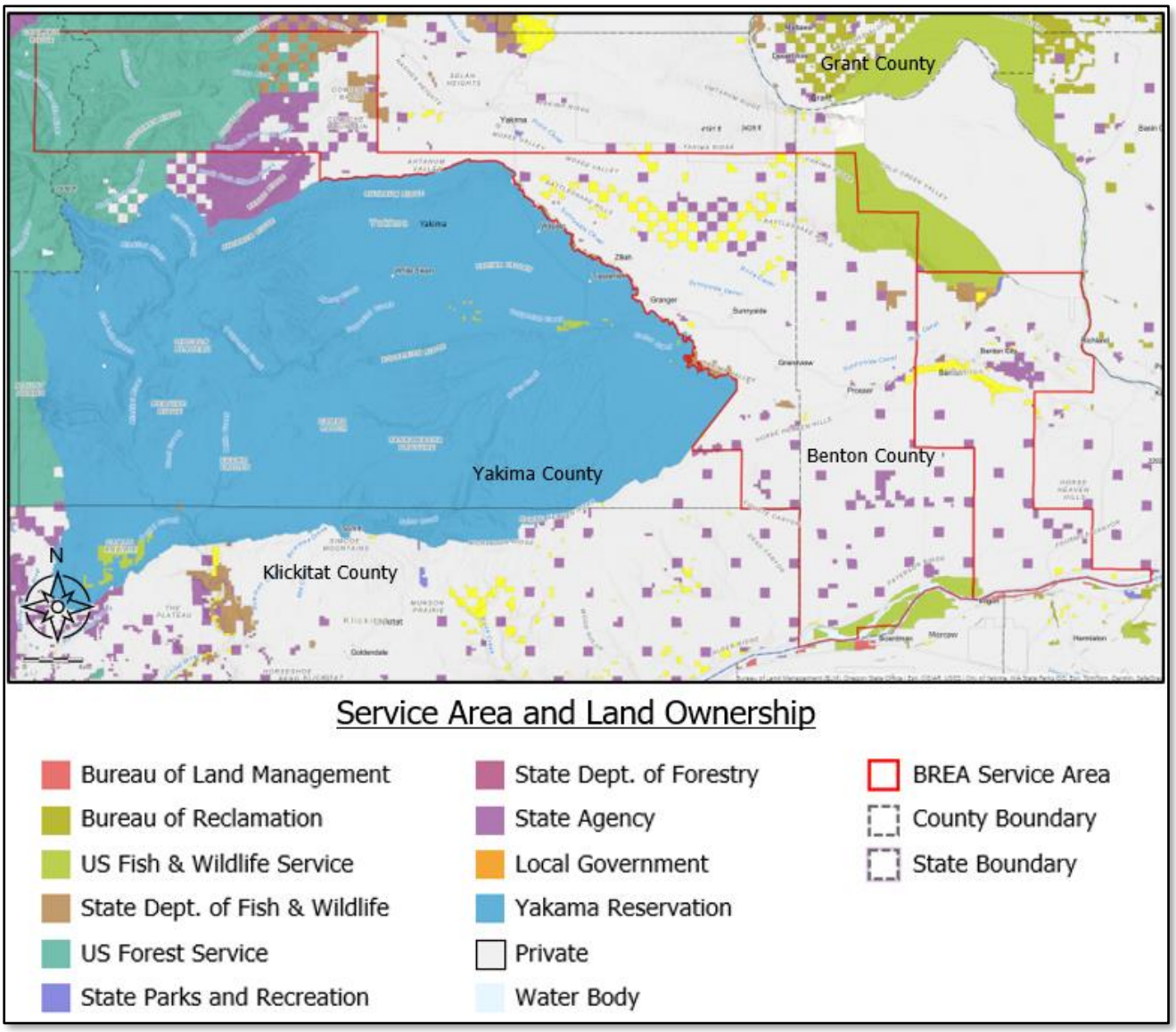
The service territory is in the central part of the Columbia Basin, which is surrounded by the Cascade and Rocky Mountain ranges to the west and east, respectively. These ranges have a pronounced effect on the region's climate, which is dry and arid.

The fire season in the region is approximately from mid-April to mid-October with high temperatures exceeding 90°F during the summer months and as low as 6°F or colder during the winter months. The hottest month of the year in Yakima is July, with an average high of 88°F and low of 56°F.

Precipitation is generally light in the summer and heaviest in the winter. Valleys and lowlands receive an average of 10 to 14 inches of precipitation, while in the mountains, precipitation increases with elevation.

With elevations ranging from ~350 feet to ~4,500 feet above sea level, the geography consists of forested highlands, shrub steppe and grass-covered rolling hills, and river valleys dominated by irrigated farmlands. Cheat grass has invaded many of the undeveloped areas, especially areas affected by wildfire. Farming practices have resulted in alteration of vegetation over much of the landscape. Very few native plants still exist with areas of invasive and noxious weeds present within and adjacent to the farmed portions.

Figure 1. BREA Service Territory and Land Ownership



4 Objectives of the Wildfire Mitigation Plan

The WMP's main objective is to implement an actionable plan to:

1. Continue patrols of BREA substation feeders and lines, in conjunction with annual maintenance to harden BREA electrical infrastructure with the goal of mitigating electrical infrastructure as a source of fire ignitions; Findings to be documented in PZM
2. Ensure continuation of the vegetation management actions under normal and emergency situations as stated in the General Policy 415.0, Vegetation Management and related Procedure 415.0P; Findings are provided in a document by our vegetation management coordinator.
3. Identify environmental conditions (e.g., heightened fire conditions and weather) which could warrant changes from normal operating practices; Conditions and Operational Decisions are stored in a GIS layer.
4. Specify the changes from normal operating practices that may be implemented to respond to wildfire/environmental conditions.
5. Identify the BREA staff responsible for monitoring wildfire/environmental conditions, such as fire fuel loads and weather conditions, and for considering and initiating appropriate action in response to such conditions.
6. Study the factors to be considered for implementation of a Public Safety Power Shutoff
7. Specify when and how to return to normal operating practices.
8. Identify the BREA staff responsible for coordinating with fire agencies and local public officials.
9. Identify BREA staff responsible for notifying members regarding departures from and returning to normal operations of the BREA electrical system facilities.
10. Identify BREA staff responsible for and the type of training needed for the Plan.
11. Identify the BREA staff responsible for revising/updating the Plan.

4.1 Minimizing Sources of Ignition

The proposed wildfire mitigation strategies can be categorized into five main mechanisms that align with BREA's best practices. Together, the five components create a comprehensive wildfire preparedness and response plan with a principal focus on stringent construction standards, fire mitigation through system design, proactive operations and maintenance programs, and specialized procedures and staff training.

- **Design & Construction:** BREA's design and construction consists of system, equipment, infrastructure design and technical upgrades. These practices aim to improve system hardening to prevent contact between infrastructure and fuel sources to minimize the risk of BREA's systems becoming a source of ignition.
- **Inspection & Maintenance:** BREA's inspection and maintenance strategies consist of diagnostic activities as well as various methods of maintaining and ensuring all equipment and infrastructure is in proper working condition.

- **Operational Practices:** Comprised of proactive day-to-day actions taken to mitigate wildfire risks and to ensure preparedness in high-risk situations, such as dry and windy climatological conditions.
- **Situational & Conditional Awareness:** This component consists of methods to improve system visualization and awareness of environmental conditions. The practices in this category aim to provide tools to improve the other components of the plan.
- **Response & Recovery:** This strategy consists of BREA's procedures in response to wildfire, de-energization, and other emergency events. This component aims to formalize protocols for these situations for thorough and efficient communications, emergency response and recovery.

4.2 General Wildfire Mitigation Actions

It must be recognized that no WMP can address all possible contingencies that may emerge during an environmental emergency or wildfire event. In recognition of this, this Plan addresses as many contingencies as practicable while using adaptability as its core principle in response to emergent situations. In turn, employees are expected to use common sense and good judgement in mitigating fire risk, in both their day-to-day activities and during emergent situations.

If actions are necessary outside of the scope of this Plan, consistent with prudent utility practices, BREA employees are empowered to use their best judgement to take the necessary actions to safeguard the public, BREA employees, and the BREA electrical system from potential and actual fire threats.

Wildfire mitigation is a utility-wide responsibility that is part of all aspects of utility facilities design, operations, and maintenance. BREA employees will conduct their day-to-day business consistent with the following general guidance:

1. Conduct work in a manner that will minimize potential fire dangers;
2. Take all reasonable and practicable actions to prevent fires resulting from BREA's electric facilities;
3. Immediately report fires, pursuant to specified procedures; and,
4. Take corrective action when observing or having been notified that fire protection measures have not been properly installed or maintained.

4.3 Resiliency of the Electric Grid

Approximately one third of the utility's assets are overhead, wood pole construction located across a combination of dry and fire prone landscapes and irrigated croplands. BREA's distribution grid is moderately susceptible to wildfire, as historically, several large wildfire perimeters have intersected with BREA's overhead assets.

The electric grid is quite expansive with vast distances and indirect routes for utility crews to travel in response to outages. During or immediately after a wildfire, restoration and recovery time is highly dependent on wildfire response agency's ability to contain and extinguish fires. The

forested areas, without active forest management, tend to grow thick with heavy underbrush making navigation along cross-country alignments difficult.

The local distribution grid is a mix of looped and radial configurations but is operated radially. The transmission system is not looped and there are no micro-grids. Most substations are intertied with each other.

5 Roles and Responsibilities

5.1 Utility Roles and Responsibilities

The **Chief Executive Officer (CEO)** is responsible for the content and execution of the WMP. The BREA **Engineering and Operations Leadership (EOL**) team is responsible for the day-to-day implementation of the Plan. Staff responsibility for plan implementation and general communications are described below.

- The **System Engineer** (**SE**) and/or the **Member Engineering Manager** (**MEM**) are responsible for assisting the **Operations Engineering Managers** (**OEM**) and **VP of Engineering and Operations** (**VPE&O**), with actions pertaining to "System Operations" modes.
- The **Operations Manager** (**OM**) is responsible for coordinating with the Incident Commander during an emergency.
- **General Foreman** (**GF**) coordinates with local fire and emergency agencies during a wildfire or other environmental emergency.
- **The Member Services Manager (MSM)** provides the necessary notifications to the membership and is the liaison to the news media and local public officials.
- The **OM** is responsible for ensuring that BREA employees with assigned roles under the Plan are aware of their responsibilities and shall provide the required training.
- The **EOL** are responsible for the annual review and updating of the Plan.

5.2 Notification and Coordination

When an emergent situation occurs which does, or has, the potential of involving BREA assets, the following notifications will be made:

- The **OM** will promptly notify the **MSM** regarding the nature of the event, including the areas impacted and the estimated duration.
- **MSM** will implement communications as soon as practicable to notify affected members of the pendency and possible impacts of the event. The **MSM** will act as liaison to the news media and may also coordinate with local public officials to provide information and updates as needed.
- The **OM** will coordinate with the **Incident Commander** (**IC**) to ensure, among other matters, that the location(s) of BREA staff are always known, and that their safety response activities are coordinated with overall fire suppression activities. The **GF** will coordinate with fire and emergency agency personnel at the event site.
- The **EOL** will periodically assess the ability of BREA to respond to emergencies and determine if additional resources are necessary. Examples of additional resources include line contractors and aerial-patrol contractors.
- Whenever there is a departure from normal operations, such changes will be promptly communicated to the **MSM** and the **CEO**.

5.3 Coordination with Local Utility and Infrastructure Providers

BREA will alert local utility staff to ensure advanced warning prior to planned outages that would impact their operations. Regular updates will be provided via phone or email during the restoration process.

5.4 Coordination with Local Tribal Entities

BREA owns and operates a transmission line, and one substation located within the Yakima Nation Reservation. BREA will coordinate with the Confederated Tribes and Bands of the Yakama Nation Department of Emergency Management in the event of a BREA-related wildfire impacting the Yakama Nation reservation or adjacent lands.

5.5 Emergency Management/ Incident Response Organization

During active emergencies BREA coordinates and collaborates with our local emergency response agencies as well as other relevant local and state agencies as a peer partner. A small-scale emergency requires less resources and coordination than a large-scale event. Therefore, a two-tiered approach to emergency management interaction is sensible.

During small-scale events BREA's dispatch personnel will coordinate recovery efforts with first responders. This coordination will be maintained until first responders declare the emergency over.

When large scale emergencies require County emergency managers to stand up their emergency operations center (EOC), it means that many diverse resources are needed. During such events, BREA's OM will contact the local EOC and establish themself as the duty officer for coordination. The OM will work with emergency management staff to ensure BREA is contributing the necessary resources to the areas needed. Depending on the circumstances this coordination may be via phone, email, or in person. BREA primary coordination points are Yakima and Benton County Departments of Emergency Management (DEM).

6 Wildfire Risks

6.1 Risk Drivers Associated with Design, Construction, Operation, and Maintenance

Wildfire risks related to the design, construction, and operation of utility equipment and facilities are influenced by several factors, including the age of equipment, VM work, and narrow right-of-ways (ROW).

Aging equipment, including bare wire copper conductors, pose risks due to deterioration over time. Environmental exposure can cause degradation of old copper conductors which can lead to breakage, electrical faults, overheating, and reduced performance.

Vegetation management is another risk factor. Vegetation near utility infrastructure can lead to safety hazards such as downed lines, electrical outages or fires. The primary drivers of these risks include rapid plant growth, tree mortality, insufficient clearance distance at time of trim, and high winds.

Lastly, narrow ROW can create challenges for maintaining and operating utility infrastructure. Narrow ROWs can limit access in these areas can complicate maintenance, repair, and emergency response efforts.

6.2 Risk Drivers Associated with Topographic and Climatological Factors

Wildfire risks for BREA are highly influenced by both topographic and climatological factors. The region's unique geography and climate contribute to a very high fire risk, with several specific drivers increasing the likelihood and severity of wildfires.

Drought conditions can significantly impact utility operations by increasing the risk of wildfires, which can damage infrastructure and disrupt service. Prolonged dry periods lead to reduced moisture levels in the environment, making vegetation more flammable and increasing the likelihood of fires that can threaten utility lines and facilities. Native and invasive grasses can also present risks, particularly related to fire hazards. In dry conditions, these grasslands can become highly flammable, increasing the likelihood of wildfires that may impact utility infrastructure.

The type of vegetation within a utility’s service area can influence the risk profile. Certain vegetation, such as highly flammable native and invasive grasses or trees, can exacerbate fire risks, especially during dry conditions. Additionally, dense or fast-growing vegetation can obstruct access to, or contact utility infrastructure.

High winds can pose a significant risk to utility infrastructure by causing physical damage to power lines, towers, and other equipment. Strong winds can lead to fallen trees and debris that might disrupt service or create hazardous conditions. The risk is heightened in areas with topographic features that channel or amplify wind speeds.

6.3 Enterprise-wide Safety Risks

Enterprise Risk Management (ERM) is a tool to assist in anticipating and managing risks, as well as considering how multiple risks can present even greater challenges. The overall goal is to determine the residual risk level after all mitigation factors have been applied to the initial inherent risk.

ERM is not a periodic "Risk Assessment" but an ongoing and forward-looking management discipline that allows BREA to analyze risk on a continual basis and adapt to changing conditions. The key or critical risks affect the entire community and are interrelated, and thus, are managed holistically and with a structured approach.

All utilities face enterprise-wide safety risks that are specific to the organization and region. For BREA, some risk areas may include:

- Operational
  - Ability to appropriately respond to vegetation encroachment. (Primarily trees)
- Procedural
  - Effective processes to maintain vegetation encroachment or perceive when action is needed.
- System Sensitivities
  - Line contact from objects (Trees cause most incidents).

The aforementioned risks and risk drivers have many possible consequences should any be a contributing factor for an ignition. The list below outlines some of the worst-case scenarios, the prevention of which is impetus for the development of this Plan:

- Personal injuries or fatalities to the public, employees, and contractors
- Damage to public and/or private property
- Damage and loss of BREA-owned infrastructures and assets
- Impacts to reliability and operations
- Damage claims and litigation costs, as well as fines from governing bodies
- Damage to BREA's reputation and loss of public confidence
- Negative public opinion of the power industry in general
- Loss of natural resources

6.4 Wildfire History and Outlook

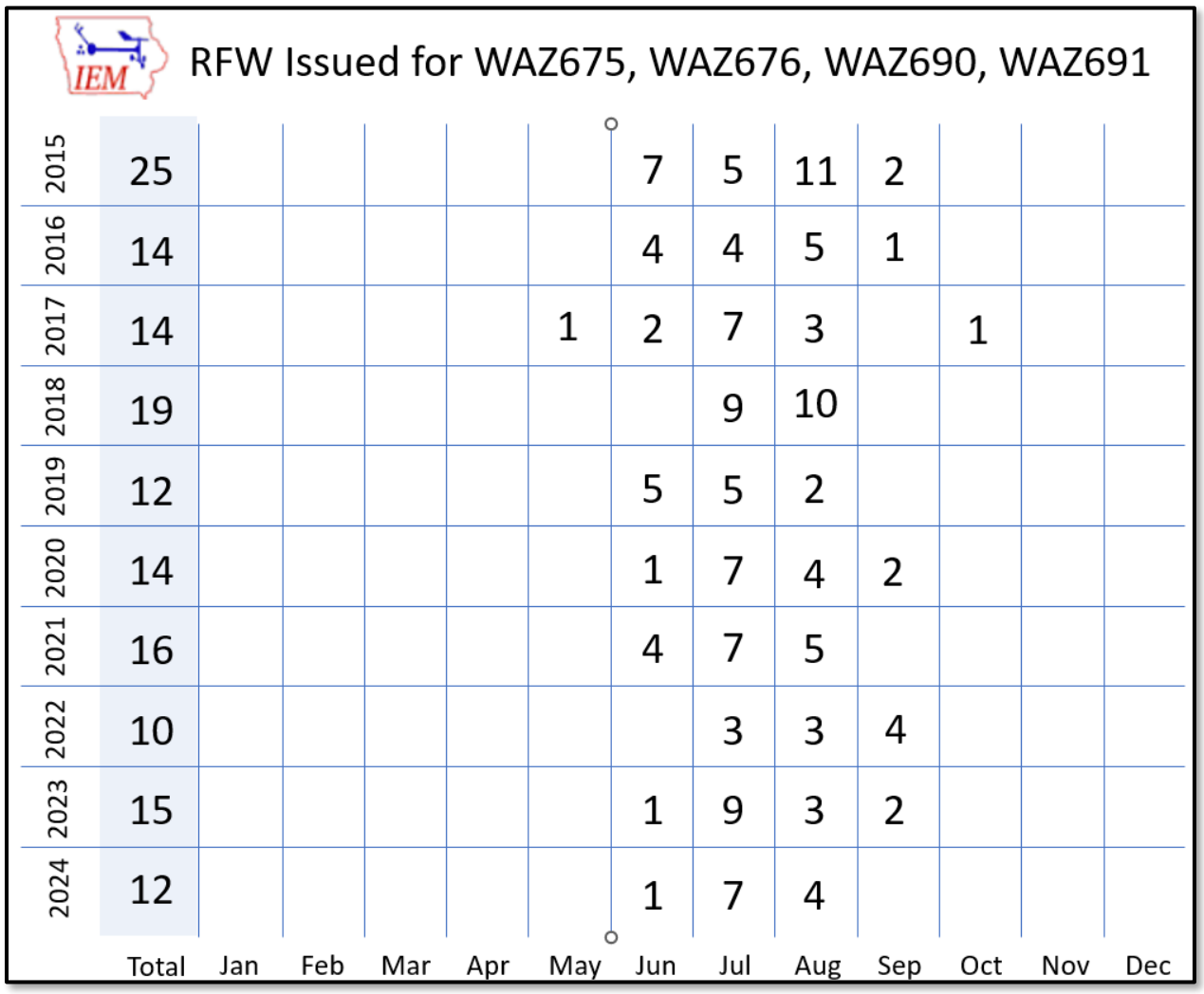
While wildfires occur in all regions of the state, Washington's largest wildfires occur on the drier east side of the Cascade Range due to hot, dry and windy conditions. As shown in Figure 3, large-scale wildfires occur regularly throughout the service area and adjacent counties.

Generally speaking, fire season in Washington lasts from April through the end of October, but wildland fires have occurred in every month of the year. Fire seasons from 2003 through 2012 averaged more than 84 days longer than in 1973 to 1982[2]. According to NIFC data, the total number of fires and total number of acres burned are trending upward with a significant increase in the number of acres burned since 2000. The largest fire years coincide with warm spring and summer temperatures, and early spring snowmelt. Annual large wildfire frequency in US Forest Service (USFS), National Park Service and Bureau of Indian Affairs (BIA) forests is significantly correlated with spring and summer temperature. Projected warmer and drier summers and declining snowpack and correlated decreases in summer soil moisture will increase the risk of wildfires, particularly in forested areas where fuels are abundant[3].

Figure 2 illustrates the Red Flag Warning data from 2020 through September 2024 for the four fire weather zones in proximity to the service area.

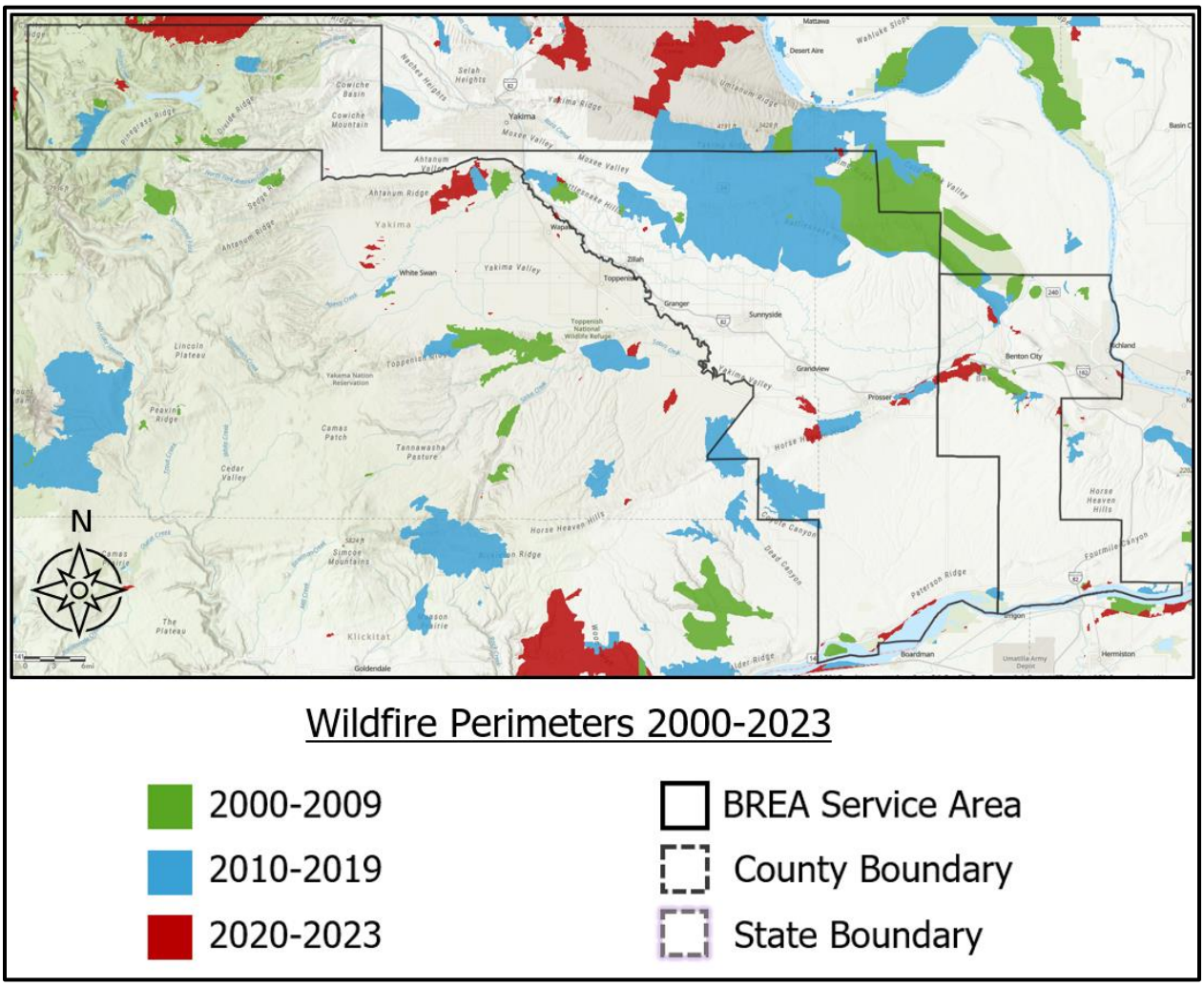
[2] Westerling, A.L. 2016 Increasing Western US Forest Wildfire Activity; https://royalsocietypublishing.org/doi/10.1098/rstb.2015.0178
[3] RMJOC 2018; Gergel et al 2017

Figure 2. Red Flag Warning by Year & Month (2015-2024)



	Total	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2015	25						7	5	11	2			
2016	14						4	4	5	1			
2017	14					1	2	7	3		1		
2018	19							9	10				
2019	12						5	5	2				
2020	14						1	7	4	2			
2021	16						4	7	5				
2022	10							3	3	4			
2023	15						1	9	3	2			
2024	12						1	7	4				

Figure 3. Wildfire Perimeters 2000-2023



6.4.1 Wildfire Hazard Potential

The Wildfire Hazard Potential (WHP) map (Figure 4) used in this plan is a raster geospatial dataset produced by the USDA Forest Service, Fire Modeling Institute (FMI). It is intended to inform evaluations of wildfire risk or prioritization of fuels management needs across large landscapes. The specific objective of the WHP map is to depict the relative potential for wildfire that would be difficult for suppression resources to contain.

The WHP-2023 dataset was built upon:

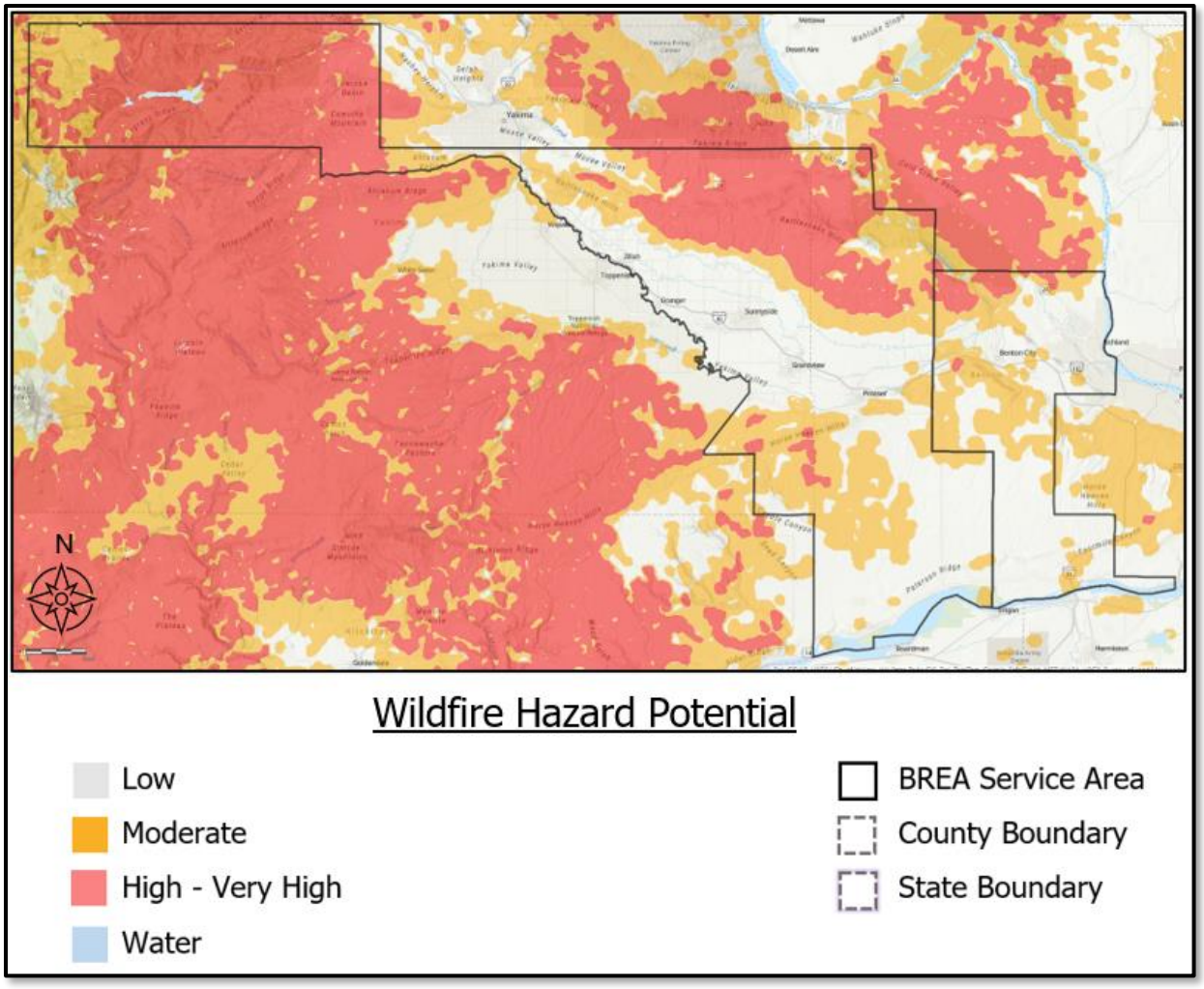
- Spatial vegetation and wildland fuels data from *LANDFIRE 2020* (version 1.4.0). The *LANDFIRE* Fire Behavior Fuel Models layer is a primary input to the FSim Burn Probability (BP) and Fire Intensity Level (FIL) datasets and forms the foundation for WHP.
- Spatial datasets of wildfire likelihood and intensity were generated for the conterminous U.S. with the *Large Fire Simulator* (FSim). FSim simulates the growth and behavior of hundreds of thousands of fire events for risk analysis across large land areas using geospatial data on historical fire occurrence, weather, terrain, and fuel conditions. Effects of large-fire suppression on fire duration and size are also simulated. This research aims to develop a practical method of quantifying geospatial wildfire impacts, including annual probabilities of burning and fireline intensity distributions at any point on the landscape.
- Point locations of past fire occurrence from 1992 through 2020

Areas mapped with higher WHP values represent fuels with a higher probability of experiencing torching, crowning, and other extreme fire behavior under conducive weather conditions. An essential aspect of the WHP method is the use of "resistance to control weights" at the end of the mapping process. This serves to reduce the WHP index in areas with light fuels, such as grass and shrubs. This helps to inform where forest fuel reduction treatments might be most needed.

On its own, WHP is not an explicit map of wildfire threat or risk, but when paired with spatial data depicting highly valued resources and assets such as communities, structures, or powerlines, it can approximate relative wildfire risk to those resources and assets. WHP is not a forecast or wildfire outlook for any particular season as it does not include any information on current or forecasted weather or fuel moisture conditions.

The WHP map can be used to prioritize vegetation management activities, determining the location for focused recloser operational protocols, and future sectionalizing studies and associated remedial actions.

Figure 4. Wildfire Hazard Potential



7 Wildfire Preventative Strategies

This WMP integrates and interfaces with BREA's existing operations plans, asset management, and engineering principles, which are themselves subject to change. Future iterations of the WMP will reflect any changes to these strategies and will incorporate best management practices as they are developed and adopted. Table 4 summarizes BREA's five mitigation components with associated programs and activities that support BREA's ongoing commitment to wildfire reduction and mitigation. Not all construction standards, such as underground lines, are employed solely for wildfire mitigation, or installed in all areas of the service territory.

Table 4. Mitigation Programs and Activities

DESIGN AND CONSTRUCTION
Strategic Underground distribution lines
Substation perimeter fencing for security and protection
Fiberglass crossarms (pilot program)
Animal guards on transformers
Avian Protection Plan
Fire-resistant mesh wrap on transmission poles in high-risk areas
Elevated nesting platforms
Steel pole (pilot program)
Covered jumpers and animal guards on new construction
SCADA enabled recloser conversion (upgrades in process)
Supervisory Control and Data Acquisition (SCADA)
INSPECTION AND MAINTENANCE
Infrared inspections of substation and large transformers
Substation inspections
Distribution system right-of-way (ROW) maintenance
Transmission ROW Clearing
GIS assisted maintenance and VM tracking
Vegetation management program
Mid-cycle vegetation trimming
Wood pole intrusive inspection and testing
Brush Clearing around structures
OPERATIONAL PRACTICES
Community outreach/Controlling incompatible vegetation
Hazard tree removal
Fire suppression equipment on service vehicles
Alternate settings for reclosers during high fire danger conditions
Slip tank trucks used for ignition prevention and support on active fires

Table 4. Mitigation Programs and Activities (continued)

SITUATIONAL AWARENESS
Weather Monitoring
DNR fire-danger level monitoring
Industrial Fire Protection Level (IFPL) monitoring
RESPONSE AND RECOVERY
Outage response communications
Coordination with local first responders
Line patrols prior to re-energization
Regular communication with Washington Dept. of Natural Resources & USFS

7.1 Weather Monitoring

7.1.1 Current Strategy Overview

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

BREA uses various situational awareness resources to monitor evolving fire weather, fuel, and other climatological conditions that may lead to fire events. It evaluates information such as Industrial Fire Protection Levels, real-time field observations, GIS data, asset maintenance reports, ongoing wildfire reporting and a BREA-owned weather station. Based on available information, BREA appropriately schedules work crews, adjusts equipment settings, and prepares for fire weather conditions as needed.

- **NOAA Weather and Hazards Data Viewer:** This on-line map provides historic or real-time surface observations including wind speed and direction, wind gust, dew point, relative humidity, and sea level pressure collected from remote automated weather stations (RAWS). Extreme-weather alerts such as fire weather watch, high wind watch, and red flag warning are provided from this resource. (https://www.wrh.noaa.gov/map/?wfo=psr)
- **Industrial Fire Level Precaution Levels (IFPL):** Fire season requirements become effective when fire season is declared in each Washington DNR Protection District. (https://www.dnr.wa.gov/ifpl)
- **Washington DNR Wildfire Danger Viewer:** This site provides current information about wildfire danger in Washington, as well as restrictions applying to outdoor burning conducted on DNR-protected forestlands throughout Washington. (https://fortress.wa.gov/dnr/protection/firedanger/)

7.1.2 Industrial Fire Precaution Levels

When conditions of fire hazard exist each summer, Washington Department of Natural Resources, United States Forest Service, or the Bureau of Land Management declare fire season to be in effect. Title 36 of CFR 261.50(a) gives each Forest Supervisor the authority to issue orders which close or restrict use of the area over which he/she has jurisdiction. As conditions warrant, the forester will issue an Industrial Fire Precaution Level[4] (IFPL) at one of four levels. The declaration of fire season affects utility and other commercial operations and as well as recreational activities by the public. Fire season remains in effect until terminated by each Agency or by reducing the IFPL until conditions for fire hazard no longer exist.

BREA operates within lands managed by the US Forest Service (USFS) and the DNR. To maintain safety during maintenance and VM work, the Operations Department monitor IFPL levels regularly (during fire season) and directs staff and VM crews to take the necessary precautions and deploy the necessary fire suppression equipment to job sites. BREA equips field vehicles with small water packs, fire extinguishers and other equipment required by IFPL rules for operating on state and federal lands during seasonal restrictions.

7.2 Design and Construction Standards

7.2.1 Current Strategy Overview

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

7.2.1.1 Fire Retardant Pole Wrap

BREA is transitioning away from painted protective coatings to a fiberglass-core, fireproof mesh wrap on select transmission poles in high-risk areas. The goal is to improve the resilience of the grid and prevent outages due to range fires that are common in the service area. This material, when affixed to wooden poles, activates within 20 seconds when in contact with wildfire, withstands temperatures up to 2,100°F, and prevents burning, strength loss, and pole failure.

7.2.1.2 Overhead vs Underground Conductor

BREA has approximately 628 miles of UG distribution line on its network. The benefits of overhead conductor are that it is much less costly and easier to troubleshoot following an outage event, making restoration times shorter compared to underground construction. The downside to overhead conductor is its susceptibility to contact from foreign objects such as wildlife, vegetation, and equipment, and its exposure to the environment which can degrade facilities over time.

[4] https://fortress.wa.gov/dnr/protection/ifpl/

The undergrounding of distribution lines improves reliability in high wind events and functions as an effective mitigation against wildfire since it is not susceptible to foreign contact. Most new service connections and residential subdivision developments are built using UG construction.

7.2.2 Avian Protection Construction Standards

Since 2010, BREA has employed design and construction standards to protect raptors, migratory birds, and other wildlife. The measures contained in BREA's Avian Protection Plan (APP) have been shown to reduce the collision and electrocution risks and the number of birds injured. Consequently, avian protection strategies also reduce the potential for fire ignitions while helping to prevent power outages.

After taking into consideration engineering and operational requirements, geographic area, economic and other factors, BREA may apply avian-safe construction standards as outlined in its APP. The BREA Engineering and Operations Department will implement the following construction practices:

- The installation of protective measures on existing lines where there is a recorded high avian mortality that involves a species protected under the MBTA.
- Where feasible and appropriate, implement avian protection design standards on new lines where geographically high avian mortality or contact has been recorded involving MBTA-protected species.

These safety measures have reduced the potential for fire ignitions while also assuring compliance with the Migratory Bird Treaty Act (MBTA), Bald and Golden Eagle Protection Act (BGEPA), and the Endangered Species Act (ESA).

7.2.2.1 Planned Updates

BREA will continue to implement fire safety into their design and construction practices. Planned updates include installing avian protection equipment on transformers, reclosers, and dead ends to prevent nesting and birds contacting energized equipment. Continued electronic recloser upgrades will incorporate line sensing software as this becomes feasible. BREA is also pilot testing metal poles on select transmission lines, along with fiberglass poles and crossarms.

7.3 Fuel and Vegetation Management

BREA maintains over 1,200 miles of overhead T&D ROW to minimize interruptions of services and to provide a safe and reliable supply of electricity to its customers. This includes not only the maintenance of hardware, conductors, and poles but trees and other vegetation that threatens to fall onto or grow into the electrical conductors. To this end, BREA has developed a vegetation management (VM) program intended to maintain safe and reliable electric facilities, provide safety for the public and for utility workers, and fire mitigation throughout the service area.

7.3.1 Current Strategy Overview

The effective management of vegetation near power lines is a major component of wildfire mitigation. The goal of the VM program is to proactively maintain vegetation in a manner that keeps it from contacting BREA's electrical system facilities, thereby reducing the likelihood of outages and fires. The components of BREA's VM program are broken out into the following categories:

7.3.1.1 Preventive Vegetation Management

The systematic, preemptive and routine identification and removal of vegetation growing within and along BREA powerlines. This includes periodic trimming on a consistent 5-year cycle as dictated by the vegetation growing in and along established ROWs. This includes educating BREA members on proper planting to prevent growth under power lines and other electrical equipment. In high-risk areas, we are placing sterilant around poles to help prevent them from grass fires.

7.3.1.2 Corrective Vegetation Clearance

BREA is authorized by RCW 64.12.035 to trim or remove any tree or vegetation that poses an imminent hazard to the public or is a potential threat that could damage electric facilities. Trees are trimmed or removed for safety, reliability, board policies, and compliance with the National Electric Safety Code (NESC).

If a tree's proximity to power lines is a threat to our electric system, our tree crew will trim the growth away from our equipment. At a minimum, vegetation growing within 10 feet of energized primary conductors will be removed when this work is performed.

BREA will remove individual trees and vegetation threatening BREA power lines in addition to normal preventive VM work. When clearance issues are identified, they are followed up on by BREA's OM and Vegetation Management Coordinator (VMC) to ensure the threat is mitigated. If designated as a high priority, BREA will prioritize the vegetation removal and take immediate corrective action. Priority actions are monitored by the OM and the VMC to ensure that these issues are being resolved in a timely manner.

7.3.1.3 Emergency Vegetation Clearance

Uncustomary maintenance necessitated by storms, natural disasters, wildfires and other emergencies will be identified and resolved promptly. This may include the removal and cleanup of fallen trees and branches resulting from storms.

7.3.1.4 Post Fire Vegetation Actions

After a fire has been extinguished and the area deemed safe by the relevant emergency management agency, assigned employees will survey poles, ROW, wire, and other facilities and recommend repairs as needed.

7.3.2 Standards for Routine VM Activities

7.3.3 Trimming Schedule

Cycle trimming is the cornerstone of the vegetation management program. Under this concept all system electrical distribution lines are assigned a schedule for tree trimming and/or removal. BREA-contracted crews are responsible for trimming trees and vegetation to obtain the minimum required clearance with due regard to current and future tree health and symmetry. To accomplish this, full-time tree trimming crews perform year-round vegetation management work on a 5-year pruning cycle.

Fast growing trees such as aspens and poplars may be managed more frequently and aggressively than stated above. Areas with fast-growing species are typically trimmed mid-cycle as needed to maintain safe vegetation clearance from the power lines and associated equipment. Line crews also address vegetation concerns in response to service calls or field observations by employees or customers.

Depending on the environmental conditions at any given time, work may be redirected to accommodate limitations from Industrial Fire Protection Levels or winter weather conditions in the higher alpine regions. Any areas missed due to environmental reasons are addressed the following year.

7.3.4 Vegetation Control Options

Methods for controlling vegetation along the ROW include chemical, biological, manual, or mechanical techniques. The choice of control option(s) is based on effectiveness, environmental impact, site characteristics, worker and public health and safety concerns.

7.3.5 Hazard Tree Removal

A subset of Danger Trees[5], a Hazard Tree is defined as any tree or portion of a dead, dying, rotten, or decayed tree that may fall into or onto the overhead lines, or trees leaning toward distribution facilities. These trees are generally outside the right-of-way and are deemed to pose a potential threat to the lines. BREA makes it a priority to remove hazard trees as soon as they are identified using RCW 64.12.035 as a general guideline.

Tree removal eliminates hazardous conditions, improves access to facilities, and reduces future work and will be pursued wherever feasible. BREA will remove identified hazard trees growing outside its established ROW at no cost to the property owner providing permission is first granted. If permission is not granted, the property owner will be notified of their liability associated with the hazard trees remaining in place.

[5] As defined by ANSI 300 Part 7 standards

7.4 Asset Inspections and Responses

7.4.1 Current Strategy Overview

Recognizing the hazards of equipment that operate high voltage lines, BREA maintains formal time-based inspection and maintenance programs for distribution and substation equipment, which plays an essential role in wildfire mitigation, reliability, and safety.

BREA asset inspections include:

- Time-based inspection for wood poles (10-year cycle)
- Monthly substation inspections
- Annual detailed substation inspections and testing

The following methods and techniques are used as needed:

- Infrared/FLIR (substation inspections)
- Drone
- LiDAR(planned)

7.4.2 Pole Management Program

To maintain BREA's utility poles, a Pole Management Program was initiated with the goal of inspecting approximately 10% of the poles per year. Contracted pole testers perform the pole inspections on a planned basis to determine whether they have degraded below National Electric Safety Code (NESC) design strength requirements with safety factors.

Poles up to nine years old will undergo a visual inspection with no further action unless necessary. Poles that are 10 years and older will be inspected both above and below the ground. All inspection findings are recorded and maintained by BREA.

7.4.3 Infrared Thermography

Hundreds of different pieces of equipment may be found in an electrical distribution system. They start with electricity production, high voltage distribution, switchyards and substations, and end with service transformers, switchgear, breakers, meters, local distribution. Abnormal heating associated with high resistance or excessive current flow is the main cause of many problems in these electrical systems.

Using FLIR cameras, also referred to as IR thermography, BREA inspects its substations, line regulators and SCADA-enabled reclosers to locate hidden electrical and mechanical issues before they become a reliability issue. FLIRs create images from heat, rather than visible light. Because excess heat is a sign of increased resistance, FLIR technology is well suited to locating defects in connections and components. Thermal imagers enable inspectors to see the heat signatures associated with high electrical resistance long before the circuit becomes hot enough to cause an outage or damage.

7.5 Workforce Training

7.5.1 Current Strategy Overview

The key to an effective WMP is ensuring that each BREA employee assigned duties under this Plan fully understands their responsibilities, how they fit into the Plan, and when they will be expected to act. To that end, the OM will develop and manage an annual training schedule that includes all BREA employees with responsibilities under the Plan.
In addition, all field staff are:

- Trained on the content of the WMP
- Trained in proper use and storage of fire extinguishers
- Required, during pre-job briefings, to discuss the potential(s) for ignition, environmental conditions (current and forecasted weather that coincides with the duration of work for the day)
- Required to identify the closest fire extinguisher and other fire abatement tools
- Required to report all ignition events to management for follow-up

7.6 Relay and Recloser Policy

7.6.1 Current Strategy Overview

BREA Management will operate the electrical system in a hybrid manner. Weather, fire danger and other environmental data from multiple sources will be used to track service area operating conditions on a daily or weekly basis, as warranted.

Weather, fire danger and other environmental risk data will be obtained from the following sources:

1. ESRI US Wildfire reports-ESRI Disaster Response Program
2. The National Oceanic and Atmospheric Administration (NOAA)
3. National Weather Service (NWS)
4. US Forest Service Wildland Fire Assessment System (WFAS)
5. National Fire Danger Rating System (NFDR)
6. Internal knowledge of the service area and local conditions
7. US Geological Survey (USGS)

After analysis by the EOL, system protection settings will be adjusted as needed in accordance with local fire weather conditions. BREA operations have implemented two modes of system protection operations; Normal Operations, and Fire-safe Mode.

Figure 5 below depicts the wildfire danger rating system. These wildfire risk categories, which are based on weather and fuel indicators from DNR, will be used in determining the mode of operation during fire season.

Figure 5. Fire Danger Rating System

Low	Weather and fuel indicators show the probability of fire occurrence low.
Medium	Weather and fuel conditions indicate some potential for fire occurrence. Expect predictable fire behavior with moderate rate of spread.
High	Fires are active. Expect moderate and occasional high rates of spread.
Very High	Fires spread rapidly and show erratic behavior. Dangerous burning conditions exist.
Extreme	Potential for large fires exist. Fires spread rapidly. Extreme fire behavior is probable. Critical conditions exist.

Normal Operations - When the wildfire risk is rated low or medium by DNR, the electric system will be operated with a focus on optimal reliability and continuity of service. This mode of operations is referred to as "Normal Operations." Normal Operations will be in effect during periods of the year when the fire forecast is low or medium risk, as determined by the reporting fire and weather data obtained by the EOL.

Fire-safe Mode – Fire-safe Mode will be in effect when the fire and weather danger data for the service area obtained by the EOL is forecasting fire danger as High, Very High or Extreme and/or 'Red Flag Conditions' are forecast or in effect, or when the EOL determine that conditions warrant its activation.

Changes in operating practices are made to safeguard the public, reduce the possibility of electrically induced fires and protect BREA's electrical system and facilities from damage. Such practices include system monitoring through SCADA, patrolling lines that have experienced any interruptions of power before reenergizing and placing power line reclosers or circuit breakers on "non-reclose" to prevent multiple recloses during these occurrences.

Implementing Fire-safe Mode – When Fire-safe Mode is initiated, the System Engineer (SE) will closely monitor substation circuit breakers and line reclosers based on the exposure to combustibility risk of the lines they protect. This monitoring will be accomplished remotely where SCADA permits or by using field workers to patrol specific powerlines as needed. Fire-safe Mode does not mandate the use of alternate trip settings, non-reclose settings, or de-energization of circuits entirely based upon data obtained. Future plans include the deployment of BREA-owned weather stations in select locations to help inform the decision-making process with more localized and granular data. Based on the current conditions, alternate operating modes will be considered and implemented when deemed necessary by the EOL. While in Fire-

safe Mode, the following mitigation actions are available and will be implemented when appropriate based on the assessed fire risk.

Table 5. Fire-safe Mode Operations

Operational Action	Low	Moderate	High	Very High	Extreme
Substation circuit breaker settings	Automatic Reclose	Automatic Reclose	Non-Reclose on RFW days	Non-Reclose on RFW days	Non-Reclose on RFW days
Line crew patrol following circuit outage	Normal until a fault condition is identified		All outages and operations on lines fully patrolled*		
Line reclosers in predetermined hazard areas	Automatic Reclose	Automatic Reclose	Non-Reclose*	Non-Reclose	Non-Reclose
Increased number of "On Call" personnel	No	No	No	Yes	Yes
Increased number of "On Call" personnel during high wind or lightning events	No	No	As needed	As needed	As needed

*Dependent on location as determined by EOL

7.7 De-energization / Public Safety Power Shutoff

7.7.1 Current Strategy Overview

A Public Safety Power Shutoff (PSPS) preemptively de-energizes power lines during high wind events combined with hot and dry weather conditions. In addition to the Fire-safe Mode actions described above, BREA has the authority to shut off power on specific line segments due to fire-threat conditions. This option will only be used in the most extraordinary circumstances, and only when other strategies would not be effective. The EOL, in consultation with the CEO will make a case-by-case decision whether to shut off power based on any one or more of the following considerations:

1. Red-Flag Warnings issued by the National Weather Service for fire weather zones that contain BREA circuits
2. BREA staff assessments of local conditions, including wind speed (sustained and gust), humidity and temperature, fuel moisture, fuel loading and data from weather stations
3. Real-time information from BREA staff located in areas identified as at risk of being subject to extreme weather conditions
4. Awareness of mandatory or voluntary evacuation orders in place
5. Expected impact of de-energizing circuits on essential services
6. Other operational considerations to minimize potential wildfire ignitions, including the blocking of reclosers on the identified circuit(s)
7. On-going fire activity throughout the area
8. Ability to notify members, local governments and public officials
9. Potential impacts to communities and members

If the decision is made to implement a PSPS, the MSM will be immediately informed by the OM. The MSM will endeavor to notify, as soon as practicable, all members and stakeholders impacted by the PSPS. Information regarding the pendency of the PSPS, when it is expected to be implemented, and the estimated duration will be disseminated to by all available means.

BREA has considered the extremely complex external risks, and potential consequences of de-energization while striving to meet its main priority of protecting the communities and customers we serve. They include:

- Potential loss of water supply to fight wildfires due to loss of production wells and pumping facilities.
- Negative impacts to emergency response and public safety due to disruptions to the internet and mobile phone service during periods of extended power outages.
- Loss of key community infrastructure and operational efficiency that occurs during power outages.
- Medical emergencies for members of the community requiring powered medical equipment or refrigerated medication. Additionally, the lack of air conditioning can negatively impact medically vulnerable populations.
- Negative impacts on medical facilities, fire, police, and schools.

- Traffic congestion resulting from the public evacuation in de-energized areas can lengthen response times for emergency responders.
- Negative economic impacts from local businesses forced to close during an outage.
- The inability to open garage doors or motorized gates during a wildfire event.
- Loss of power for fuel station pumping

The risks and potential consequences of initiating a PSPS are significant and extremely complex. Based on the above considerations, BREA reserves the option of implementing a PSPS when conditions dictate but does not currently plan to proactively de-energize its system.

On a case-by-case basis, BREA will consider de-energizing a portion of its system in response to a known public safety issue or response to a request from an emergency management agency. Any de-energizing of the lines is performed in coordination with key local partner agencies, but the final determination is made by BREA.

8 Community Outreach and Public Awareness

8.1 Current Community Outreach and Public Awareness Program

The Member Services Manager will use various methods of communicating with members and the public to ensure that the Plan is widely disseminated and well understood. These forms of communications with the members and the public may include:

- Newsletter articles
- News articles
- Ruralite Magazine
- BREA website
- E-Mail
- Text messages
- Member forums
- Neighborhood meetings
- Social media

The Member Services Manager will determine which of these methods will be used and in which circumstances.

BREA also encourages its customers to take proactive measures to safeguard their homes from wildfire danger and to prepare for emergency events. To help create an awareness of fire danger in the service area, and what homeowners can do to minimize it, BREA provides information on prevention and mitigation on its website and social media platforms.

Customers will find links to the following information:

- Current outages (map) and reporting
- Home Ignition Zone
- Wildfire preparedness
- Home generator safety
- Escape planning/Emergency supplies
- Exterior sprinkler system facts
- National Fire Protection Association (NFPA) which has additional information on home ignition zones, wildfire mitigation for homeowners and emergency planning.

9 Restoration of Service

To effectively restore service under extreme conditions, BREA follows an emergency response plan. This plan helps identify how to best utilize BREA's existing labor force, as well as when to call for additional labor or material resources. The plan also specifies the order of priority in which electrical service will be restored.

BREA work crews will take the following steps before restoring electrical service after a de-energization event. These measures are intended to protect the worker, the public, and the system's reliability.

- **Patrol:** De-energized lines are patrolled to ensure no hazards have affected the system during the outage. If an outage is due to a wildfire or other natural disaster, as soon as it is deemed safe by emergency response officials, lines and equipment are inspected for damage or foreign objects contacting the lines, and to assess the need for equipment repairs and reconstruction. Lines located in remote and rugged terrain with limited access may require additional time for inspection. VM crews are called on to assist in clearing downed trees and limbs as needed.
- **Isolate:** Isolate the outage and restore power to areas not affected.
- **Repair:** After the initial assessment, BREA supervisors, managers, and engineers meet to plan the needed work. Re-building will commence as soon as affected areas become safe. Repair plans prioritize substations, then distribution circuits that serve the most critical infrastructure needs. While the goal is to reenergize all areas as soon as possible, emergency services, medical facilities, and utilities are given first consideration when resources are limited. Additional crews and equipment will be dispatched as necessary.
- **Test:** After repairs are completed and the equipment is safe to operate, line segments are energized and tested.
- **Restore:** After successful line testing, power is restored to homes and businesses as quickly as possible. Customers are then notified of the restoration of electric service. After initial power restoration, further demolition and rebuilding may be necessary.

9.1 Returning to Normal Operations

The EOL will be responsible for jointly monitoring weather and environmental conditions to determine when the conditions that prompted Fire-safe Mode have abated sufficiently to warrant a return to normal system operations. The SE and/or Distribution Engineer (DE) will assist with actions to be taken through SCADA to change the mode of system operations as necessary. The EOL will make the decision whether the circumstances (weather and/or environmental conditions) warrant a return to normal operations, and the action(s) necessary to do so. However, if such a decision cannot be quickly achieved jointly, it will be referred to the CEO for resolution.

10 Evaluating the Plan

10.1 Metrics and Assumptions for Measuring Plan Performance

In addition to a robust mitigation plan, BREA will be tracking performance metrics (Table 6, Appendix a) intended to gauge the effectiveness of BREA's various programs and strategies for mitigating wildfire ignitions. The goal of these metrics is to provide a data-driven evaluation of plan performance to help determine the effectiveness of various programs and to identify areas for improvement. The annual tracking of these metrics will also help identify circuits most susceptible to unexpected outages, time-of-year risks, and the adequacy of the VM and asset inspection schedules.

Because this plan is in the initial stage of implementation, relatively limited data is on hand. However, as results of the mitigation programs become evident and additional data is collected, BREA will identify areas of its operations that will require a different approach, as well as develop additional methods to achieve the goal of eliminating BREA asset-sourced ignitions. As the metrics are analyzed in the following years, refinements will be made, and the selected metrics, as with other aspects of the plan, will likely evolve in future iterations.

10.2 Identifying and Addressing Areas of Continued Improvement

This Plan is a living document and will be reviewed annually and modified as needed to reflect changes in regulations, advances in technology and changes in operational circumstances. The EOL are responsible for conducting an annual review of the Plan and recommending to the CEO any revisions or changes to the Plan. As per DNR guidelines, the WMP will be updated every three years going forward.

As results of the mitigation programs become evident and additional data is collected, BREA will identify areas of its operations that will require a different approach, as well as methods that are working towards the goal of eliminating BREA asset-related ignitions.

BREA's EOL are responsible for spearheading discussions on addressing deficiencies and collaborating on solutions when updating the WMP. Staff responsible for assigned mitigation areas must vet current procedures and recommend changes or enhancements to build upon the Plan's strategies. When deficiencies are identified, the EOL and designated staff evaluate each reported deficiency to determine their validity. The CEO records the agreed upon corrective actions and plan steps for implementation and inclusion in future iterations of the WMP.

10.3 Monitoring the Performance of Inspections

The utility manages the distribution line and substation assets and develops inspection and maintenance programs. These programs ensure the safe operation of BREA line and substation facilities.

Key imperatives are to:

- Reduce the risk of power-related wildfire
- Meet federal and state regulatory requirements
- Achieve reliability performance within mandated limits and to optimize capital and O&M investments

Designated managers regularly monitor inspection and corrective maintenance records and diagnostic test results to adjust maintenance plans and develop new programs. BREA makes every effort to follow best industry practices in developing its maintenance programs.

BREA's OM is responsible for performing the inspections and corrective maintenance. The priority for corrective maintenance is to remove safety hazards immediately and repair deficiencies according to the type of defect and severity of the risk level associated with the asset location. Work orders are monitored throughout the year to ensure timely completion via regular internal reports.

Appendix A: Metrics

Table 6. Performance Metrics

METRIC	DESCRIPTION/ RATIONAL	INDICATOR	MEASURE OF EFFECTIVENESS
Red Flag Warning (RFW) days	N/A	N/A	Used to adjust annual variation in criteria
Number of Utility Caused Ignitions- **Transmission**	Demonstrates the effectiveness of the overall plan	A reportable fire incident includes all of the following: 1) Ignition is associated with powerlines and 2) something other than utility facilities burned and 3) the resulting fire traveled more than one meter from the ignition point.	No material increase
Number of Utility Caused Ignitions- **Distribution**	Demonstrates the effectiveness of the overall plan	A reportable fire incident includes all of the following: 1) Ignition is associated with powerlines and 2) something other than utility facilities burned and 3) the resulting fire traveled more than one meter from the ignition point.	No Material Increase
T&D OH Wires Down Event during fire season	Assigns risk to the root cause	Number of instances where an electric transmission or primary distribution conductor is broken and falls from its intended position to rest on the ground or a foreign object; excludes down secondary distribution wires and "Major Event Days" (typically due to severe storm events) as defined by the IEEE.	Reduction in the general trend of events
System Average Interruption Frequency Index (SAIFI)	Assess system hardening & overall reliability	Count of events	Reduction in annual average score

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Appendix B: Acronym Glossary

ANSI	American National Standards Institute
BLM	U.S. Bureau of Land Management
BMP	Best Management Practices
BPA	Bonneville Power Administration
CSR	Customer Service Representative
CEO	Chief Executive Officer
Co-op	Cooperative
DE	Distribution Engineer
DEM	Department of Emergency Management
DNR	(Washington) Department of Natural Resources
EOC	Emergency Operation Center
EOL	Engineering and Operations Leadership
GF	General Foreman
GM	General Manager
HFTA	High Fire Threat Area
HIF	High Impedance Fault
IC	Incident Commander
IFPL	Industrial Fire Protection Level
KV	Kilovolt
KWH	Kilowatt Hours
LDE	Line Down Event
MW	Mega Watts
MSM	Member Services Manager
MVCD	Minimum Vegetation Clearance Distance
NERC	North American Electric Reliability Corporation
NESC	National Electric Safety Code
NFDRS	National Fire Danger Rating System
NOAA	National Oceanic and Atmospheric Administration

NF	National Forest
NWS	National Weather Service
OH	Overhead
OM	Operations Manager
BREA	Public Utility District #1 of Okanogan County
OEM	Office of Emergency Management
PSPS	Public Safety Power Shutoff
PM	Project Manager
QA	Quality Assurance
QC	Quality Control
RAWS	Remote Automated Weather Station
RFW	Red Flag Warning
ROW	Right-of-Way
SE	System Engineer
SCADA	Supervisory Control and Data Acquisition
UG	Underground
USDA	United States Department of Agriculture
USFS	United States Forest Service
VM	Vegetation Management
VPE&O	Vice President of Engineering and Operations
WA	Washington State
WDFW	Washington Department of Fish and Wildlife
WFAS	Wildland Fire Assessment System
WHP	Wildfire Hazard Potential
WMP	Wildfire Mitigation Plan
WUI	Wildland Urban Interface

Appendix C: Definitions

Bonneville Power Administration: The Bonneville Power Administration (BPA) is an American federal agency based in the Pacific Northwest created in 1937 to market electric power from the Bonneville Dam and to construct transmission facilities. BPA is the marketing agent for power from all 31 of the federally owned hydroelectric projects in the Pacific Northwest. The BPA is one of four regional Federal power marketing agencies within the U.S. Department of Energy (DOE).

Circuit Breaker: An electrical switch designed to protect an electrical circuit from damage caused by overcurrent/overload or short circuit. The basic function is to interrupt current flow after protective relays detect a fault.

Commission: Publicly elected three-member board of commissioners.

Danger Tree: A danger tree is any tree, on or off the right of way, that can contact electric power lines. A danger tree may be completely healthy and intact, or it may be sick or dead. Even a healthy tree could sustain damage in a severe storm and impact nearby power lines, thus the potential for "danger."

Distribution System: The final stage in the delivery of electric power carrying electricity from the transmission system to individual consumers. The BREA distribution system includes 7.2Kv lines not tied to generation facilities.

Fire Hazard: "Hazard" is based on the physical conditions that give a likelihood that an area will burn over a 30 to 50-year period without considering modifications such as fuel reduction efforts.

Fire Risk: "Risk" is the potential damage a fire can do, to the area under existing conditions, including any modifications such as defensible space, irrigation and sprinklers and ignition resistant building construction which can reduce fire risk. Risk considers the susceptibility of what is being protected.

Fire Season: 1) Period(s) of the year during which wildfires are likely to occur, spread, and affect resource values sufficiently to warrant organized fire management activities. 2) A legally enacted time during which burning activities are regulated by state or local authority.

Fire Weather Watch: A term used by fire weather forecaster to notify using agencies, usually 24 to 72 hours ahead of the event, that current and developing meteorological conditions may evolve into dangerous fire weather.

Hardening: Modifications to electric infrastructure to reduce the likelihood of ignition and improve the survivability of electrical assets.

Hazard Tree: A specific type of danger tree that poses a greater likelihood of causing damage to electric power lines or equipment. In this case, the tree is structurally unsound and positioned in such a way that it could fall onto conductors.

Industrial Fire Precaution Level (IFPL): Activated when needed during the summer fire season, IFPL is an activity closure system to reduce wildfire risk. By law (WAC 332-24-301), it applies to woods workers and other industrial forest users on 13 million acres of unimproved private, federal, and state forestlands protected by the WADNR, BLM or USFS. Levels range from Level-1 to Level-4.

Landscape: Refers generally to the area of interest in a project or study and could refer to modeled or on-the-ground conditions.

National Fire Danger Rating System (NFDRS): A uniform fire danger rating system that focuses on the environmental factors that control the moisture content of fuels. It combines the effects of existing and expected states of selected fire danger factors into one or more qualitative or numeric indices that reflect an area's fire protection needs.

Raster: An array or regular grid of square cells used to store data. Raster data is made of a matrix of pixels, also referred to as cells in much the same way as you might find when working within a spreadsheet. They are often square and regularly spaced on a field divided into a grid of squares with each square representing a value which can be discrete (e.g. soil type) or continuous (e.g. elevation).

Recloser: Recloser is a device that is used in over-head distribution systems to interrupt the circuit to clear faults. Automatic reclosers have electronic control senses and vacuum interrupters that automatically reclose to restore service if a fault is temporary. There are several attempts that may be made to clear and reenergize the circuit and if the fault still exists the recloser locks out. Reclosers are made in single-phase and three-phase versions and use oil or vacuum interrupters.

Red Flag Warning (RFW)[6]: A term used by fire- weather forecasters to call attention to limited weather conditions of importance that may result in extreme burning conditions. It is issued when it is an on-going event, or the fire weather forecaster has a high degree of confidence that Red Flag criteria will occur within 24 hours of issuance. Red Flag criteria occurs whenever a geographical area has been in a dry spell for a week or two, or for a shorter period, if before spring green-up or after fall color, and the National Fire Danger Rating System (NFDRS) is high to extreme and the following forecast weather parameters are forecasted to be met:

- A sustained wind average 15 mph or greater;
- Relative humidity less than or equal to 25%, and;
- A temperature of greater than 75 degrees Fahrenheit

6 Source: https://w1.weather.gov/glossary/index.php?word=Red%20Flag%20Warning

In some states, dry lightning and unstable air are criteria. A Fire Weather Watch may be issued prior to the RFW.

Right-of-Way (ROW): The corridor of land under (and adjacent to) a transmission or distribution line.

Risk: A measure of the probability and severity of adverse effects that result from exposure to a hazard.

Substation: Part of the electrical generation, transmission and distribution system, substations transform voltage from high to low, or the reverse, or perform any of several other important functions. Between the generating station and consumer, electric power may flow through several substations at different voltage levels. A substation may include transformers to change voltage levels between high transmission voltages and lower distribution voltages, or at the interconnection of two different transmission voltages.

Summer Fire Rules (DNR): Washington's "summer fire rules" are in effect April 15 through October 15. These rules apply to the 13 million acres of private and state forestlands protected from wildfire by the Washington Department of Natural Resources.

These regulations affect loggers, firewood cutters, land clearers, road builders, heavy equipment operators, off-road motorcyclists, and others. During fire season, people using motorized equipment in the woods must have approved spark arresters and follow fire safety precautions. In addition, those working in the woods must have fire prevention and extinguishing equipment in good working order at the job site and workers trained in proper use.

The rules are intended to prevent forest fires and to extinguish small fires before they spread to the forested lands. These rules restrict cigarette smoking in forested areas to roads, gravels pits, or other clearings and prohibit lighting fireworks on forestland.

Transmission System: The bulk delivery of electrical energy from a generating site to an electrical substation. While BREA does not currently own any transmission system assets, BPA does operate several transmission lines in the county.

UAV: An unmanned aerial vehicle is a powered, aerial vehicle that does not carry a human operator, uses aerodynamic forces to provide vehicle lift, can fly autonomously or be piloted remotely.

Vegetation: Trees, shrubs, and any other woody plants.

Vegetation Management: A broad term that includes tree pruning; brush removal using power saws and mowers; the judicious use of herbicides and tree growth regulators; hazard tree identification and removal; the implementation of strategies to minimize the establishment of incompatible species under and near power lines; and the control of weeds.

Wildfire: Also called wildland fire, an unplanned, uncontrolled fire in a forest, grassland, brushland or land sown to crops.

Wildfire Mitigation Plan (WMP): A comprehensive plan to reduce the threat and severity of wildfire within an electric utility's service area. Plans include the preventive strategies and programs adopted by the utility to minimize the risk of its facilities causing wildfires along with its emergency response and recovery procedures.

Wildlands: Forests, shrub lands, grasslands, and other vegetation communities that have not been significantly modified by agriculture or human development*. A more specific meaning for fire managers, used by the National Wildfire Coordinating Group (which coordinates programs of participating wildfire management agencies nationwide), refers to an area in which development is essentially non-existent (except for roads, railroads, power lines, and similar transportation facilities); structures, if any, are widely scattered.

Wildland Urban Interface (WUI): Line, area, or zone where structures and other human development meet or intermingle with vegetative fuels in wildlands.

Appendix D: Vegetation Management-Procedure No. 415.OP

Benton REA
The Cooperative Way!

BENTON RURAL ELECTRIC ASSOCIATION
402 7TH Street • P.O. BOX 1150 • PROSSER, WASHINGTON 99350 • 509/786-2913 • Fax: 509/786-0291
A Touchstone Energy® Cooperative

PROCEDURE NO. 415.0P:

PROCEDURES FOR IMPLEMENTING GENERAL POLICY 415.0 – Vegetation Management

I. SUBJECT: VEGETATION MANAGEMENT

II. OBJECTIVE:

A. To ensure Benton Rural Electric Association's (BREA or Association) vegetation management activities are well planned, coordinated, and efficiently executed, while safeguarding the public, Association employees and contractors assigned to performing designated work.

B. To provide guidelines for controlling vegetation in and near existing rights of way that may interrupt service to BREA's members or hinder restoration of electrical service to them, and to mitigate fire risk.

C. To ensure reasonable service continuity is maintained during the clearing or removal of vegetation.

III. PROCEDURES:

A. General Standards for Vegetation Management:

Effectively managed right of way is an essential component of providing reliable service to BREA members; controlling costs; safeguarding BREA facilities from damage resulting from falling timber; and mitigating fire risk resulting from trees and vegetation coming into contact with energized lines. To achieve these outcomes, the BREA will endeavor to abide by the following general guidelines related to vegetation management within and around its established rights of way by:

1. Managing all rights of way in accordance with the most current edition of the National Electric Safety Code (NESC).

2. Removing if possible all trees growing in its rights of way (ROW) that can legally be removed and meet any of the following conditions:

a) Could make contact with overhead power lines, taking into consideration:

1. Anticipated growth within the maintenance cycle plus two years.

2. Wind gusts and snow loading.

b) Impede reasonable access necessary for maintenance of BREA facilities and/or equipment.

3. Removing all limbs growing into its right of way that meet any of the following conditions:

a) Could make contact with overhead power lines, taking into consideration:

1. Anticipated growth within the maintenance cycle plus two years.

2. Wind gusts and snow loading.

b) Are physically hanging over energized power lines, regardless of height.

c) Impede reasonable access necessary for maintenance of BREA facilities and/or equipment.

4. Cutting to a safe height or removing, at its own cost, all dead, structurally distressed, and critically diseased trees that are outside of established BREA rights of way but that could make contact with overhead power lines or other electrical facilities and/or equipment if they or their branches were to fall, providing:

a) BREA has the legal right to do so or obtains the consent of the property owner.

b) Their natural direction to fall is in the general direction of BREA facilities and/or equipment.

5. To the extent practicable, clearing or trimming all overhead distribution line rights-of-ways as needed.

B. Right of Way Management Planning:

The Association will develop, adopt, and follow a comprehensive right of way vegetation management plan which shall include:

1. Prioritizing the segments of power lines requiring periodic right of way management.

2. The types of vegetation growing within a line segment and the anticipated growth rate of that vegetation.

3. The methods of vegetation management to be utilized to control vegetation growing within identified line segments.

4. Methods of clearing that might be required and which may vary from segment to segment include trimming, mowing, spraying, etc.

5. The maximum and recommended interval of time between right of way clearing cycles per segment of line.

6. The estimated costs of performing the necessary vegetation management, which vegetation management will be done by a contractor selected through a competitive bid process that provides proposals that can be managed by BREA employees, or the BREA Utility Tree Coordinator with regard to the work to be performed.

C. Budgeting and Coordination of Work Prescribed by the Vegetation Management plan:

1. The annual budget recommended for vegetation management shall be based on the work designated by the right of way management plan for that year's cycle of work.

2. All work specified by the vegetation management plan and budgeted for the year should be completed within that year.

D. Performing Necessary Vegetation Management:

1. When performing vegetation management activities within and around rights of way, the Association will ensure that all work is performed in accordance with:

a) The approved practices established in the most current edition of ANSI, NESC and OSHA standards.

b) The guidelines established by BREA Bylaws, Policies, Procedures, and the provisions stated within the Vegetation Management Plan currently in effect.

c) Sound utility practices related to mitigating the hazards of vegetation coming into contact with energized lines.

2. When managing vegetation within BREA's rights of way, the BREA Utility Tree Coordinator will make a reasonable effort to notify landowners of required work prior to it being performed. BREA's desire to notify landowners of planned vegetation management within BREA's

rights of way shall in no way be construed as seeking permission. Rather, permission to manage vegetation within these rights of way will be established by the BREA Bylaws and the appropriate power line easement. The work shall be done at no cost to the landowner.

3. When managing vegetation outside of BREA's rights of way, landowner's written consent for the necessary work will be obtained prior to such work being performed. Once obtained, the work will be performed at no cost to the landowner provided that the work is required to comply with these Procedures.

4. If consent of the landowner is not obtained and the vegetation in question poses an imminent threat to BREA facilities, equipment and/or ability to provide electric service, the landowner will be provided with written notification stating the following:

   a) The nature and extent of the vegetation management work required, and the hazards posed by failing to permit such work to be performed.

   b) The landowner's potential legal liability to BREA and others associated with the identified hazards.

   c) The right of BREA, and others who may suffer damage or injury, to pursue legal remedies for such damage and/or injury in the event the identified vegetation causes damage to BREA's facilities and/or equipment, creates an outage, starts a fire or otherwise damages or injures others.

   d) The BREA's continued willingness to remove the hazardous vegetation, at no cost to the landowner, upon receipt of written consent.

4. The debris produced while managing vegetation shall be disposed of in the following manner, taking into consideration site aesthetics and fire risk:

   a) Chipping into truck or in place (live material only).

   b) Lopping and scattering where the chipper is not easily positioned near debris, when debris is dead material or is too large to be chipped.

   c) Any materials too large to chip, or impractical to lop and scatter, are left on site for landowner use.

5. When chemicals are used for vegetation management, the following additional guidelines will be followed:

   a) BREA will make reasonable efforts to notify the owners of any land where BREA plans on spraying chemicals for the purpose of vegetation management, and BREA will also notify the property owners with regard to the chemical(s) to be sprayed and any specific precautions BREA intends to employ related to the chemical in use.

   b) BREA will comply with all local, state and federal rules, regulations and guidelines pertaining to the application of such chemicals.

   c) Chemicals will be applied in accordance with the manufacturer's recommendations.

E. Land Owner Requests for Vegetation Removal Outside of BREA ROW:

BREA will remove vegetation that reasonably threatens BREA facilities and/or equipment, located outside its rights of way, at the request of a landowner. BREA will work with the landowner in scheduling the necessary work and will perform it at no cost to the landowner. BREA shall not perform this work for landowners, regardless of cost, if the vegetation to be removed does not threaten BREA's facilities and/or equipment, or its removal conflicts with the standards identified in these Procedures.

F. Land Owner Responsibilities:

Landowners have a responsibility to notify the Association of vegetation management activities they plan which could threaten BREA's facilities and/or equipment. In the event a landowner fails to notify the Association of such work and, as a consequence of that work, BREA's facilities and/or equipment are damaged, the Association will pursue legal financial restitution for damages incurred, including legal action if necessary.

G. Mitigation Activities for Narrow Rights-of-Way:

The Association will identify line segments prone to frequent right-of-way related disruptions of service. In those cases where the existing easements are narrower than currently required, or are difficult to patrol or maintain with a line truck, means of mitigating for future disruptions will be considered. In these cases, the Association will evaluate pursuing additional right of way, convert overhead lines to underground, or relocate the line along a more accessible route or any other reasonable approach. Those instances where the financial benefits of the proposed mitigation outweigh the actual costs of implementing it will be proposed to the General Manager for consideration. Approval of these projects will be made on a

case-by-case basis and will follow the guidance of other Board approved Policies related to the expenditure of funds.

IV. RESPONSIBILITY:

The Manager of Operations shall have overall responsibility for administration of this procedure. Day to day compliance with this procedure shall be delegated to BREA's Utility Tree Coordinator.

V. GENERAL POLICIES TO WHICH THIS PROCEDURE APPLIES:

This Procedure implements GENERAL POLICY No. 415.0 – VEGETATION MANAGEMENT

This Procedure supersedes any existing Procedure, or portions thereof, which may be in conflict herewith.

Approved by: Michael J. Bradshaw
General Manager/Executive Vice President

DATE ADOPTED: April 28, 2021
DATE EFFECTIVE: April 28, 2021

Benton REA
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GENERAL POLICY NO. 415.0

I SUBJECT: VEGETATION MANAGEMENT

II OBJECTIVE:

A. To provide guidelines for the Association for controlling vegetation in and near existing rights of way that may interrupt service or hinder restoration of electrical service to BREA members, and to mitigate fire risk.

B. To ensure reasonable service continuity is maintained during the clearing or removal of vegetation.

C. To ensure the safety of BREA employees, BREA contractors and the public during the clearing or removal of vegetation.

III POLICY:

A. The Association shall follow the provisions contained in the National Electrical Safety Code regarding tree trimming around overhead supply lines and vegetation around underground facilities.

B. Vegetation control methods used by BREA employees or BREA contractors shall follow accepted practices identified in the current ANSI Standards.

C. The Association or its agent shall attempt to notify members prior to entering or crossing their private property during scheduled vegetation control.

D. The Association or its agent will assist members with removal of vegetation hazards located outside of a BREA right of way where the vegetation poses a threat to primary power lines.

IV RESPONSIBILITY:

It shall be the responsibility of the General Manager to administer this policy.

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V **PROCEDURES ADOPTED BY THE BOARD TO IMPLEMENT THIS GENERAL POLICY:**

There are no procedures adopted by the Board of Trustees to implement General Policy 415.0.

This General Policy supersedes any existing General Policy, or portions thereof, which may be in conflict with the provisions of this General Policy.

APPROVED BY THE BOARD OF TRUSTEES

DATE ADOPTED: April 28, 2021
DATE EFFECTIVE: April 28, 2021