GWEC WILDFIRE MITIGATION PLAN

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BKI ENGINEERING SERVICES

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1 Introduction/Executive Summary

For Goldenwest Electric Cooperative, (GWEC), 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, GWEC is committed to taking all practical actions available to it to prevent the devastation that a wildfire could bring to the people and communities we serve. This wildfire mitigation plan lays out the steps we are taking to do so.

1.1 Purpose of the Plan

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

The Operations Manager is responsible for the implementation of the Plan. The WMP is a living document that will receive regular reassessment as projects and initiatives are completed. Primary accountability for plan implementation resides with the CEO.

1.2 Objectives of the WMP

The main objective is to implement an actionable plan to create increased reliability and safety while minimizing the likelihood that GWEC assets may be the origin or contributing factor in the ignition of a wildfire. This plan was developed to be consistent with current industry best management practices, will comply with current Montana State law, and National Electric Safety Code (NESC) regulations and guidelines. To help develop the Plan, GWEC compared emerging technologies that not only reduce the likelihood of a service interruption but also minimize the risk of ignition from the fault causing the outage.

The secondary objective is to annually measure the effectiveness of the standard operating procedures for wildfire mitigation. Where a particular action, program component or protocol proves unnecessary or ineffective, GWEC will assess whether modification or replacement is suitable.

1.3 Utility Profile and History

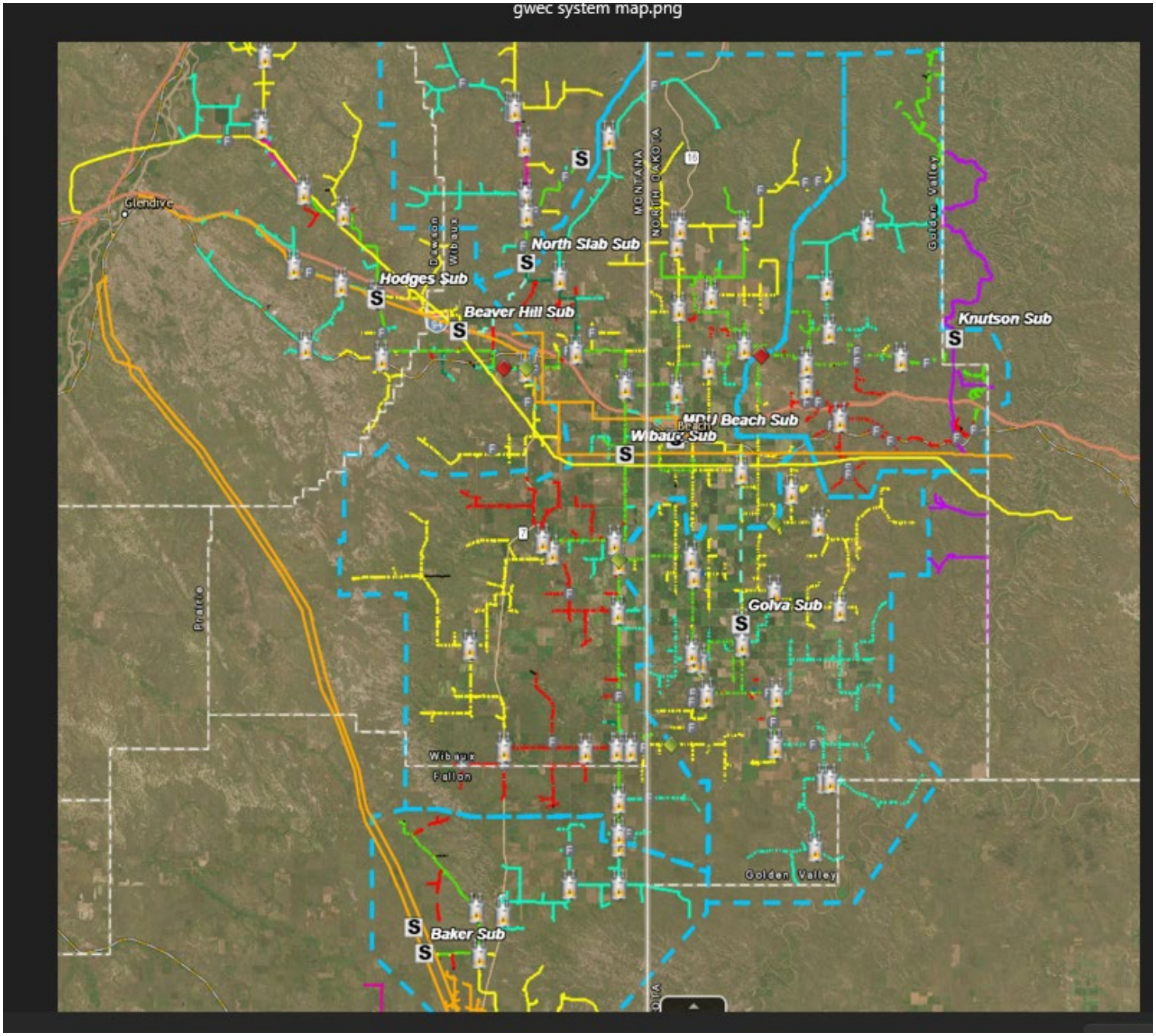
GWEC was incorporated in 1942. Headquarters are located in Wibaux, MT. Service territory is in Dawson, Fallon, and Wibaux counties in MT and Billings, Golden Valley, and Slope counties in ND. Currently serving just over 680 members with 1632 meters. GWEC is governed by a board of 5 directors elected by the membership.

1.4 The Service Area

GWEC's office and warehouse are located NE of Wibaux, MT at 15 Truck Route Road. The pole yard is located just north of the office on the South side of the highway. The service area it

serves is approximately 2500 square miles. Farming and ranching are prevalent throughout the area. Rolling hills cover most of the area with badlands along the rivers. Forest service land is located in the Northeast corner of the service territory in North Dakota. Average rainfall is 14" with temperatures ranging from -20 to 100 degrees.

Figure 1. Service Area



2 Overview of Utility's Fire Prevention Strategies

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

Table 1 summarizes GWEC's five mitigation components with associated programs and activities that support GWEC's ongoing commitment to wildfire prevention and mitigation.

Table 1. Mitigation Strategies/Activities

DESIGN AND CONSTRUCTION
Strategic undergrounding of distribution lines
Oil filled recloser to vacuum-type breaker change-out program
Covered jumpers and animal guards
Shorter span lengths and larger class poles for system hardening
Avian protection construction standards
Substation perimeter fencing for security and protection
INSPECTION AND MAINTENANCE
Infrared inspections of substation equipment
Unmanned Aerial Vehicle (UAV) T&D line inspections
Annual inspection of transmission lines
Wood pole intrusive inspection and testing
T&D vegetation right-of-way maintenance
Distribution system line patrols and detailed inspections
Increased removal rate of undesirable trees on right-of-way's
OPERATIONAL PRACTICES
Work procedures and Fire Hazard training for staff
Provide liaison to county offices of Disaster and Emergency services (DES)
Fire suppression equipment on all company vehicles

SITUATIONAL AWARENESS
Weather Monitoring in the service area
RESPONSE AND RECOVERY
Coordination with local Department of Emergency Services
Emergency Restoration Plan

3 Utility Asset Overview

Table 2 provides a high-level description of GWEC's T&D assets.

Table 2. Asset Overview

ASSET CLASSIFICATION	ASSET DESCRIPTION
Transmission Line Assets	Approximately 29 miles of conductor, transmission structures and switches at 60 kilovolts (kv)
Distribution Line Assets	Approximately 1,200 miles of overhead (OH) and 90 miles of underground (UG) conductor, cabling, transformers, voltage regulators, capacitors, switches, lined protective devices operating at or below 25kV.
Substation Assets	Major equipment such as power transformers, voltage regulators, protective devices, relays, open-air structures, switchgear, and control houses in 8 substation/switchyard facilities.

GWEC's office and warehouse are contiguous. They all lie just NE of the city limits of Wibaux, MT. Warehouses are locked at all times.

Basin Electric cooperative, based in Bismarck ND, supplies all of GWEC's energy. Western Area Power Administration, (WAPA), is the regional transmission operator. Basin's portfolio includes Coal fired generation, Natural gas generation, Wind generation, solar generation, and waste oil generation.

GWEC owns and operates 29 miles of transmission line feeding 3 of 8 substations. Five substations are fed from Montana Dakota Utilities, (MDU), 60 kV transmission line.

Overhead distribution lines exceed RUS minimum requirements for heavy loading areas. Span lengths for all new construction have been shortened, pole classes are class 2, 3, or 4. Crossarms are fiberglass which has a positive impact for raptors in our area. Covered jumper wire and bushing covers are installed on all new construction and added to existing structures during general maintenance. Class "A" and "B" connectors are used on all primary and secondary connections. Conductor size has increased providing increased breaking strength. Minimum clearance on roadways is 24' for all new construction. All poles are tested on a 10-year rotation. All employees are trained in hazard recognition at least once every 2 years.

Underground distribution lines are installed in accordance with RUS and NESC guidelines. Proper installation, red marking tape buried with cable, cable route marking posts, and appropriate signage are standards that are followed.

Great care and research are taken in the planning of all transmission, and overhead and underground distribution lines. This includes routing, clearances, past weather events, and anticipated growth.

GWEC currently operates 8 substations. Three of these substations have been built in the last 20 years. High side voltages include 60 kV, 69 kV, and 115 kV. Distribution voltages are 2.4/4.16 kV, 7.2/12.47 kV and 14.4/24.9 kV. Monthly inspections and maintenance are documented.

4 Risk Analysis and Risk Drivers

GWEC's service territory is similar to that of all of eastern Montana. Spring rains bring the pasture grass early. June through September are typically dry with little to no precipitation. Hot dry windy days are not out of the ordinary.

GWEC's historical data shows that small animals and birds getting into overhead equipment has been one of the leading causes of electrically caused fires in our area. To mitigate these occurrences, covered jumper wire and bushing covers have been utilized for a number of years. These are installed on all new construction and on existing structures when any maintenance is done. We have experienced a noticeable decrease in outages of this nature since they have been utilized.

Data also showed that poor or loose electrical connections are another major factor in fires started on the system. To mitigate these problems, GWEC researched different options for connections and made changes to how things were done. Class A, B, & C connectors were

used in different applications in the past. The change was made to use only class AA, A, & B connections going forward in all new construction. A concerted effort by the operations department is being made to go through every secondary service on the system and change out connections. This has had a very positive impact on these type of electrically caused fires.

A small percentage of fires have been caused by trees getting into the powerlines. GWEC increased the time and budget for tree trimming/ROW management quite a few years ago. We have also been allowed to take more problem trees down eliminating a number of problem areas. We encourage the public to let us know if they see problem trees or branches. We have had good success with this approach.

The majority of fires in our service territory are not caused by electrical problems, rather they are caused by farm and commercial activities. Equipment malfunction during haying and harvest season is one of the leading causes. Controlled burns getting out of control happen from time to time, and arson, are also causes we have seen. Fires started by any of the aforementioned have at times caught poles on fire.

Our volunteer fire departments along with the farmers and ranchers in our area are aware of this problem and do a good job of getting water around poles if they are able.

4.1 Fire Risk Drivers Related to Construction and Operations

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

- Equipment failure
- Foreign contact
- Vehicle impact
- Cross-phasing
- Age of assets
- Vandalism

4.2 Fire Risk Drivers Related to the Service Area

- Topography
- Accessibility
- Hot Dry Climate / High Winds
- Vegetation Types / Fuels
- Tree Mortality / Failure
- Lightning

4.3 Key Risk Impacts

Ignitions caused by the aforementioned risk drivers have many possible outcomes. The list below outlines some of the worst-case scenarios, the prevention of which is the impetus for the development of this WMP:

- Personal injuries or fatalities to the public, employees, and contractors
- Damage to public and/or private property
- Damage and loss of GWEC owned infrastructures and assets
- Impacts to reliability and operations
- Damage claims and litigation costs, as well as fines from governing bodies
- Damage to GWEC's reputation and loss of public confidence

4.4 Wildfire History and Outlook

A normal fire season in our service area typically starts around the first part of July and goes through September. This is our normal hot and dry season. Recent trends show a slowdown in grass fires and grain field fires. This can be attributed to farmers and ranchers becoming more aware and putting off work in the dryest conditions along with better firefighting equipment. The addition of more County grass fire rigs has also made a big difference. The individual that the grass fire rig is loaned out to is encouraged to drive it on a daily basis to the field so they have it when it's needed.

GWEC carries fire swatters and water cannons on all vehicles. Employees have learned to be aware of where they are driving and parking.

GWEC has replaced many of its oil-filled breakers with vacuum operated breakers. All of the electronic 3-phase units are equipped with electronic relays that are set appropriately and operate the same in hot or cold weather.

4.4.1 Wildland Urban Interface

The United States Forest Service (USFS) defines the wildland urban interface (WUI) as a place where humans and their development meet or intermix with wildland fuel. Communities that are within 0.5 miles of the zone are included. According to the USDA Forest Service, the land area considered WUI has grown by 67.4% in Montana from 1990 to 2010, with the number of homes increasing by 37.8%[1]. There are now over 308,567 homes in Montana located in the WUI[2].

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

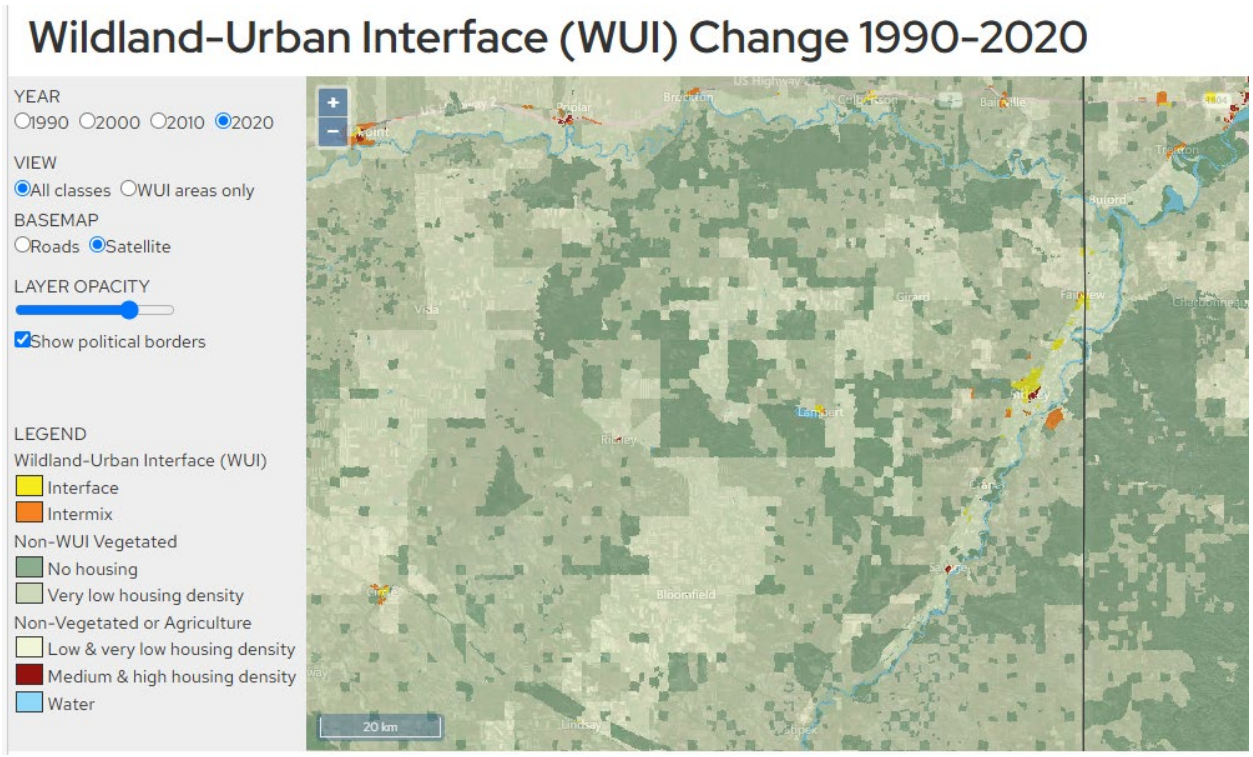
[1] https://www.nrs.fs.fed.us/data/wui/state_summary/

of dense wildland vegetation. Figure 2 illustrates the distribution of WUI areas in the service area.

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

- **WUI Intermix**: Areas with ≥16 houses per square mile and ≥50 percent cover of wildland vegetation
- **WUI Interface:** Areas with ≥16 houses per square mile and <50 percent cover of vegetation located <1.5 miles from an area ≥2 square miles in size that is ≥75 percent vegetated
- **Non- WUI Vegetated (no housing):** Areas with ≥50 percent cover of wildland vegetation and no houses (e.g., protected areas, steep slopes, mountain tops)
- **Non-WUI (very low housing density):** Areas with ≥50 percent cover of wildland vegetation and <16 houses per square mile (e.g., dispersed rural housing outside neighborhoods)

Figure 2. Wildland Urban Interface



4.5 Fire Threat Assessment Mapping

The Wildfire Hazard Potential (WHP) map 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:

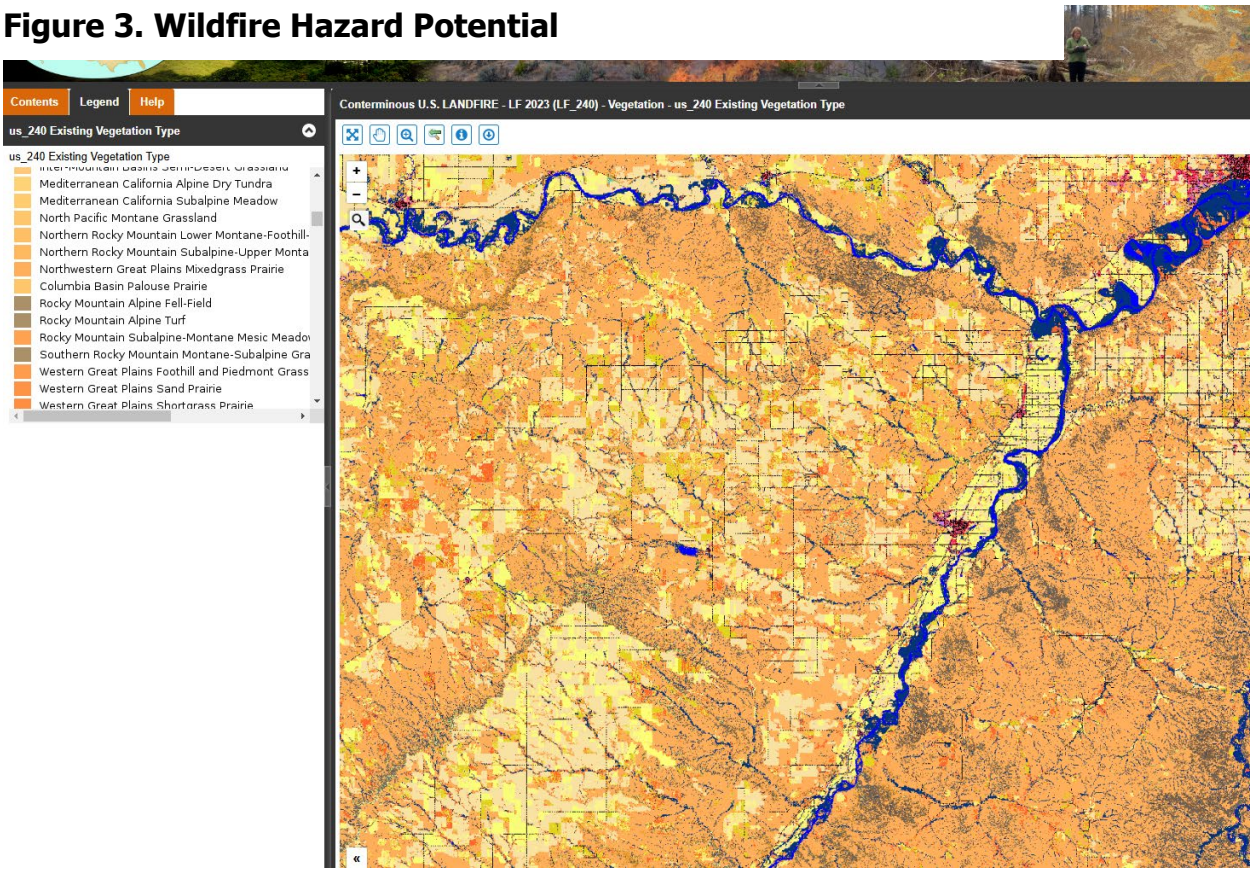
- Spatial vegetation and wildland fuels data from *LANDFIRE 2020* (version 1.4.0). The *LANDFIRE* Fire Behavior Fuel Models layer is a primary input to the FSim Burn Probability (BP) and Fire Intensity Level (FIL) datasets and forms the foundation for WHP.
- Spatial datasets of wildfire likelihood and 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 is a tool that 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 3. Wildfire Hazard Potential



landfire.gov/viewer/

5 Wildfire Prevention Strategy and Programs

This section will provide descriptions of the preventative strategies in use at GWEC to minimize the risk of GWEC assets causing wildfires. Some examples that are outlined below include:

- PSPS protocols
- Recloser operational practices
- Inspection programs, tracking, record keeping, etc.
- Pole testing
- Vegetation management
- Emerging wildfire mitigation technologies

5.1 Transmission and Distribution System Operational Practices

5.1.1 De-energization – Public Safety Power Shutoff

A Public Safety Power Shutoff (PSPS) preemptively de-energizes power lines during high wind events combined with hot and dry weather conditions. When considering de-energization, GWEC examines the impacts on fire response, water supply, public safety, and emergency communications.

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

- Potential loss of water supply to fight wildfires due to loss of production wells and pumping facilities.
- Negative impacts to emergency response and public safety due to disruptions to the internet and mobile phone service during periods of extended power outages.
- Loss of key community infrastructure and operational efficiency that occurs during power outages.
- Medical emergencies for members of the community requiring powered medical equipment or refrigerated medication. Additionally, the lack of air conditioning can negatively impact medically vulnerable populations.
- Negative impacts on medical facilities.
- Traffic congestion resulting from the public evacuation in de-energized areas can lengthen response times for emergency responders.
- Negative economic impacts from local businesses forced to close during an outage.
- The inability to open garage doors or motorized gates during a wildfire event can lead to injuries and fatalities.

The risks and potential consequences of initiating a PSPS are significant and extremely complex. Based on the above considerations, GWEC reserves the option of implementing a PSPS when conditions dictate. While GWEC believes the risks of implementing a PSPS far outweigh the chances of its electric overhead distribution system igniting a catastrophic wildfire, the PSPS provides a last resort tool and another mitigation option in a potential crisis.

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

5.1.2 Recloser Operational Practices

GWEC has the capability to set an alternate "one-shot" setting on the reclosers in its substations. The remaining reclosers in the field can also be set to "non-reclose". This setting has to be done manually onsite at each substation and recloser location.

The determination to set a recloser to "non-reclose" is made on a case-by-case basis by the operations department based on the best information it has available and on past history of the system. Dry conditions, wind speed, and pole age are some factors taken into consideration when making the determination.

5.1.3 Situational Awareness

Situational assessment is the process by which current operating conditions are determined. Situational Awareness is the understanding of the working environment, which creates a

foundation for successful decision making and the ability to predict how it might change due to various factors.

GWEC's Operations department relies on various resources to monitor evolving fire weather and climatological conditions that may lead to fire events. Sources for weather information include, but are not limited to the following:

- **USFS-Wildland Fire Assessment System (WFAS):** For immediate and short-term situational awareness, mapping tools from the USFS-WFAS help determine daily and short-term forecasted risk, with daily or weekly fire weather status maps produced as needed to assess PNW wildfire conditions. (https://www.wfas.net/index.php/fire-danger-rating-fire-potential--danger-32/fire-danger-subsets-fire-potential--danger-55)
- **The National Weather Service (NWS):** The NWS provides on-line predictive fire weather forecasting tools in the form of a current fire-weather outlook, 2-day, and a 3-8 day outlook. (https://www.spc.noaa.gov/products/fire_wx/)
- **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)

5.2 Infrastructure Inspections and Maintenance

Recognizing the hazards of equipment that operate high voltage lines, GWEC maintains a formal inspection and maintenance program for OH and UNG distribution, transmission, and substation equipment which plays an essential role in wildfire prevention. GWEC currently patrols its system regularly and is increasing the frequency of inspections in high-risk areas. Table 3 summarizes the inspection schedule for all assets, while the following sections outline inspection practices for the utility.

Table 3. Inspection Program Summary

ASSET CLASSIFICATION	INSPECTION TYPE	FREQUENCY
Transmission	Routine Safety Patrol Inspection	Annually
	Detailed Inspection (Visual from ground)	Annually
	Wood Pole Test and Treatment	Every 10 years
	UAV Inspections	As deemed necessary
Overhead Distribution	Routine Safety Patrol Inspection	Every 4 years
	Detailed Inspection (Visual from ground)	Every 8 years
	Wood Pole Test and Treatment	Every 10 years
Underground Distribution	Routine Safety Patrol Inspection	Every 4 years
	Detailed Inspection	Every 8 years
Substation	Routine Inspection	Monthly
	Detailed Inspection	Monthly
	Infrared Inspection	Annually

5.2.1 Definition of Inspection Levels

1. **Routine Safety Patrol Inspection:** A simple visual inspection of applicable utility equipment and structures designed to identify obvious structural problems and hazards. Patrol inspections may be carried out in the course of other company business. These are not necessarily documented unless problems are found. Any problems found are documented and turned into the Operations department.

2. **Detailed Inspection:** Individual pieces of equipment and structures are carefully examined visually and through use of routine diagnostic testing as appropriate. If practical and useful information can be gathered, equipment may be opened and the condition rated and recorded.

3. **Intrusive Pole Inspection:** Inspections involving the movement of soil, taking samples of the wood pole for analysis, and/or using more sophisticated diagnostic tools beyond visual inspections.

5.2.2 Routine Safety Patrol Inspections

GWEC conducts Hazard Mitigation and Recognition training for all staff annually. This training involves what types of hazards to look for at all times when traveling. This can include low hanging wire, excessively leaning poles, new construction in close proximity to electrical wires and equipment, or anything that does not look right.

Operations staff pays close attention to all lines when travelling GWEC's system. They make a point to travel different routes so as to see lines that would not be travelled normally. This includes taking the extra time needed to drive cross country lines that would otherwise not be looked at.

The staff understands the importance of recording possible problems and ensuring that the report is given to the Operations manager immediately.

The Operations department investigates all reports and assigns them to appropriate personnel to resolve based on the severity of the issue.

5.2.3 Detailed Inspections of Transmission and Distribution Lines

GWEC conducts a pole by pole inspection of all transmission lines annually. Each structure is documented using NISC's software program for line inspection. These records are stored in our Vault software system. Staff can see inspection results on the mapping system as they are done. Any issues found are reported to Operations Manager and scheduled for repair if needed based on his discretion.

GWEC strives to do a detailed pole by pole, or URD junction box to junction box or padmount transformer, inspection on the distribution system every 8 years. The same software used for

transmission lines is used for distribution lines. Any issues found are handled the same as for transmission lines.

These inspections are intended to identify NESC violations, any defects, or deterioration of facilities which must be corrected to maintain safe reliable service.

5.2.4 Wood Pole Testing and Treatment

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

A third-party contractor inspects and tests all poles on a cycle meeting the interval recommended in RUS Bulletin 1730B-121. Circuits are identified, mapped, and scheduled for inspection and testing using latest industry standards and best practices. Poles suspected of deficiencies are subjected to intrusive inspection to determine and identify problems such as rot, decay, or insect damage. All poles that are non-thru bore, as well as thru bore poles older than 10 years are subjected to intrusive inspection. Based on the results of the intrusive test, the pole may be changed out. This is at the operations staff discretion.

5.2.5 Substation Inspections

The Preventive Maintenance Plan provides for monthly inspections of GWEC's substations. Qualified personnel will use prudent care while performing inspections following all required safety rules to protect themselves, other workers, the general public, and the system's reliability.

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

5.2.6 Prioritization of Repairs

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

Inspection data (overhead & underground) will be prioritized and issued as follows:

> **Priority # 1 – Immediate hazard:** Conditions that may affect the integrity of the system or present a hazard to workers or the general public. These conditions will be

responded to **immediately** and appropriate action taken until the hazardous condition is remedied.

Priority # 2 – Non-emergency repair condition: Conditions that require maintenance that can be scheduled to maintain the integrity of the system. Priority #2 conditions will be prioritized by urgency and will be scheduled to have appropriate repairs made to correct the condition typically within a year. If the Priority Level 2 issue is located in a High Risk zone and poses a potential fire risk, correction of the deficiency will occur within 6 months.

Priority # 3 – Non-emergency repair condition: Conditions that do not present a situation that could jeopardize the safety of the system, line workers and the general public. Priority #3 conditions will be submitted by the inspector. The Operations department will schedule these typically within a 2-year timeframe.

5.3 Vegetation Management (VM)

GWEC currently utilizes their staff to inspect, schedule, and either trim or remove vegetation they deem to be in conflict with electrical lines and equipment. The majority of this work is done in the winter months.

Staff is trained to recognize potential problems, including vegetation, documents their findings, and turns them into the Operations department when found. The Operations department categorizes these based on severity and area. If any are found to present an immediate problem they are handled as a priority and taken care of as soon as possible.

GWEC inspects and trims vegetation system wide on a biennial basis. If possible, vegetation that can grow into or fall into overhead power lines are removed. GWEC works with landowners to educate them of the dangers of vegetation coming into contact with power lines. GWEC's practice is to trim so there is a minimum of 10' of clearance to power lines.

5.3.1 Vegetation to Conductor Clearance

GWEC has an operational and management responsibility and is required by State and Federal Agencies to maintain the right of way, under or around its power lines. GWEC strives to meet or exceed the minimum standards for conductor clearances from vegetation to provide safety for the public and utility workers, reasonable service continuity and fire prevention.

Vegetation management operations are scheduled to ensure all lines are cleared of vegetation hazards. This is accomplished using different approaches. One approach utilized is to systematically inspect the areas that historically are the problem areas. This includes residential areas and along rivers. GWEC typically concentrates on a specific area of the system each year. GWEC takes care of reported tree issues as soon as possible. This approach has worked well based on the very few instances where trees cause any problems on our system.

5.3.2 Vegetation Trimming Standards

GWEC's staff follows American National Standards Institute (ANSI) A300 concepts and utility directional pruning, which supports proper pruning/tree health while achieving and maximizing the pruning cycle. The VM program was developed with RUS, ANSI A300, ANSI C2, National Electrical Safety Code (NESC), and FAC 003-4 standards in mind.

Work performed to the above guidelines provides reasonable service continuity, public safety, and guards against wildfire damage caused by supply conductors. Consideration is given to the impact of pruning on power line reliability, individual tree condition, and tree aesthetics.

5.3.3 VM Trimming and Inspection Schedule

GWEC personnel perform ground-based inspections of tree conductor clearances and hazard tree identification for GWEC ROWs and easements on a regular basis. The majority of vegetation management work is done starting in the fall and continuing through spring. GWEC crews also address vegetation concerns in response to service calls or field observations. Proactive maintenance during routine operations and prompt action during emergency events maintain system reliability, a safe work environment, and reduces fire danger. Scheduled patrols ensure all lines are inspected for vegetation hazards and systematically trimmed. On-going, year-round field patrols identify targeted areas for vegetation pruning or removal and ensure compliance with state and federal regulatory requirements.

5.3.4 Hazard Trees

A subset of Danger Trees[3], A Hazard Tree is defined as any tree or portion of a tree that is dead, rotten, decayed, or diseased and which may fall into or onto the overhead lines or trees leaning toward transmission and distribution facilities. These trees are sometimes located beyond the easement or ROW. Any tree that is located outside of the ROW and is deemed a hazard tree will be removed or topped to make safe for conductors.

A hazard tree will have one or more of the following characteristics:

- Dead or dying - all dead or dying trees along, or outside the GWEC right-of-way may be removed depending on the height of tree and the direction of the lean.
- Leaning trees - trees that have such a lean toward the right-of-way that they cannot be trimmed without removing the tops and slanting the tree back. Removal depends on height and species of the tree and direction of the lean.

5.4 Fire Mitigation Construction

GWEC has been installing fiberglass crossarms as a standard for over 20 years.
Typical ruling span for distribution and transmission lines is 275'.
Pole classes have been increased on all new construction.

[3] As defined by ANSI 300 Part 7 standards

Replacing overhead distribution lines with underground where trees are an issue is done on a regular basis.
GWEC has replaced approximately 85% of its oil filled reclosers with electronic reclosers. These units provide much better high impedance fault detection.

5.4.1 Avian Protection Program

GWEC implemented an Avian protection program over 20 years ago. Bushing covers, covered jumper wires, fiberglass crossarms, and fuse cutout covers have had a positive impact.
Staff reviews the companies Avian Protection Plan yearly.

5.5 Emerging Technologies

GWEC is exploring new technologies and best management practices. These projects will serve to evaluate the effectiveness of emerging technologies while controlling unwarranted expenditures on unproven methods. GWEC may elect to integrate these technologies or practices into its ongoing maintenance programs based on the outcomes. These technologies include, but are not limited to thermal imaging cameras, electronic reclosers, and drone inspections.
Other new technologies are also being researched. For example, fire protective coatings for wood poles, satellite imagery for vegetation management, and UV, Lidar, and IR inspections.

6 Emergency Response

6.1 Preparedness and Response Planning

GWEC has an Emergency Restoration and Response plan in place. This is updated annually and reviewed with all staff.

6.1.1 Emergency Management Communication and Coordination

In response to active emergencies, GWEC coordinates and collaborates with the local Department of Emergency Services, (DES), and relevant state agencies as a peer partner. During such emergencies, a GWEC representative is in contact with the county DES to ensure effective communication and coordination.
GWEC's primary coordination point is Wibaux County DES, which in Wibaux County is administered by the Director of Emergency Services. GWEC's representative contacts the local DES and establishes themselves as the duty officer for coordination. The Operations Manager acts as the communications officer during an emergency.

6.1.2 Jurisdictional Structure

The majority of land ownership in GWEC's service territory is private. There is a small percentage of BLM and Montana State land.

6.1.3 Public Agency and Customer Communications for Outages

GWEC utilizes Security Response Services, (SRS), for after-hours, weekend, and holiday calls from members. SRS is also utilized for member outage notification for planned outages and may use this service for member notifications during longer term unplanned outages.
In the event of a major storm, we are able to communicate with local DES as needed. Facebook, and other social media platforms are other tools used to communicate with our members.

6.1.4 Community Outreach

GWEC offers safety resources on their website, including Call Before You Dig guidelines, tree planning recommendations, and electrical safety tips. The website also shares important updates and information through social media platforms, such as Facebook, Twitter, and Instagram, to keep the community informed. Additionally, GWEC distributes a monthly magazine to all members, emphasizing the importance of electrical safety.

6.2 Restoration of Service

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

6.2.1 Service Restoration Process

After a wide-spread outage, GWEC work crews take the following steps before restoring electrical service after a de-energization event. These measures are intended to protect the worker, members, the public, and the system's reliability.
There are many factors taken into account by the Operations department when deciding what approach to take in outage restoration. Weather conditions are considered. Known condition of line affected and past history with the section of line.
Normally crews will patrol affected lines and if possible, isolate the problem area and restore power to the areas not affected.
In the event of a major storm, crews will assess and document the damage. After the initial assessment, GWEC staff meet to plan the needed work. Rebuilding commences as soon as the affected areas become safe. Repair plans prioritize substations and transmission facilities, then distribution circuits serving the most critical infrastructure needs. While the goal is to reenergize all areas as soon as possible, emergency services, medical facilities, members with known medical conditions, and utilities receive first consideration when resources are limited.
Additional crew and equipment are dispatched as necessary. Periodic member and media updates of restoration status before full restoration are posted on social media platforms and

GWEC's website. After repairs are made, power is restored to homes and businesses as quickly as possible. Updates are given through various social media platforms.

7 Performance Metrics and Monitoring

7.1 Plan Accountability

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

- The Board of Directors makes policy decisions relative to the utility – they will be responsible for approving and adopting the Wildfire Mitigation Plan.
- The CEO directs management staff responsible for operations, customer service and finance.
- The Operations Manager supervises the Line Crew, etc.
- The Operations Manager is responsible for the overall execution of the WMP. Staff will be directed as to their roles and responsibilities in support of the plan.
- The Operations Manager is responsible for communicating with public safety, media outlets, public agencies, first responders, local Office of Emergency Management, and health agencies during an emergency.
- The Operations Department works with outside agencies in cases of major storm or wildfire emergency events.
- GWEC's Operations Manager will be responsible for monitoring and auditing the targets specified in the WMP to confirm that the objectives of the WMP are met, as well as the implementation of the plan in general.

7.2 Monitoring and Auditing of the WMP

The WMP will be reviewed annually for the purpose of updating the plan as needed to reflect knowledge gained in the preceding year and modified accordingly.

The Operations Manager will be responsible for ensuring that this WMP meets all public agency guidelines to mitigate the risk of its assets becoming the source or contributing factor of a wildfire. Staff responsible for assigned mitigation areas have the role of vetting current procedures and recommending changes or enhancements to build upon the strategies in the WMP. Either due to unforeseen circumstances, regulatory changes, emerging technologies or other rationales, deficiencies within the WMP will be sought out and reported to the Board of Directors.

The Operations Manager or their designee will be responsible for spearheading discussions on addressing any plan deficiencies and collaborating on solutions when updating the WMP. At any point in time when deficiencies are identified, the Supervisors or their delegates are responsible for making the appropriate policy adjustment proposals. GWEC staff are encouraged to bring any potential deficiencies to the attention of the Operations Department. The Operations Manager, along with the appropriate staff, will evaluate each reported deficiency, and if determined to be valid, shall record the deficiency for further action.

7.3 Performance Metrics

GWEC categorizes all outages, planned and unplanned, to help in determining the most common causes of unplanned outages. The decrease in "animal related" outages is noticeable over the last few years. The changes made to GWEC's construction standards is another indication that our plan is working.

7.4 Programmatic QA/QC processes

7.4.1 Transmission and Distribution System Inspection QC Process

GWEC staff conducts a thorough pole by pole inspection annually on its transmission lines and every eight years on its distribution lines. The Operations manager reviews the inspections, generates job orders for any problems found, and schedules the corrective actions needed on a case-by-case basis.

7.4.2 Vegetation Management QC Process

The operations department conducts random checks of all construction and maintenance work done, including tree trimming. GWEC's consultant engineer randomly chooses 10% of new work orders to thoroughly inspect annually.

GWEC is a RESAP, (Federated Insurance Company's "Rural Electric Safety Achievement Program"), participant. An important part of this program is an inspection/observation done by individuals from other cooperatives every three years. They inspect overhead and underground distribution equipment and pay special attention to ROW maintenance. In addition to this three-year inspection, GWEC conducts its own RESAP inspection in-house utilizing the company's safety committee.

A report of findings is presented to GWEC's board of directors, management, and staff. All problems noted in the inspections are prioritized and repaired on a scheduled basis. The Operations department is responsible for the scheduling.

7.5 Plan Approval Process

7.5.1 Board Presentation

This plan will be sent to each board member prior to a scheduled board meeting for them to read through and review. It will be a board meeting agenda item for them to comment on and approve if they choose to.

Appendix A: Plan and Mapping Disclaimers

WILDFIRE MITIGATION PLAN DISCLAIMER

The information provided in this report was developed by GWEC staff and is intended for GWEC's internal planning purposes only. GWEC does not warrant the accuracy, reliability, or timeliness of any information in this report, and assumes no liability for any errors, omissions, or inaccuracies in the information provided. GWEC shall not be held liable for losses caused by using this information. Portions of the data may not reflect current conditions. Any person or entity who relies on any information obtained from this report does so at their own risk. This report is presented solely for internal use AS-IS by GWEC staff. GWEC makes no representations or guarantees, expressed or implied, regarding the accuracy or completeness of the report.

WMP MAPPING DISCLAIMER

Maps in this report were created from multiple datasets from various, public, and private sector sources and may include utility Geographic Information System (GIS) data. The geographic information contained in the map(s) is not to be used as a "legal description" or for any purpose other than general planning and reference. Every effort has been made to ensure the accuracy of the map(s), but errors in source documents do occur and inherent mapping ambiguities are not shown.

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Appendix B: Code Citation

Rule 38.5.2101
Electric Utility Line and Facility Maintenance Minimum Standards

(1) Each public utility providing electric service subject to the jurisdiction of the commission shall, at the minimum, maintain its electric utility lines and facilities pursuant to the national electrical safety code as that code is identified in 69-4-201 , MCA, the effective edition of which is designated at ARM 38.5.1010.

(2) The edition of the code applicable at the time of maintenance shall be that in effect by statute or rule at the time of construction of the electric utility line or facility unless, without undue expense, the edition in effect by statute or rule at the time of maintenance can reasonably be complied with.