Raft River Rural Electric Cooperative Wildland Fire Protection Plan

OCTOBER 2022

PREPARED FOR

Raft River Rural Electric Cooperative

PREPARED BY

SWCA Environmental Consultants

RAFT RIVER RURAL ELECTRIC COOPERATIVE
WILDLAND FIRE PROTECTION PLAN

Prepared for

Raft River Rural Electric Cooperative
155 North Main
Malta, Idaho 83342
Attn: Chad Black

Prepared by

Victoria Amato, M.S., Arianna Porter, M.S.,
Anne Russell, B.S. and Breanna Plucinski, B.S.

SWCA Environmental Consultants
295 Interlocken Blvd Ste 300
Broomfield, Colorado 80021
(303) 487-1183
www.swca.com

SWCA Project No. 64125

October 2022

CONTENTS

Appendices

Figures

Tables

1 INTRODUCTION

Raft River Rural Electric Cooperative (RREC) is an electrical distribution cooperative that was formed on January 17, 1939. RREC serves areas in southern Idaho, northwestern Utah, and northeastern Nevada, supplying service to over 5,000 electric meters, with lines spanning 2,400 miles (Figure 1). Because of the rural nature of the cooperative, there are only 2 meters for every mile of line, presenting a unique set of challenges, both operationally and economically.

As a cooperative, RREC is owned by those served, so revenue is reported as margins that members own, which incentivizes the organization to be as efficient as possible, collecting only enough in rates to cover power costs and distribution expenses, with the goal of keeping rates as low as possible yet maintaining and building adequate infrastructure to provide reliable and affordable electrical service.

Table 1. RREC Service Area Statistics

County, State	Area	Miles of Transmission	Miles of Overhead Distribution	Miles of Underground Distribution	Number of Substations	Number of Members
Cassia County, ID	Approximately 1500 square miles	90 miles of 138 KV	950	90	11	2674
Minidoka County, ID	N/A	1 mile of 138 KV	0	0	0	0
Oneida County, ID	Approximately 100 square miles	0	45	2	0	68
Owyhee County, ID	Approximately 120 square miles	65 miles of 138 KV	50	2	1	167
Power County, ID	Approximately 50 square miles	5 miles of 138 KV	40	8	0	84
Twin Falls County, ID	N/A	0	1	0	0	0
Elko County, NV	Approximately 1700 square miles	9 miles of 69 KV	348	27	2	1893
Box Elder County, UT	Approximately 2,300 square miles	80 miles of 138-kV transmission	425	75	3	727

1.1 Organization of the Wildland Fire Protection Plan

The Plan includes the following sections:

Section 2: Overview of the Plan

Section 3: Risk Analysis

Section 4: Wildfire Prevention Strategies and Protocols

Section 5: Situational Awareness

Section 6: Communications

Section 7: Plan Implementation

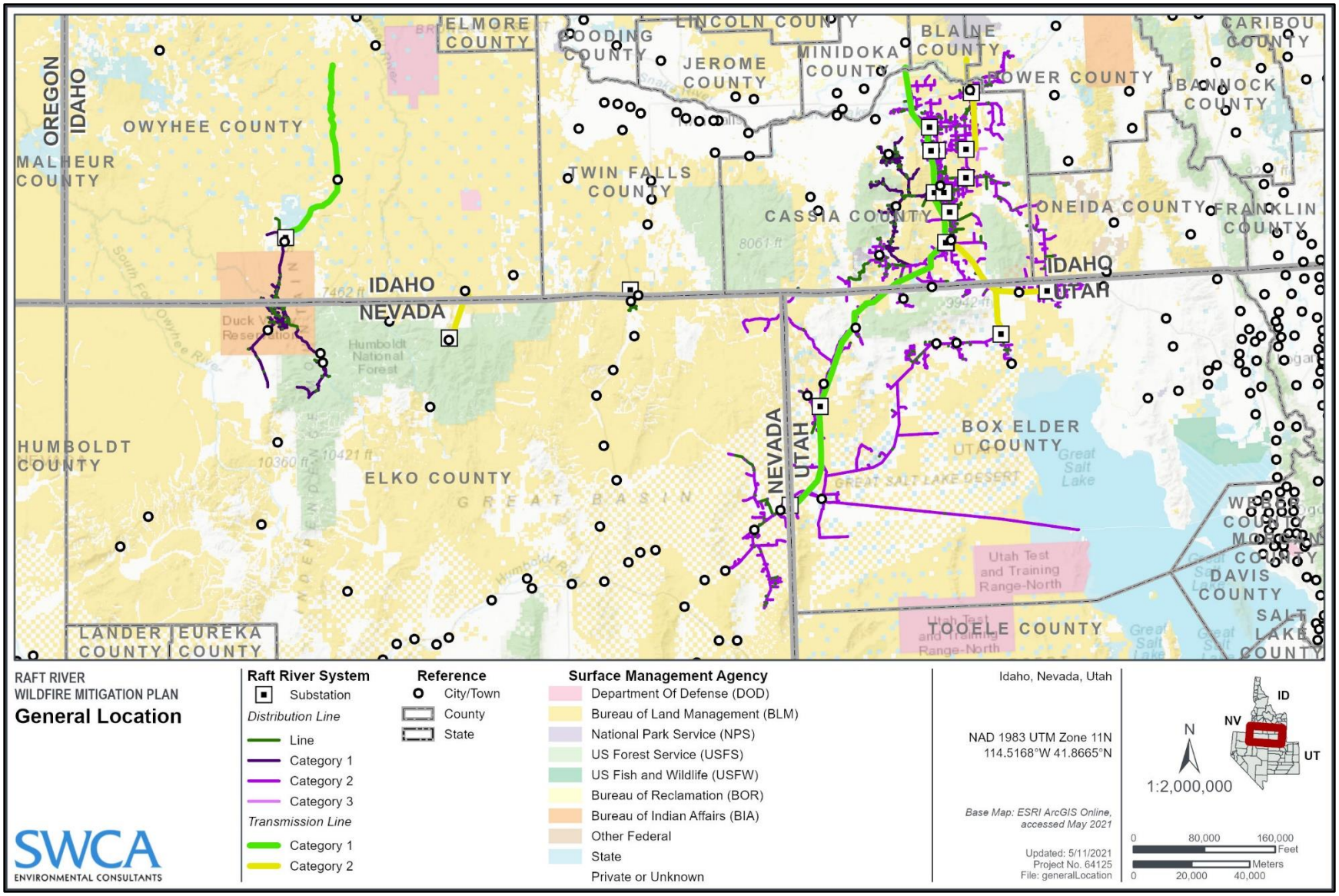


Figure 1. General project location, showing RREC's infrastructure, service area, and land ownership.

2 OVERVIEW OF THE PLAN

2.1 Policy Statement

2.1.1 Idaho

While there is no Idaho state direction requiring electric utility companies to develop a wildland fire protection plan or similar document, RREC is being proactive by developing this wildland fire protection plan (Plan) to incorporate the Idaho service territory.

2.1.2 Nevada

On May 22, 2019, the Governor approved Senate Bill No. 329, which revises provisions relating to the prevention of natural disasters. This bill requires that electric utility companies submit a natural disaster protection plan to the Public Utilities Commission of Nevada and provides guiding measures for other matters related to such a plan. The bill requires that electric utilities submit a natural disaster protection plan on or before June 1 of every third year. A natural disaster protection plan must contain procedures and protocols relating to the efforts of the electric utility to prevent or respond to a fire or other natural disaster.[1] Raft River will adhere to all provisions in the Senate Bill as outlined in Appendix D to this document. For the Nevada portions of this plan, RREC addresses wildfire risk and the risk of other natural disasters in the vicinity of its Nevada infrastructure. More detailed information on the state legislation is included in Appendix D.

2.1.3 Utah

Given recent increases in wildfire frequency and severity throughout Utah, on March 28, 2020, the Governor signed House Bill 66, *Wildland Fire Planning and Cost Recovery*, a law that grants the Public Service Commission rulemaking authority to enact rules establishing procedures for the review and approval of wildland fire protection plans. The law requires qualified utility and electric cooperatives to prepare and submit for approval a wildland fire protection plan in accordance with the requirements outlined in the bill.[2] More detailed information regarding the state legislation is included in Appendix E.

2.2 Purpose of the Wildland Fire Protection Plan

This Plan describes the range of activities that RREC is taking or considering to prevent, mitigate, and respond to the threat of powerline-ignited wildfire, including the protocols and procedures that RREC would undertake, as well as industry best practices. This Plan aligns directly with the Raft River Emergency Response Plan, developed by RREC in 2019 as well as other internal planning and procedures that guide daily operations for the Cooperative.

The Plan complies with the requirements outlined under Nevada Senate Bill No. 329 and Utah House Bill 66 (Appendices D and E, respectively). The Utah portion of this Plan was originally prepared in June 2020, and the Nevada and Idaho portions of this Plan were prepared in spring and summer 2021. The Plan will be reviewed every 3 years thereafter. The final plan has been reviewed by all pertinent agencies. The Plan was duly adopted by the RREC Board of Directors on October 26, 2022.

[1] Senate Bill 329: https://www.leg.state.nv.us/Session/80th2019/Bills/SB/SB329.pdf

[2] House Bill 66: https://le.utah.gov/~2020/bills/static/HB0066.html

The Plan has been written to inform the future development of an Operating Agreement for RREC that encompasses vegetation management and operations and maintenance direction on federal right-of-way (ROW). The planned development of the RREC Agreement is in response to new directives issued by the U.S. Department of Agriculture and U.S. Department of Interior for implementing Section 512 of the Federal Land Policy and Management Act (FLPMA). Section 512 and its implementing regulations govern the development, review, and approval of proposed operating plans and agreements for vegetation management, inspection, and operation and maintenance of electric transmission and distribution line facilities (powerline facilities) on National Forest System (NFS) and Bureau of Reclamation land. Section 512 operating plans and agreements apply inside the linear ROW for powerline facilities and on NFS and Bureau of Land Management (BLM) land adjacent to either side of the ROW as provided for in the directive (USDA 2020).

2.2.1 Objectives of the Wildland Fire Protection Plan

"Raft River Rural Electric Cooperative, Inc.'s objective is to take a proactive approach to safeguard against an emergency event that may significantly impact the customers we serve. This would include the training of all personnel to aid in the successful planning for, and response to, such an event.

The focus would first be to ensure safety to all employees and the public, then to quickly and accurately assess damages caused by the emergency, and finally to restore service as safely, quickly and efficiently as possible." (RREC Emergency Response Plan, December 2019, page 3)

RREC's overarching goal is to provide safe, reliable, and economic electric service to its members. In order to meet this goal, RREC routinely constructs, operates, and maintains its electrical lines and equipment in a manner that minimizes the risk of catastrophic wildfire posed by its electrical lines and equipment. The following outlines the objectives for wildfire mitigation identified in this document.

2.2.1.1 MINIMIZING SOURCES OF IGNITION

The goal of this Plan is to assess and minimize the probability that the RREC transmission and distribution system may contribute to or be the origin of a wildfire ignition. In addition, the Plan identifies measures to be taken to protect the system from wildfire damage to secure service for RREC members.

2.2.1.2 RESILIENCY OF THE ELECTRIC SYSTEM

An additional goal of this Plan is to ensure long-term resilience of the RREC electric grid. Through implementing this Plan, RREC will be able to assess industry best practices and technologies that are designed to be implemented to reduce the potential for a service interruption and improve and facilitate restoration of service.

2.2.1.3 ADHERENCE TO REGULATIONS

This Plan has been developed in response to a series of new regulations for wildfire mitigation and wildfire resilience at the state levels. RREC is committed to adequately meet responsibilities to all regulatory agencies.

2.3 Wildfire Prevention Strategies and Protocols

This Plan details a number of wildfire prevention strategies and protocols that are designed to prevent and/or mitigate the threat of wildfire to system infrastructure and to communities who depend on RREC service. These are described in more detail in Section 4.

- **Vegetation Management** – Measures to control vegetation near overhead transmission lines and clearance specifications, as well as hazardous fuels information to reduce potential wildfire spread.
- **Enhanced Inspections** – Assessment and diagnostic activities and mitigating actions. Inspections would focus on ensuring all infrastructure is in working condition and that vegetation clearance specifications are maintained.
- **Situation Awareness** – Methods to improve system awareness and environmental conditions.
- **Operational Practices** – Mitigating actions that are taken on a day-to-day basis to reduce wildfire risks. These actions prepare RREC for high-risk periods, associated with heavy winds and dry conditions.
- **System Hardening** – Technical and system upgrades aimed at reducing potential contact between infrastructure and fuel sources and making the system more resilient to wildfire and other natural disasters.
- **Procedures for De-energization and Reclosing** – Conditions under which lines may be de-energized to reduce wildfire risk or protect people and/or equipment during a wildfire incident, and the conditions for restoring service after the risk has abated.
- **Wildfire Response and Recovery** – Procedures for wildfire response in order to formalize protocols in the event of an ignition.
- **Public Safety and Notification** – Measures for engaging the community in identifying and reducing wildfire risk. Includes public warnings and notifications in the interest of public safety.

2.4 Identifying Unnecessary or Ineffective Actions

This Plan should be revised every 3 years. As part of the revision process, RREC will monitor the effectiveness of the wildfire mitigation strategies within this document to assess the merits of the modifications and to implement adaptive management to improve future results. During the annual review process, RREC should also update mitigation strategies through review of industry best practices.

2.5 Existing Wildfire Planning Efforts within the Service Area

2.5.1 Internal

In the spring and summer of 2020, RREC developed a wildland fire protection plan in response to Utah House Bill 66, that outlines wildfire risk and wildfire mitigation protocols across the Utah service territory. This Plan is a revision of that wildland fire protection plan to incorporate the entire service territory of RREC, to include the Idaho and Nevada service territories.

In 2019, RREC developed an Emergency Response and Disaster Recovery Plan (ERP) to meet Rural Utilities Services (RUS) Rules and Regulations (7 Code of Federal Regulations [CFR] 1730), and Department of Homeland Security requirements. The objectives of the ERP are the following:

- Plan for natural and human-made emergencies that may have an impact on the electrical grid, such as fires, storms, earthquakes, or any other disturbances.

- Respond rapidly and effectively to protect the public and to restore utility service following such emergencies.
- Help to alleviate hardships caused by the emergencies.
- Assist communities in returning to normal activity.

The ERP outlines roles and responsibilities during an emergency, emergency restoration and disaster recovery guidelines, and emergency contact information across all three states. This Plan builds upon and aligns with the ERP to provide more specific guidance for wildfire protection and mitigation and response to wildfire and other natural disasters (in Nevada).

Additional relevant RREC plans, procedures, and protocols are incorporated by reference in this Plan.

2.5.2 External

The Plan is designed to align with wildfire mitigation goals identified in other existing land management plans already in place in the service area. The service area covers Cassia County, Oneida County, Owyhee County, and Power County, Idaho; Elko County, Nevada; and Box Elder County, Utah. While small portions of RREC infrastructure are located in Twin Falls, Blaine, and Minidoka Counties, Idaho, these areas are marginal and wildfire planning efforts in these counties are not described below.

Within the RREC service area are numerous communities at risk from wildfire, which are referenced in both the Utah Department of Natural Resources (DNR) Utah Wildfire Risk Assessment Portal (UWRAP)[3] and the Nevada Natural Resources and Fire Information Portal (NRFIP). Idaho does not currently have a similar resource to these risk assessment portals, but Communities at Risk from wildfire in Idaho can be found in spatial format through the U.S. Geological Survey.[4] All of these communities at risk may have specific wildfire mitigation measures proposed under municipal and county planning documents.

2.5.2.1 COUNTY LAND

2.5.2.1.1 Idaho

Following the 2000 record-breaking wildfire season, Congress approved funds for the National Fire Plan to help local communities implement strategies to reduce and/or prevent the effects of wildland fires. In 2004, the State of Idaho adopted a Statewide Implementation Strategy for the National Fire Plan. The state took a collaborative approach between local, state/regional, tribal, and national levels of response. Each county requested to write their own wildland fire mitigation plan including a wildland-urban interface (WUI) risk assessment, mitigation strategies, processes to monitor and maintain the plan, and signatures from the involved officials. For each county in Idaho, the county-specific Wildland Fire Interagency Group prepared a WUI Wildland Fire Mitigation Plan.

The RREC Idaho service territory is located primarily in four counties in Idaho: Cassia, Owyhee, Oneida, and Power. Wildfire planning efforts in those counties are described below.

Cassia County, Idaho

The population of Cassia County was estimated at 24,030 people as of 2019 (U.S. Census Bureau 2019). The majority of the population lives in rural areas, including Burley, which houses 44% of residents in the

[3] Utah DNR Wildfire Risk Assessment Portal: https://wildfirerisk.utah.gov/

[4] https://www.sciencebase.gov/catalog/item/4fc6482ce4b0f02c1d6a7fa8

county. Most residents practice some form of agriculture. Cassia County completed its Wildland Fire Hazard Mitigation Plan in August of 2004 (North Wind 2004a). The purpose of this plan was to identify and reduce wildfire risks, enhance fire suppression and response, encourage fire-adapted ecosystems, and create a plan in accordance with the Idaho Statewide Implementation Strategy for the National Fire Plan (North Wind 2004a). This plan includes a general overview of the county, existing conditions and resources, and a mitigation plan for all seven fire protection districts within the county. Recommended mitigation strategies include adding fuel breaks, developing and maintaining mowed ROWs, and improving communication systems (North Wind 2004a).

Owyhee County, Idaho

As of 2019, the population of Owyhee County was estimated at 11,823 people (U.S. Census Bureau 2019). The county incorporates three communities: Grand View, Marsing, and Homedale. It is predominantly a rural area, with nearly 30% of the population working in the agricultural sector, specifically in cattle dairies and feedlots. Much of the land in the county is federally owned. Wildfires that affect private land usually start on federal land. These fires can also have a large impact on the county's economy through impacts to permitted grazing and ranching operations on federal land.

The WUI Wildfire Mitigation Plan for Owyhee County was finalized in March of 2005 (Northwest Management 2005). The plan was created to provide a guideline for protecting citizens, infrastructure, and ecosystems from the threat of wildland fire. Subjects addressed within the plan include vegetation and climate profiles, wildfire hazard profiles, fire behaviors models, communities at risk, firefighting capabilities, mitigation recommendations, issues faced, and treatment recommendations (Northwest Management 2005). Goals outlined in this plan include establishing mitigation priorities and strategies, prioritizing protection, lessening the area of burned land, and educating communities. Mitigation activities recommended for Owyhee County include livestock grazing, fuels reduction projects, watershed research, public education, and fire personnel training (Northwest Management 2005).

In 2018, the Owyhee County Multi-Jurisdictional Hazard Mitigation Plan was updated. The purpose of this plan is to identify hazards that may impact the county and provide both short- and long-term actions that reduce risk and loss associated with said disasters (Owyhee County 2018). The plan provides a county profile, risk assessment, and mitigation strategy goals and actions. Wildfire was ranked as the highest risk for Owyhee County. Mitigation actions recommended in regard to wildfire include developing a formal WUI advisory committee, planning and implementing hazardous fuels reduction projects and community defensible space programs, and utilizing controlled burns (Owyhee County 2018).

Oneida County, Idaho

In 2019, the population of Oneida County was estimated at 4,531 people (U.S. Census Bureau 2019). Approximately 52% of the county population resides in Malad City, while the remaining 48% reside in other rural communities.

The Oneida County Wildland Fire Hazard Mitigation Plan was completed in September of 2004. The purpose of this plan is to identify and reduce wildfire risks, enhance fire suppression and response, encourage fire-adapted ecosystems, and create a plan in accordance with the Idaho Statewide Implementation Strategy for the National Fire Plan (North Wind 2004b). This plan includes a general overview of the county, existing conditions and resources, and mitigation recommendations for Oneida County as a whole and the Oneida Fire District. Recommended mitigation strategies include continuing public education, adding fuel breaks, developing mutual aid agreements, and improving communication systems (North Wind 2004b).

Power County, Idaho

There were an estimated 7,681 people living in Power County in 2019 (U.S. Census Bureau 2019). Approximately 55% of the population lives in American Falls, while the remainder lives in other rural communities. The Power County Wildland Fire Mitigation Plan was prepared in February of 2004 (Dynamac Corporation 2004). This plan was created to prioritize protection of life, property, resources, and values. The plan includes a county profile, hazard identification, location, and risk, as well as mitigation goals, strategy, and implementation (Dynamac Corporation 2004). Mitigation goals listed include increasing dispatch communication capabilities, increasing fire district resources, reducing fuels buildup, creating defensible space, encouraging community education and involvement, and applying fuels treatment (Dynamac Corporation 2004).

Power County also updated their Comprehensive Plan in 2018. This plan acts as a guide to aid the County in making decisions and maintaining Power County's natural amenities (Power County 2018). Goals specific to wildfire include decreasing development within areas at high risk to wildfire, protecting water resources and ensuring their availability, and maintaining clean air (Power County 2018).

2.5.2.1.2 Nevada

In 2005, the Nevada Fire Safe Council completed the Nevada Community Wildfire Risk/Hazard Assessment Project in all Nevada counties (Resource Concepts Inc. [RCI] 2020). This led to the completion of 239 risk and hazard assessments for at-risk communities. The purpose of this project was to identify risks and hazards within Nevada communities and, in turn, provide hazard reduction and land management recommendations specific to each community (RCI 2005).

Elko County, Nevada

The estimated population of Elko County is 52,778 people as of 2019 (U.S. Census Bureau 2019). The majority of this population lives in rural communities.

In 2005, the Nevada Community Wildfire Risk/Hazard Assessment Project for Elko County was completed (RCI 2005). Within Elko County, three communities were listed as "extreme hazard" and 13 communities were listed as "high hazard" with regard to wildfire risk. General recommendations to mitigate wildfire risk included reduction of flammable vegetation, increased community awareness and education, and fire suppression agency coordination. Recommendations specific to utilities included guidelines for clearing vegetation near utility poles and power stations, maintaining vegetation clearance within utility corridors, and removal of trees beneath powerlines (RCI 2005).

In May 2008, the Landscape-Scale Wildland Fire Risk/Hazard/Value Assessment was completed for Elko County. This plan was created as a companion document to the above-mentioned Nevada Community Wildfire Risk/Hazard Assessment Project. Both documents are to be used to aid priorities and implement fuels reduction projects in Elko County. The 2008 plan includes a landscape-scale wildland fire risk/hazard/value assessment for the entire county to assess the threat of wildfire to property, life, and resources on any land that was not previously accounted for during the 2005 effort. There is no mention of electric utilities in this plan. General mitigation goals are for firefighter and public safety, hazardous fuel reduction, risk reduction of wildland fire on isolated areas adjacent to federal land, restoration of healthy ecosystems, coordination of efforts to acquire funding, and protection of economies and infrastructure. Treatment options are detailed in the plan to accomplish these goals (Wildland Fire Associates 2007).

In 2014, Elko County developed their Multi-Jurisdictional Hazard Mitigation Plan with an overarching goal of creating a cohesive document to discuss hazards of the county and streamline the administrative process if a disaster occurs (Elko County 2014). This plan defines valuable assets of the county, defines potential natural disasters within the area, discusses how to prepare for natural hazards, and discusses how to prevent or lessen the impacts of hazards with mitigation strategies (Elko County 2014).

In 2019, the Elko County Office of Emergency Management completed an Emergency Operations Plan. This plan establishes roles and responsibilities during incidents, emergencies, and disasters to reduce the consequences of emergencies and improve resiliency in the county. In addition to establishing roles and responsibilities, the plan identifies resources for an emergency and steps to address concerns during response and recovery (Elko County Office of Emergency Management 2019).

2.5.2.1.3 Utah

Box Elder County, Utah

It is estimated that Box Elder County has a population of approximately 9,429 people as of 2017, the majority of whom live in cities and towns (Utah DNR 2019).

In 2019, Box Elder County developed a County Wildfire Preparedness Plan to empower local governments and citizens to enhance community safety and resilience to wildfire (Box Elder County 2019). Utilities are identified as a protected value that is at risk to wildfires. More generally, the plan assesses past efforts and future goals related to increased community wildfire protection. In the past, outreach and education regarding wildfire issues, along with first responder trainings and fuel reduction activities, have been strong. County goals include continued outreach and first responder trainings and increased firebreak maintenance and fuel reduction activities (Box Elder County 2019).

The small community of Grouse Creek is in the northwest corner of Box Elder County and has, as of 2016, approximately 120 residents. In 2016, Grouse Creek developed a community wildfire protection plan (CWPP) that identifies, among others, these priority projects: creation and maintenance of a fuel break around Grouse Greek, fuels reduction within the community and on adjacent public land, improved emergency communications systems, and public outreach and education (Grouse Creek Community 2016). The Box Elder County and Grouse Creek CWPPs are not available online. However, the 2007 Northern Utah Regional Wildfire Protection Plan is available online and covers Box Elder County, along with Cache, Davis, Morgan, Rich, Salt Lake, Summit, Tooele, Utah, Wasatch, and Weber Counties.

2.5.3 County-Scale Community Fire Planning

Table 2 outlines the CWPPs in the RREC service area and their estimated timelines for updates. It is recommended that RREC participates in these plan updates as appropriate. These processes will aid in ensuring that RREC's wildfire planning efforts are aligned with external wildfire mitigation efforts in their service area.

Table 2. Community Wildfire Protection Plans

Plan Name	Planning Area	Renewal Timeline	URL
Cassia County Wildland Fire Hazard Mitigation Plan	Cassia County, Idaho	Past due (2009)	https://scholarsbank.uoregon.edu/xmlui/bitstream/handle/1794/17676/ID_031_Cassia_2004.pdf?sequence=1&isAllowed=y

Plan Name	Planning Area	Renewal Timeline	URL
Oneida County Wildland Fire Hazard Mitigation Plan	Oneida County, Idaho	Past due (2009)	https://scholarsbank.uoregon.edu/xmlui/bitstream/handle/1794/17702/ID_071_Oneida_2004.pdf?sequence=1&isAllowed=y
Owyhee County WUI Wildfire Mitigation Plan	Owyhee County, Idaho	Past due (2010)	https://scholarsbank.uoregon.edu/xmlui/bitstream/handle/1794/17703/ID_073_Owyhee_2005.pdf?sequence=1&isAllowed=y
Power County Wildland Fire Mitigation Plan	Power County, Idaho	Past due (2009)	Not publicly available
Box Elder County Community Wildfire Protection Plan	Box Elder County, Nevada	Due in 2024	Not publicly available
Nevada Community Wildfire Risk/Hazard Assessment Project: Elko County	Elko County, Nevada	Past due (2010)	https://www.rci-nv.com/reports/elko/
Landscape-Scale Wildland Fire Risk/Hazard/Value Assessment: Elko County	Elko County, Nevada	Past due (2013)	http://forestry.nv.gov/wp-content/uploads/2013/12/Elko-Assessment-Final.pdf
Northern Utah Regional Wildfire Protection Plan	Box Elder, Cache, Davis, Morgan, Rich, Salt Lake, Summit, Tooele, Utah, Wasatch, and Weber Counties, Utah	Past due (2012)	https://digitallibrary.utah.gov/awweb/awarchive?item=31610
Grouse Creek Community Wildfire Protection Plan	Grouse Creek, Utah	Due in 2021	Not publicly available

2.5.4 State Land

2.5.4.1 IDAHO

In 2016, the Idaho Fire Chiefs Association revised their Idaho Fire Service Resource Response Plan. This plan was created for state and local agencies as an organized resource for mobilization, deployment, and management of fire and fire response resources. The plan outlines organizational structure and responsibilities, deployment of resources, documentation, and logistical support (Idaho Fire Chiefs Association 2016).

In 2017, the Idaho Office of Emergency Management published the Idaho Emergency Operations Plan. This plan was developed to organize disaster response by outlining disaster response protocols, identifying roles and responsibilities, and describing mitigation resources available (Idaho Office of Emergency Management 2017). Firefighting response for fires on state land that have exceeded the capacity of local response is outlined in the Emergency Support Function #4 Annex within the plan (Idaho Office of Emergency Management 2017).

In 2020, the Idaho Department of Lands created the Idaho Forest Action Plan (FAP). The FAP was divided into two sections. The first section, the FAP Resource Assessment, takes inventory and provides analysis of Idaho forests while determining areas of priority for treatment. The second section, the FAP Resource Strategy, uses the Resource Assessment findings to outline strategies that restore, enhance, and protect forest resources (Idaho Department of Lands 2020). The Resource Assessment addresses various forest threats such as insect infestations, diseases, fire risk, and climate change. The Resource Strategy couples knowledge of the previously mentioned forest threats with priority areas to create goals and strategies specific to Idaho forests. A few of the goals listed include ensuring Idaho forests are resilient to climactic changes, prioritizing care for forests that provide high ecosystem benefit, and ensuring the forests are more resilient to human activity (Idaho Department of Lands 2020).

In 2020, the Idaho Office of Emergency Management updated its 2018 State Hazard Mitigation Plan. The plan used 47 hazard mitigation plans from counties and/or tribes to form one cohesive document for the state. The plan identifies threats and hazards imposed on the state, analyzes such hazards, identifies areas of potential loss and vulnerability, and recommends strategies to mitigate such impacts (Idaho Office of Emergency Management 2020). Reducing fuel loads, increasing awareness of the physical and financial dangers of wildfires, and improving land planning are some of the mitigation strategies recommended in the State Hazard Mitigation Plan (Idaho Office of Emergency Management 2020).

2.5.4.2 NEVADA

In 2018, the Nevada State Comprehensive Emergency Management Plan was published with the purpose of organizing disaster response by outlining disaster response protocols and operations, identifying roles and responsibilities, and describing mitigation resources available (Nevada Department of Public Safety 2018a). The firefighting response for fires on state lands that have exceeded capacity of local response is outlined in Annex A under Emergency Support Function #4 (Nevada Department of Public Safety 2018a).

In 2018, the Nevada Department of Public Safety released the latest Enhanced Hazard Mitigation Plan for the state. The plan provides a state profile, a risk and vulnerability assessment, analysis of potential losses, and a mitigation strategy accompanied by mitigation goals (Nevada Department of Public Safety 2018b). One of the five main mitigation goals is to reduce the possibility of damage and loss due to wildfire, as Nevada is ranked as being at high risk for wildfire by this plan. Mitigation strategies recommended with regard to wildfire include focusing on fuel projects in communities with high fire risk, coordinating collaborative mutual aid agreements, and completing fire damage reclamation reports (Nevada Department of Public Safety 2018b).

In 2020, the Nevada Department of Public Safety published the Nevada Utility Vulnerability Assessment and Emergency Response Plan Guide. This guide was created for the purpose of providing potential first responder and utility collaboration on disaster response via planning efforts (Nevada Department of Public Safety 2020). This plan is not an in-depth solution to risk but an outline of utility requirements mandated by Nevada Revised Statutes 239C.250. The plan also provides templates and instructions for various utility requirements such as providing a vulnerability assessment (Nevada Department of Public Safety 2020).

In 2020, the Nevada Division of Forestry released a draft of their Nevada Forest, Range, and Watershed Action Plan. The purpose of this plan is to educate the public, provide information for various planning efforts, aid in cooperative agreements, direct resource investments, and to orient forest management efforts to align with government agencies (Nevada Division of Forestry 2020). Furthermore, the plan summarizes Nevada forest resources, a forest health assessment, key threats and management strategies, priority landscapes, and future goals. Mitigation strategies recommended for priority landscapes threatened by fire include increasing agency use of prescribed burns, participation in and implementation of the National Cohesive Strategy, public education and outreach, and establishment of an interagency wildland fire communications system (Nevada Division of Forestry 2020).

2.5.4.3 UTAH

In 2013, Utah released the Catastrophic Wildfire Reduction Strategy (Utah Department of Agriculture and Food (UDAF) 2013). The goal of this strategic plan was not only to reduce the risk of wildfires but also to recognize that fire plays a vital role in ecosystem health. Therefore, the plan aims to bring forests back to their original state of a healthy ecosystem that benefits from fires rather than turning catastrophic (UDAF 2013). The plan was founded on an interagency collaborative approach via the Catastrophic Wildfire

Reduction Steering Committee and six regional working groups. In addition, regionally appointed technical committees are available to consult on specific issues such as policy impediments, local firefighting resources, and education (UDAF 2013).

In 2015, the Bear River Region developed a pre-disaster mitigation plan to identify hazards and solutions to reduce hazard risk to communities. Plan goals include improved emergency communication and protection of emergency response capabilities. The Box Elder County portion of the plan asserts that Box Elder County is susceptible to a moderate to high risk of wildfire, especially in the WUI and in areas adjacent to grassy and shrubby vegetation types. Utility companies are invited to be involved in planning processes for future plan updates (Bear River Association of Governments 2015).

In 2019, the Utah DNR published the State of Utah Community Wildfire Preparedness Plan for the Wildland Urban Interface. This plan was created with the goals of enhancing fire resilience and preparedness within the community, identifying wildland fire hazards and how they threaten communities, and providing wildfire risk reduction strategies (Utah DNR 2019). Recommended mitigation actions include reducing fuels on government and private land, facilitating prescribed burns, and educating children (Utah DNR 2019).

In 2019, the Utah State Hazard Mitigation Plan was published by the Utah Division of Emergency Management. The goal of this planning effort is to provide understanding and guidance with regard to natural disasters that may impact the state (Utah Division of Emergency Management 2019). Within the plan, various potential disasters or hazards are identified, a hazard assessment and capabilities assessment are provided, and mitigation strategies are recommended. Mitigation action priority areas include life and property protection, local/tribal mitigation effort support, and high-risk hazard addressment (Utah Division of Emergency Management 2019).

In 2016, the latest Utah Emergency Operations Plan was created with the intention of organizing disaster response by taking a coordinated and collaborative approach to prevention, response, and recovery (Utah Department of Public Safety 2016). The plan outlines disaster response protocols, identifies roles and responsibilities, and identifies Emergency Support Function supporting facilities, such as the location from which disaster response would deploy. Emergency Support Function–specific information is provided in the annex (Utah Department of Public Safety 2016).

In 2020, the Utah DNR produced the latest Utah Forest Action Plan. The purpose of this plan is to provide an overview of Utah forests health while providing guidance for a cohesive forest management strategy that still allows for flexibility (Utah DNR 2020). The plan provides a forest assessment, identifies forest threats, describes means of cooperative forestry management, and presents forest restoration goals and strategies, and methods to accomplish said goals and strategies. The four overarching goals of this FAP include restoring Utah's forests, reducing wildfire risk to communities and both water and natural resources, increasing collaborative landscape-scale forest restoration activities, and increasing engagement in forest restoration activities (Utah DNR 2020).

2.5.5 Federal Land

2.5.5.1 BUREAU OF LAND MANAGEMENT

2.5.5.1.1 Idaho

In 2019, the BLM released the BLM Idaho Fire Management Plan in ArcGIS Story Map format. This plan was created to provide instructional support in regard to the management of wildland fires. The plan outlines fire management goals and objectives, operational guidance, fuels treatments, post-fire response,

and monitoring protocols (Idaho BLM 2019). Goals listed relating to wildfires include incorporating fire as a vital process to ecological health, collaborating with communities that fall within the WUI, and creating a multi-agency integrated approach to resource and fire management (Idaho BLM 2019).

2.5.5.1.2 Nevada

The Raft River infrastructure crosses the Elko District of the BLM, Wells Field office. All Federal partners in Nevada and Nevada Division of Forestry have entered into a Statewide Master Agreement that covers a range of fire management and fire suppression actions. This is also the instrument that is used to exchange funds for suppression expenditures (BLM, 2021).

2.5.5.1.3 Utah

In 2005, the BLM issued a finding of no significant impact (FONSI) in response to an environmental assessment regarding the Utah Land Use Plan Amendment for Fire and Fuels Management. This amendment outlined changes to wildland fire management performed by the Salt Lake Field Office. The overall goals of wildfire management under these documents include firefighter and public safety, collaborative risk reduction in the WUI, and allowing fire to function in its ecological role where appropriate (BLM 2005).

2.5.5.2 BUREAU OF INDIAN AFFAIRS

In 2008, the Bureau of Indian Affairs (BIA) created a Fuels Management Program to manage and implement the BIA hazardous fuels reduction program for tribal land. Overall goals of the Fuels Management Program include restoring and protecting cultural and natural resources, integrating fuel reduction, embracing biomass utilization and prescribed fires, and reducing risk to communities (BIA 2008).

The BIA also has wildfire prevention teams, known as Fire Prevention Education Teams, that operate under the BIA branch of Wildland Fire Management. The teams combine cultural awareness with fire prevention skills to slow or stop wildland fires while respecting traditional values of local communities. Teams can be dispersed into local, regional, or national units; when this happens, the Fire Prevention Education Teams refer to the BIA regional WUI/prevention specialist for guidance (BIA 2020).

In addition, the BIA contains the Branch of Wildland Fire Management. Under this branch is the Fire Operations Section. This group is responsible for the implementation and coordination of preparedness and suppression programs. The group also manages fire facility construction as well as maintenance programs (BIA 2021).

2.5.5.2.1 Idaho

The Duck Valley Reservation, home of the Shoshone-Paiute Tribe, sits directly on the Idaho-Nevada border and is evenly split between Owyhee County, Idaho, and Elko, County Nevada.

In 2012, the Duck Valley Reservation released the Duck Valley Indian Reservation Tribal Hazard Mitigation Plan. The purpose of this plan was to enhance the safety of Duck Valley by reducing the community's risk to natural hazards. The plan lists a series of goals including prioritizing the sustainability of the economy, reducing threat from natural hazards, furthering community education, establishing mitigation priorities, and reducing disaster recovery costs (Duck Valley Indian Reservation 2012).

2.5.5.2.2 Nevada

As previously mentioned, the Duck Valley Reservation, home of the Shoshone-Paiute Tribe, crosses the Idaho-Nevada border.

2.5.5.2.3 Utah

There are no Native American Reservations under RREC service lines in the state of Utah.

2.5.5.3 U.S. FOREST SERVICE

The Sawtooth National Forest is broken up into several Ranger Districts and Divisions, including the Raft River Division and Albion Division. RREC infrastructure intercepts the Minidoka Ranger District in Idaho and Utah, with the Raft River Division occurring in Box Elder County and the Albion Division in Cassia County. While RREC infrastructure is adjacent to other divisions in Idaho, these two are the only ones that the RREC service area intercepts on Sawtooth National Forest–managed land.

In 2012, the Sawtooth National Forest developed a forest plan to steer natural resource management activities and ensure sustainable ecosystem use and resilient watersheds (U.S. Forest Service [USFS] 2012). The plan considers actions to reduce conflict in areas where wildfires could cross management area boundaries outside of the National Forest. Additionally, fuel reduction treatments are prioritized in the WUI (USFS 2012).

Sawtooth National Forest Fire Management is tiered to the Forest Plan and integrated into the Wildland Fire Decision Support System (WFDSS).

The Humboldt-Toiyabe National Forest is broken up into several Ranger Districts. Fire Prevention Patrol Units are under development and not yet functioning (USFS 2021). RREC infrastructure intercepts the Humboldt-Toiyabe National Forest in the Jarbidge and Mountain City Ranger Districts.

2.5.6 Hazardous Fuel Treatment Projects

State and federal agencies routinely develop fuel treatment planning to address hazardous fuels within their jurisdiction. RREC should work with the state agencies responsible for forest and fire management (Idaho Office of Emergency Management, Idaho Department of Lands, Nevada Division of Emergency Management, Nevada Division of Forestry, Nevada Division of State Lands, Utah Division of Emergency Management, and Utah Forestry, Fire, and State Lands), as well as federal agencies (BLM, USFS, and BIA) to look for opportunities to treat fuels in a collaborative manor in and around the RREC ROW to help mitigate wildfire risk in areas projected to have high or extreme fire behavior.

2.6 Emergency Management and Response- Roles and Responsibilities

2.6.1 Raft River Rural Electric Cooperative

2.6.1.1 COMPANY STRUCTURE

Table 3 below outlines the internal roles played by the RREC staff related to operations, maintenance, and emergency management. These assignments are subject to change.

Table 3. Strategy Leads

Strategy	Lead Personnel	Key Technical Personnel
Operational Practices	Dallan Spencer	Dallan Spencer, Mike Christensen, Richard Hall
System Hardening	Mike Christensen	Dallan Spencer, Mike Christensen, Richard Hall
Enhanced Inspections	Dallan Spencer	Line Foreman, Mike Christensen, Dallan Spencer
Situational Awareness	Dallan Spencer	All Operations Personnel
Reclosing and De-energization	Dallan Spencer	Richard Hall, Dallan Spencer
Public Safety and Notification	Dallan Spencer	Mandi Hitt
Vegetation Management	Mike Christensen	Mike Christensen, Austin Udy, Scott Jones
Wildfire Response and Recovery	Dallan Spencer	Dallan Spencer, Mike Christensen, Austin Udy

2.6.1.2 RREC EMERGENCY MANAGEMENT TEAM

The RREC Emergency Management Team is composed as follows:

General Manager

The General Manager coordinates the overall effort in the recovery of corporate, electrical, and business services and provides updates and status reports to the Board of Directors as required. The Communications Manager/Executive Assistant, Manager of Finance and Administration, and Manager of Operations may assist with these duties as needed.

Manager of Finance and Administration

The Manager of Finance and Administration coordinates the efforts in the restoration of services in the Financial Department in relation to the business continuity plans. The Accounting and Billing Program Manager may assist with these duties as needed.

Communications Manager/Executive Assistant

The Communications Manager/Executive Assistant coordinates the gathering and dispelling of information both internally and externally, and provides a framework for prompt, accurate, and effective communications. Communication is key in any outage/emergency situation. This individual also assists with all other duties as needed.

Manager of Operations

The Manager of Operations provides overall coordination of efforts to restore electrical service, as well as required repairs to physical facilities. In addition, this individual is also responsible for reporting and coordination with power supply and transmission entities. The Line Superintendent and Operations Superintendent may assist with these duties as needed. The Manager of Operations is also responsible for the development and maintenance of the ERP.

System Engineer

The System Engineer coordinates efforts to restore electrical service and is responsible for the integrity of the system, ensuring adequate voltage is supplied. This may require interconnecting feeders or supply lines. This individual will also provide adequate support to ensure automated meter infrastructure is restored as quickly as possible.

Operations Superintendent

The Operations Superintendent ensures local, state, and federal agency's rules and regulations are adhered to in relation to power supply and the design of the lines. The Operations Superintendent will coordinate the design, staking, and gathering of materials to remediate the situation as quickly as possible, working with all members of staff.

Line Superintendent (includes the Western Division Line Superintendent)

The Line Superintendent provides support by assembling personnel, materials, and equipment to effectively and efficiently make the repairs necessary and will coordinate and dispatch resources as the emergency response team deems necessary.

2.6.2 Coordination with Outside Entities

To accommodate the notification of emergency service organizations and law enforcement agencies to assist in wildfire and other natural disasters, the following communication procedures will be implemented. The Cooperative Response Center will be notified of any event requiring emergency services (emergency number: 1-888-643-6281). The RREC General Manager and all other key staff will be notified immediately. In addition to the communications and reporting procedures for the real-time operation of electricity markets, the RREC management team will contact the appropriate law enforcement and emergency services organizations.

Figure 1 outlines the land ownership within the RREC service area. Section 2.6 outlines existing wildfire planning documents for entities within the service area. The contacts for these entities, in addition to important contact information for agency staff who may need to be contacted in the event of a wildfire, are included in Appendix F.

For additional reporting requirements and contact information, please refer to the RREC ERP.

During a wildfire incident, wildfire response agencies work within established frameworks for emergency management: the National Incident Management System (NIMS) and the Incident Command System (ICS).

2.6.2.1 NATIONAL INCIDENT MANAGEMENT SYSTEM

NIMS was developed and is administrated by the Homeland Security Presidential Directive 5, Management of Domestic Incidents. NIMS was first issued by the Department of Homeland Security on March 1, 2004. It serves as a nationwide uniform template across all levels of government, nongovernmental organizations, and the private sector, enabling these entities to collaborate in the prevention, protection, response, recovery, and mitigation of incidents, despite their origin, size, locality, or complexity. Homeland Security Presidential Directive 5 requires that all federal bodies incorporate NIMS into their individual incident management programs, and in support of all measures taken to aid governments at the state, tribal, and local levels.

2.6.2.2 INCIDENT COMMAND SYSTEM

ICS provides a standard and workable procedure for effective cross-jurisdictional incident management coordination and collaboration. ICS is utilized by both nongovernmental organizations and the private sector, as well as by all branches of government: federal, state, tribal, and local. It is composed of five primary functional areas: command, operations, planning, logistics, and finance/administration. There is an additional optional area, investigations, which is usually implemented on a case-by-case basis. All fire response and coordination across the RREC service area would align with ICS.

2.6.2.3 COUNTY

RREC engages closely with each County Emergency Manager before and during a fire. During wildland fire events, RREC works in full coordination with incident command for the wildland event.

2.6.2.3.1 Cassia County, Idaho

Fire response within Cassia County is coordinated through the South Central Idaho Interagency Dispatch Center (SCIIDC), in cooperation with the Eastern Great Basin Coordination Center. The SCIIDC is a cooperative effort among the BLM, USFS, Bureau of Reclamation, U.S. Fish and Wildlife Service (USFWS), National Park Service, and the State of Idaho. Cassia County has seven fire protection districts that service the area: ACE, Minidoka, Oakley, Raft River, Rock Creek, Burley, North Cassia Rural, and Albion Volunteer. In addition, mutual aid agreements are held with the USFWS, National Park Service, USFS, and BLM (North Wind 2004a). According to the 2004 Wildland Fire Hazard Mitigation Plan, the Fire Protection Districts within Cassia County protect approximately 673,900 acres. The additional 812,000 acres of Cassia County are categorized as “open areas” and are not designated for protection by a specific Fire Protection District but will be cared for by a neighboring Fire Protection District or mutual aid agreement.

Table 4. Land Ownership within the Cassia County Fire Protection District

	BLM	Private	State	USFS	Total
ACE	82,686	55,937	12,492	4,078	155,193
Albion	4,281	30,531	7	38	34,857
Burley/North Cassia	10,091	184,352	4,526	3	198,971
Minidoka East	5,589	13,553	2,236	0	21,379
Oakley	0	62,286	1,262	66	63,614
Raft River	154,811	187,314	7,638	147	349,911
Rock Creek	71	5,099	0	0	5,169

Source: North Wind (2004a)

2.6.2.3.2 Oneida County, Idaho

Fire response within Oneida County is coordinated through the Eastern Idaho Interagency Fire Center (EIIFC), in cooperation with the Great Basin Coordination Center. The EIIFC is a cooperative effort among the BLM, USFS, and the State of Idaho. Fire response on land administered by the Sawtooth National Forest within the county is coordinated through the SCIIDC. The county is broken into two districts for fire response: Malad City Fire Department and Holbrook/Stone Volunteer Fire Department

(North Wind 2004b). Oneida County does not hold mutual aid agreements with the USFS or BLM (North Wind 2004b).

2.6.2.3.3 Owyhee County, Idaho

Fire response within Owyhee County is coordinated through the Boise Interagency Dispatch Center (BIDC), in cooperation with the Eastern Great Basin Coordination Center. The BIDC is a cooperative effort among the BLM, USFS, and Southwest Idaho Department of Lands. Owyhee County is home to six fire protection groups that provide protection against both structural and rangeland fires: Silver City Fire and Rescue, Bruneau Fire Protection District, Grand View Rural Fire Protection District, Homedale Fire Department, Marsing Rural Fire Protection, and Murphy/Reynolds/Wilson Fire and Quick Response Unit. In addition, Owyhee County has three Rangeland Fire Protection Associations (RFPA): Owyhee RFPA, Saylor Creek RFPA, and Three Creek RFPA. These RFPAs provide voluntary rangeland fire initial attack and suppression services (Owyhee County 2018).

2.6.2.3.4 Power County, Idaho

Fire response for Power County is coordinated through the EIIFC in cooperation with the Great Basin Coordination Center. The EIIFC is a cooperative effort among the BLM, USFS, and the State of Idaho (EIIFC 2021). Fire response on land administered by the Sawtooth National Forest within the county is coordinated through the SCIIDC. Power County fire response is handled by the City of American Falls Fire Department and the Rockland Fire Protection District.

2.6.2.3.5 Elko County, Nevada

Fire response within Elko County is coordinated through the Elko Interagency Dispatch Center (EIDC) in cooperation with the Eastern Great Basin Coordination Center. This dispatch center is a cooperative effort among the Elko District BLM, Nevada Division of Forestry, Humboldt-Toiyabe National Forest, BIA, and USFWS (EIDC 2021). The Elko County Fire Protection District provides fire response for the County with aid from 14 volunteer fire departments. The Nevada Division of Forestry manages fire protection on private land within the county and oversees the 14 volunteer departments (RC1 2005).

2.6.2.3.6 Box Elder County, Utah

Fire response for the entire northern Utah region is coordinated through the Northern Utah Interagency Fire Center (NUIFC), in cooperation with the Great Basin Coordination Center. The NUIFC is a cooperative effort among the BLM, USFS, and the Utah Division of Forestry, Fire and State Lands. Fire response on land administered by the Sawtooth National Forest within the county is coordinated through the SCIIDC. There are 11 fire protection groups within Box Elder County: Corinne City Fire Department, Brigham City Fire Department, Fielding Fire Department, Garland Fire Department, Honeyville Fire Department, Mantua Volunteer Fire Department, Plymouth Fire Department, Portage Fire and Rescue, Thatcher-Penrose Fire Department and Water Services, and Tremonton Fire Department (Risk Mitigation Group, LLC 2021).

All counties in the state of Utah are affected by Utah Code Section 65A-8-6 (House Bill 146 [HB 146], which was passed by the Utah Legislature in the 2004 General Session and took effect in March of 2006).

Utah Code Section 65A-8-6 requires that counties meet eligibility requirements to enter into a cooperative agreement with the UDFFSL for wildfire protection. The Code states that counties shall

- adopt a wildland fire ordinance based on minimum standards established by the division (UDFFSL);

- require that the county fire department or equivalent private provider under contract with the county meet minimum standards for wildland training, certification, and wildland fire suppression equipment based on nationally accepted standards as specified by the division (UDFFSL); and
- file with the division (UDFFSL) a budget for fire suppression costs.

Each of these eligibility requirements must be met before UDFFSL may enter into a cooperative agreement for wildfire protection with any county.

2.6.2.4 STATE

2.6.2.4.1 Idaho

Fire response procedures can be found in the Idaho Department of Lands Mobilization Guide or the Idaho Fire Service Resource Response Plan. The Idaho Department of Lands (IDL) is the lead state agency for wildland fire response and suppression on private and state forest land (Idaho Office of Emergency Management 2017). Non-forested land within the state, such as agricultural land, is protected by local districts with help from the Rangeland Fire Protection Associations. If fire response needs exceed capabilities of local and state crews (and mutual aid agreements), the jurisdictional agency will contact either the Idaho Emergency Operations Center (private, agricultural, residential, or rangelands) or the IDL State Fire Coordinator (private or state forest lands). After the appropriate party has been contacted, said party will assist in coordinating additional response resources as needed. If the fire moves out of state jurisdiction, the IDL will take over resource mobilization. If needed, the Governor (or his authorized representative) may request federal assistance (Idaho Office of Emergency Management 2017).

2.6.2.4.2 Nevada

Nevada's State and local fire programs protect approximately 9.5 million acres. In 2018, Nevada Division of Forestry (NDF) signed cooperative wildfire protection agreements with 23 fire protection districts in 12 counties, furthering cooperation between state and local fire response and fuels reduction (State Foresters, 2019).

2.6.2.4.3 Utah

Wildfires that occur on state and private land outside city limits are managed by the UDFFSL, and fire suppression efforts are coordinated through county fire wardens, who work with federal agencies and local fire departments (Utah Division of Emergency Management 2019).[5]

2.6.2.5 FEDERAL

2.6.2.5.1 Idaho

Fire response on federal land in Idaho will be dispatched and serviced through one of three dispatch centers depending on the county. Cassia County falls under the jurisdiction of the SCIIDC, a cooperative effort among the BLM, USFS, Bureau of Reclamation, USFWS, National Park Service, and the State of Idaho. The SCIIDC is responsible for dispatch and coordination of approximately 11,869,323 acres, which average approximately 200 fires and 180,000 acres burned per year (SCIIDC 2020).

[5] Utah State Hazard Mitigation Plan: https://hazards.utah.gov/wp-content/uploads/Utah-State-Hazard-Mitigation-Plan-2019.pdf

Oneida and Power Counties fall under the jurisdiction of the EIIFC, a cooperative effort among the BLM, USFS, and the State of Idaho. The EIIFC is responsible for dispatch and coordination of over 7 million acres, which average 126 fires per year. Fire response on land administered by the Sawtooth National Forest within Oneida and Power counties is coordinated through the SCIIDC.

Owyhee County falls under the jurisdiction of the Boise Interagency Dispatch Center (BIDC), a cooperative effort among the BLM, USFS, and Southwest Idaho Department of Lands. The BIDC is responsible for dispatch and coordination of approximately 9,128,111 acres, which hosted 195 fires on 8,737 acres in 2019 (BIDC 2021).

BIA land within the service area includes the Duck Valley Reservation. Fire response for Duck Valley is managed by the Sho-Pai Fire Department, which is made up of 14 volunteers on call 24 hours per day, 7 days per week, year-round, including holidays. During the fire season, the Sho-Pai Fire Department also sponsors two Type II Initial Attack Wildland Fire Crews and four Camp Crews (Shoshone-Paiute Tribes 2021).

2.6.2.5.2 Nevada

Fire response on all federal land within Elko County is coordinated through the EIDC. The EIDC dispatches fire-fighting resources to fires on federal and state land in northeastern Nevada. Various other federal and state agencies cooperate with the EIDC to respond to these fires, including the Elko District BLM, Nevada Division of Forestry, BIA, and USFWS (EIDC 2021). Approximately 10,988,691 square acres are under the jurisdiction of the EIDC (U.S. Census Bureau 2019).

2.6.2.5.3 Utah

Fire response on all NFS land administered by the Sawtooth National Forest is coordinated through the SCIIDC. The SCIIDC dispatches fire-fighting resources to fires on federal and state land in south-central Idaho. Various other federal and state agencies cooperate with the SCIIDC to respond to these fires. In total, 11,869,323 acres are under the protection of the SCIIDC (SCIIDC 2020).

2.6.2.6 DOCUMENT ENGAGEMENT AND REVIEW

RREC provided the draft document for stakeholder review from October 28 to November 12, 2021 (stakeholders are listed in Appendix F). Stakeholders were asked to provide comments on the draft to ensure that protocols and procedures in the Plan are aligned with existing procedures for emergency management, wildfire mitigation, and wildfire response within their jurisdictions.

RREC provided the draft document for public review on the RREC's website from November 23 to December 3, 2021. No comments were received from the public during this time.

3 RISK ANALYSIS

The wildfire risk analysis process utilizes several sources, including UWRAP, NRFIP, and planning documents such as hazard mitigation plans, natural disaster protection plans, and Raft River Emergency Response Plan (Raft River, 2019). The purpose of the wildfire risk analysis is to identify areas within the RREC service area that are particularly susceptible to high-intensity, severe wildfire behavior, so as to develop mitigation measures for preventing utility-related ignitions and to improve system resilience to outside wildfire threat.

3.1 Wildfires

3.1.1 Fire History

Fire history across the RREC service territory is illustrated in Figures A-1 through A-6 in Appendix A. The service territory has a varied wildfire history in terms of fire frequency, intensity, and scale based on the composition and conditions of vegetation communities that make up combustible fuels.

3.1.1.1 IDAHO

Since 2006, there has been a downward trend in the number of fires in Idaho. However, the number of acres burned is on a steep incline. This means that there are larger fires that are more difficult to contain and suppress (Idaho Office of Emergency Management 2020). Adverse weather and topography, heavy fuel loads, and urban development can create catastrophic wildfire conditions alone, coupled with Idaho's 21+ million acres of forested land, a combination which could lead to devastating fires. The three largest fires in Idaho have occurred since 2007, each burning more than 318,000 acres. This includes the largest fire in Idaho's history, the Murphy Complex Fire, which incinerated over 567,000 acres (Monitoring Trends in Burn Severity [MTBS] 2021).

3.1.1.1.1 Cassia County

Within the past decade, flammable fuels have amassed within Cassia County, increasing the county's fire risk. Wildfire risk for Cassia County is rated at moderate to high (North Wind 2004a). The largest wildfire in the county, the Cave Canyon Fire, occurred in 2012 and burned over 84,780 acres (MTBS 2021). The second and third largest fires in Cassia County also occurred in 2007 and 2000. The Black Pine 2 and West Basin Fires were slightly smaller, burning 69,897 acres and 56,396 acres respectively (MTBS 2021).

3.1.1.1.2 Oneida County

Wildfire risk within Oneida County is rated as high, partially due to Oneida County's fire season being longer than other regions in Idaho. In addition, Oneida County's grassy vegetation, hot and dry summer weather, and topography all contribute to wildfire risk (North Wind 2004b). The last wildfire within Oneida County, I84 MM271, occurred in 2017 and burned over 3,600 acres (MTBS 2021).

3.1.1.1.3 Owyhee County

The ecosystems of Owyhee County are fire-adapted and fire controls terrestrial system processes.

Wildfires are expected to be an annual occurrence within Owyhee County. Between 2007 and 2017, 33 fire events burning more than 1,000 acres each occurred within the county (Owyhee County 2018). In addition, three of Owyhee County's largest fires all occurred after 2007, with each fire burning over 280,000 acres. The largest, the aforementioned Murphy Complex Fire, burned over 567,000 acres (MTBS 2021).

3.1.1.1.4 Power County

In Power County, dry weather, topography, and dense fuel loads contribute to elevated wildfire risk. During the fire season (June–September), a single thunderstorm may cause over 20 ignitions (Dynamic Corporation 2004). The largest fire within the County, the Powerline Fire, occurred in 2017 and

incinerated over 54,000 acres (MTBS 2021). Three wildfires occurred in 2018, each burning over 8,400 acres (MTBS 2021).

3.1.1.2 NEVADA

Fires in Nevada have always been a regular occurrence due to the arid climate, vegetation types, and weather. However, Nevada's fire regime is currently outside of historical precedents. From 2000 to 2003, only 14% of Nevada fires occurred outside of the fire season. From 2009 to 2013, 33% of Nevada fires occurred outside of the fire season. Wildfires are becoming more frequent and more damaging as this trend continues (Nevada Department of Public Safety 2018b). Three of Nevada's largest fires have occurred since 2007, each burning more than 430,000 acres. Nevada's largest fire yet, the Murphy Complex Fire, occurred in 2007 and destroyed over 567,000 acres (MTBS 2021).

3.1.1.2.1 Elko County

Over 2,500 fire events occurred in Elko County over the last 25 years (as of 2014) and have burned over 2.25 million acres (Elko County 2014). In addition to Nevada's predisposition to wildfire, the county has recently been affected by heavy fuels loads and excessive winds, increasing the likelihood of fire. In the last 6 years (as of 2014), 1.4 million acres burned within the county (Elko County 2014).

3.1.1.3 UTAH

While firefighters suppress 95% of Utah wildfires on initial attack, adverse weather and topography, heavy fuel loads, and urban development can create catastrophic wildfire conditions. The three largest fires in Utah have occurred since 2007, each burning more than 70,000 acres. 2007 saw the greatest number of acres burned in a single year since 2000; 1,385 wildfires burned almost 650,000 total acres. This total includes the largest wildfire in Utah's history, the Milford Flat Fire, which destroyed nearly 364,000 acres (Utah Division of Emergency Management 2019).

3.1.1.3.1 Box Elder County

Box Elder County experienced 1,086 fires between 1973 and 2005. Most of these fires were wildland fires that occurred in the eastern portions of the county. From 2006 to 2019, Box Elder County has experienced 39 fires, approximately 18 of which have been over 1,000 acres (Box Elder County 2019; MTBS 2021; SWCA 2007).

Figures A-1 through A-6 within Appendix A illustrate fire occurrence history within the RREC service area. Many of these fires were located in close proximity to RREC infrastructure, likely because the lines are often collocated with highways, which tend to be an ignition source for wildfires. Regional wildfire planning documents suggest that at least 12% of fires in this region of the state are a result of human ignitions, highlighting a need for greater public education and outreach for reducing fire ignitions. As a utility provider throughout this area, RREC could be a partner in these public education efforts.

3.1.2 Vegetation Communities

The RREC service area falls mostly within the Central Basin and Range, Northern Basin and Range, and Snake River Plateau ecoregions. The Central Basin and Range ecoregion occurs throughout most of Nevada, in the southeastern corner of Idaho, and in the western portion of Utah. This ecoregion is characterized by wide desert valleys bordered by parallel mountain ranges generally oriented north–south. Areas lower than approximately 5,200 feet elevation were once inundated by Pleistocene Lake

Bonneville. Extensive playas occur and are nearly flat, clayey, and salty. In general, this ecoregion is dry and lacks extensive, dense forests (Woods et al. 2001).

Common low-intensity, short-duration burns of sagebrush and desert shrubs occur during summer thunderstorms in this ecoregion. Often, there is insufficient understory to carry fires, or they are suppressed. Cheatgrass (*Bromus tectorum*) and other introduced annuals not only out-compete native bunchgrasses but have also altered the ecoregion's fire regime; in areas that previously burned approximately every 30 to 70 years, the introduction of cheatgrass has increased fire-return intervals to less than 10 years.

The Northern Basin and Range ecoregion occurs adjacent to the Central Basin and Range in the high northwestern portion of Utah, in the very southwestern portion of Idaho, and along the northern border of Nevada. The ecoregion consists of arid tablelands, intermontane basins, dissected lava plains, and widely scattered low mountains, largely covered with sagebrush steppe vegetation. Elevation ranges from 4,000 to 7,200 feet (Omernik 1987).

Disturbance regimes in this ecoregion include short-duration and low-intensity brush fires, which occur due to summer thunderstorms. Other land disturbance is associated with water and wind erosion, mining, and livestock grazing with limited farming (USFS n.d.).

The Snake River Plateau or Snake River Basin ecoregion is lower in elevation with less complex topography than that of surrounding ecoregions. Much of this ecoregion adjacent to the Snake River is filled with agricultural land for beets, potatoes (Omernik 1987), wheat, barley, corn, and other forage crops. The remaining landcover is primarily sagebrush steppe (Omernik 1987). Fire regimes in this ecoregion are similar to those in the basin and range ecoregions described above based on similarities in shrub/scrub fuels.

The RREC service area is made up primarily of dwarf shrub, evergreen forest, and shrub/scrub communities (Figure 2). Dwarf shrubs and shrub/scrub communities are shrubs less than 20 cm tall and are often co-associated with grasses and sedges (Multi-Resolution Land Characteristics Consortium 2021). Shrub species include sagebrush and other saltbrushes, as well as winterfat (World Wildlife Fund [WWF] 2021a). Evergreen forests include Douglas-fir (*Pseudotsuga menziesii*) and other montane coniferous species, as well as pinyon-juniper and sub-alpine forests communities (WWF 2021b).

Most research suggests that wildfires in sagebrush communities and associated grasses were historically of high severity, with stand replacement (meaning complete mortality of impacted vegetation) (Innes 2019; Innes and Zouhar 2018). Fire frequency was influenced by site characteristics, with frequency estimates ranging from decades to centuries; drier sites would support fewer fine fuels and therefore burned less frequently than sites with higher fine fuel loads (Mensing et al. 2006). Larger fires would occur following one or more cool, wet years that allowed fine fuels to accumulate and become continuous (Innes 2019). Return intervals vary widely depending on elevation, aspect, site moisture, and associated woodland type. Current available data suggest that fire frequency in sagebrush communities has not changed in comparison with these historical trends, or has been reduced, although the data are insufficient.

Of notable concern in the RREC service area is cheatgrass, a highly competitive invasive grass species from Eurasia. Cheatgrass has altered native plant community structure and promotes wildfire by increasing the risk of shorter fire return intervals (Bishop et al. 2019). As cheatgrass continues to spread throughout the western United States, new threats are placed on communities and infrastructure.

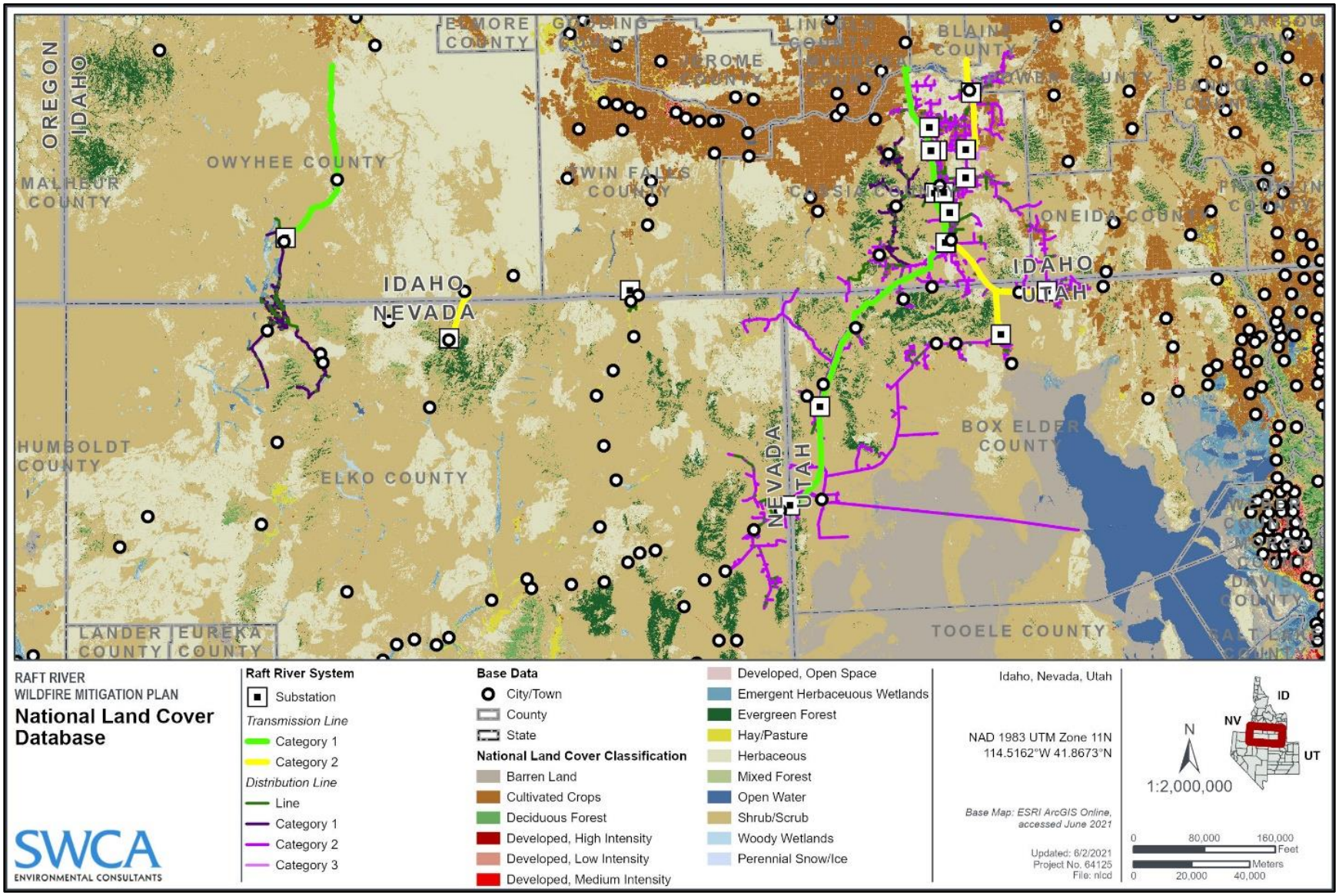


Figure 2. National Land Cover classifications within the RREC service territory.

3.1.3 Fuels

The fuels in the planning area are classified using Scott and Burgan's (2005) Standard Fire Behavior Fuel Model classification system. This classification system is based on the Rothermel surface fire spread equations, and each vegetation and litter type is broken down into 40 fuel models.

The general classification of fuels is by fire-carrying fuel type (Scott and Burgan 2005):

(NB) Non-burnable
(GR) Grass
(GS) Grass-Shrub
(SH) Shrub
(TU) Timber-Understory
(TL) Timber Litter
(SB) Slash-Blowdown

The dominant fuel models that occur within the RREC line buffer (a 0.25-mile buffer on either side of the line) are shown in Table 5 and Figures A-7 through A-12 in Appendix A. These data are based on data obtained from LANDFIRE.

Table 5. Scott and Burgan Fuel Model Composition within the 0.25-mile Corridor for all RREC Lines

Fuel Model	Acreage	Percent
NB1	31,579.45	3.474596
NB3	**16,4281.6**	**18.07544**
NB8	4,245.876	0.467162
NB9	27,258.15	2.999136
GR1	23,433.71	2.578344
GR2	**186,715.1**	**20.54373**
GR3	1,654.946	0.182089
GR4	23.46273	0.002582
GS1	**69,072.2**	**7.599817**
GS2	**248,870.5**	**27.38251**
SH1	19,883.12	2.187683
SH2	30,927.05	3.402815
SH3	10,397.43	1.143999
SH5	**76,511.14**	**8.418301**
SH6	403.1347	0.044356
SH7	8,399.288	0.92415
TU1	1,371.299	0.15088
TU2	170.575	0.018768
TU5	1,641.121	0.180568
TL1	1.190502	0.000131
TL2	865.7076	0.095251
TL3	1,005.646	0.110648
TL5	11.46124	0.001261

Fuel Model	Acreage	Percent
TL6	100.9587	0.011108
TL8	42.53888	0.00468

Note: Dominant fuels (those making up >5% of the corridor) are bolded.

While there are many fuel types within the ROW corridors, a few fuels make up the dominant cover across the service territory. These dominant fuels are described below in Table 6.

Table 6. Fuel Model Descriptions

1.	**Nearly pure grass and/or forb type (Grass)**
i.	**GR2:** Moderately coarse continuous grass, average depth about 1 foot. Spread rate high (20–50 chains/hour); flame length moderate (4–8 feet); fine fuel load (1.10 tons/acre).
2.	**Mixture of grass and shrub, up to about 50% shrub cover (Grass-Shrub)**
i.	**GS1:** Shrubs are about 1-foot high, low grass load. Spread rate moderate (5–20 chains/hour); flame length low (1–4 feet); fine fuel load (1.35 tons/acre).
ii.	**GS2:** Shrubs are 1–3 feet high, moderate grass load. Spread rate high (20–50 chains/hour); flame length moderate (4–8 feet); fine fuel load (2.1 tons/acre).
3.	**Shrubs cover at least 50% of the site; grass sparse to non-existent (Shrub)**
i.	**SH5:** Heavy shrub load. Fuel bed depth 4–6 feet. Spread rate very high (50–150 chains/hour); flame length very high (12–25 feet).
4.	**Insufficient wildland fuel to carry wildland fire under any condition (Non-burnable)**
i.	**NB3:** Agricultural field, maintained in non-burnable condition.

3.1.4 Topography and Land Use

Topography is important in determining fire behavior. Mountains create complex topography with steep slopes and varying slope aspects. Steepness of slope, aspect (direction the slope faces), elevation, and landscape features can all affect fuels, local weather (by channeling winds and affecting local temperatures), and rate of spread of wildfire. There are some steep slopes throughout the RREC service area that would influence fire behavior and spread. The rest of the service area is relatively flat, with low-lying agricultural valleys, urban areas, and salt flats. Flat areas are not topographically complex, with little variation in slope aspect and fewer changes in slope steepness.

3.1.4.1 ELKO COUNTY, NEVADA

Elko County is placed in the northeast corner of Nevada, bordering Idaho and Utah. It is the second largest county in the state totaling approximately 17,169 square miles (10,989,000 acres). The county's elevation ranges from 4,265 feet southwest of West Wendover to 11,387 feet in the Ruby Mountains. Elko Valley is filled with diverse topography, with most of the county covered in mountains. The eastern border is marked by the Toano Mountain Range. The southern region is home to several mountains such as the Pequop Mountains, Ruby Mountains, Pinon Mountains, and the Maverick Springs Range.

The county also includes some substantial valleys including the Steptoe Valley, Clover Valley, Independence Valley, and Ruby Valley. The northcentral region of Elko County is less topographically complex than the eastern and southern regions. However, this northcentral region is home to the Adobe Range, Snake Mountains, Independence Mountains, and furthest to the west near the South Fork Owyhee River are the Tuscaroram Mountains. The northwest corner of Elko County is relatively flat and home to the Owyhee Desert (Wildland Fire Associates, 2007).

Elko County is relatively dry with an average of 9.5 inches of rain annually. The most widespread vegetation types within the county include montane forest and mixed sagebrush, with pinyon-juniper coming in third. Ranches and agricultural lands are an important part to both the economy and culture of Elko County. In 2002, Elko County had the largest amount of cropland within Nevada, totaling 203,252 acres (Wildland Fire Associates, 2007).

3.1.4.2 BOX ELDER COUNTY, UTAH

Box Elder County's topography is diverse. Located in the northwest corner of Utah, Box Elder County encompasses approximately 5,614 square miles (3,592,960 acres), extending from the west spur of the Wasatch Mountains north to the Idaho border and westward to the Nevada border. The county includes parts of the Great Salt Lake and the Great Salt Lake Desert, as well as the lower course and deltas of the Bear River, the Malad River Valley, and the Promontory Mountains. Box Elder County is part of the Central Basin and Range ecoregion and fully encompasses the Northern Basin and Range ecoregion in Utah. The county contains fertile farmlands, accounting for the large area of land (43%) used for agriculture (mostly livestock, hay, grain, alfalfa, fruit, garden crops, and sugar beets), as well as significant wetlands at the mouth of the Bear River (SWCA 2007).

3.1.4.3 CASSIA COUNTY, IDAHO

Cassia County comprises approximately 2,564 square miles (1,640,938 acres) dominated by high mountain desert ecosystems. The elevation ranges from 4,100 feet (North Wind 2004a) to 10,334 feet, the summit of Cache Peak. Topography is characterized by flat or gently rolling hills with few mountainous areas (one at the western border, one in central Cassia County, and two at the eastern border). The area typically receives around 10 inches of rainfall each year, supporting a mixture of sagebrush, bunchgrasses, and low shrub communities. Agriculture is the primary economic driver, with grains, corn, and potatoes being the dominant crops (North Wind 2004a).

3.1.4.4 ONEIDA COUNTY, IDAHO

Oneida County encompasses 1,200 square miles (768,438 acres), with elevations ranging from 4,444 feet in Malad Valley to 9,092 feet atop Elkhorn Peak. The overall landscape is dominated by high mountain desert systems. There are several mountain ranges that are topographically complex such as the Elkhorn Mountains in the north, the Samaria Mountains in the south, and the Oxford Range in the east.
The valleys are dominated by agricultural land (hay, grain, and safflower) and grasslands, which give way to sagebrush steppe with increased elevation, then pinyon-juniper forests, and deciduous and coniferous forests at higher elevations. The average annual precipitation ranges from 10 to 20 inches (North Wind 2004b).

3.1.4.5 OWYHEE COUNTY, IDAHO

Owyhee County lies in the southwest corner of Idaho. It is the second largest county in the state totaling approximately 7,697 square miles (4,925,894 acres). Nearly 200,000 acres of land (4%) are used for agriculture to grow a variety of crops—corn, potatoes, onion, hay, alfalfa, and sugar beets—and grazing

for cattle. A significant amount of grazing also occurs on state and federal lands through permits and grazing leases. When a large fire impacts these lands, this has a significant impact on ranchers and on the county economy, which is primarily driven by agriculture.

Other primary vegetation types include annual grass-forb steppe and mixed sagebrush communities. Owyhee County is relatively flat with mountainous regions in the northwestern portion of the county. Generally, elevation in the county slopes downward from the southwest to the northeast. The highest point is Hayden Peak (8,401 feet), from which elevation descends to the bottom of the Snake River in Homedale (2,210 feet). Owyhee County exists in semiarid to mild climate, receiving average annual rainfall from 4 to 18 inches (RCI 2005).

3.1.4.6 POWER COUNTY, IDAHO

Power County is approximately 1,452 square miles (929,000 acres). The southern portion of the county is lined by the Sublett Range, Deep Creek Mountains, and Bannock Range all of which create the Rockland and Arbon Valleys. To the north is the Great Rift System, the largest and most recent volcanic rift system in the U.S., and the American Falls Reservoir (BLM, 2021). The County receives an average of fifteen inches of precipitation per year, creating a semi-arid environment that supports mixed sagebrush and perennial grasses, with juniper forests often on upper slopes. Agriculture via crop production and grazing are the primary economic drivers in the area (Dynamac Corporation 2004).

3.1.4.7 ELKO COUNTY, NEVADA

Elko County is in the northeast corner of Nevada, bordering Idaho and Utah. It is the second largest county in the state, totaling approximately 17,169 square miles (10,989,000 acres). The county's elevation ranges from 4,265 feet southwest of West Wendover to 11,387 feet in the Ruby Mountains. Elko Valley is filled with diverse topography, with most of the county covered in mountains. The eastern border is marked by the Toano Mountain Range. The southern region is home to several mountains such as the Pequop Mountains, Ruby Mountains, Pinon Mountains, and the Maverick Springs Range.

The county also contains some substantial valleys, including the Steptoe Valley, Clover Valley, Independence Valley, and Ruby Valley. The northcentral region of Elko County is less topographically complex than the eastern and southern regions. However, this northcentral region is home to the Adobe Range, Snake Mountains, and Independence Mountains, and further to the west near the South Fork Owyhee River are the Tuscaroram Mountains. The northwest corner of Elko County is relatively flat and home to the Owyhee Desert (Wildland Fire Associates 2007).

Elko County is relatively dry with an average of 9.5 inches of rain annually. The most widespread vegetation types within the county include montane forest and mixed sagebrush, with pinyon-juniper coming in third. Ranches and agricultural land are important to both the economy and culture of Elko County. In 2002, Elko County had the largest amount of cropland within Nevada, totaling 203,252 acres (Wildland Fire Associates 2007).

3.1.4.8 BOX ELDER COUNTY, UTAH

Box Elder County's topography is diverse. Located in the northwest corner of Utah, Box Elder County encompasses approximately 5,614 square miles (3,592,960 acres), extending from the west spur of the Wasatch Mountains north to the Idaho border and westward to the Nevada border. The county includes parts of the Great Salt Lake and the Great Salt Lake Desert, as well as the lower course and deltas of the Bear River, the Malad River Valley, and the Promontory Mountains. Box Elder County is part of the Central Basin and Range ecoregion and fully encompasses the Northern Basin and Range ecoregion in

Utah. The county contains fertile farmlands, accounting for the large area of land (43%) used for agriculture (mostly livestock, hay, grain, alfalfa, fruit, garden crops, and sugar beets), as well as significant wetlands at the mouth of the Bear River (SWCA 2007).

3.1.5 Weather

Of the three fire behavior components (weather, topography, and fuels), weather is the most likely to fluctuate. Accurately predicting fire weather remains a challenge for forecasters. As winds and rising temperatures dry fuels in the spring and summer, conditions can deteriorate rapidly, creating an environment that is susceptible to wildland fire. Fine fuels (grass and leaf litter) can cure rapidly, making them highly flammable in as little as 1 hour following light precipitation. Low live fuel moistures of shrubs and trees can significantly contribute to fire behavior in the form of crowning and torching. With a high wind, grass fires can spread rapidly, engulfing infrastructure and communities, often with limited warning for evacuation.

While weather conditions can vary widely across the service territory on an annual basis, on average, there is very little variation between weather conditions across the RREC regions (Figures 3–8).

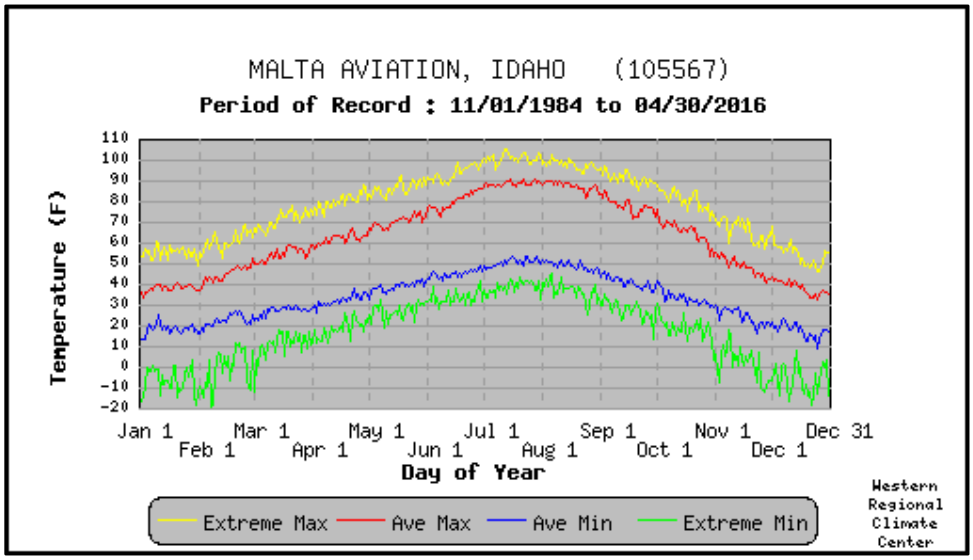


Figure 3. Daily temperature extremes and averages for Malta, Idaho.

Source: Western Regional Climate Center (2021).

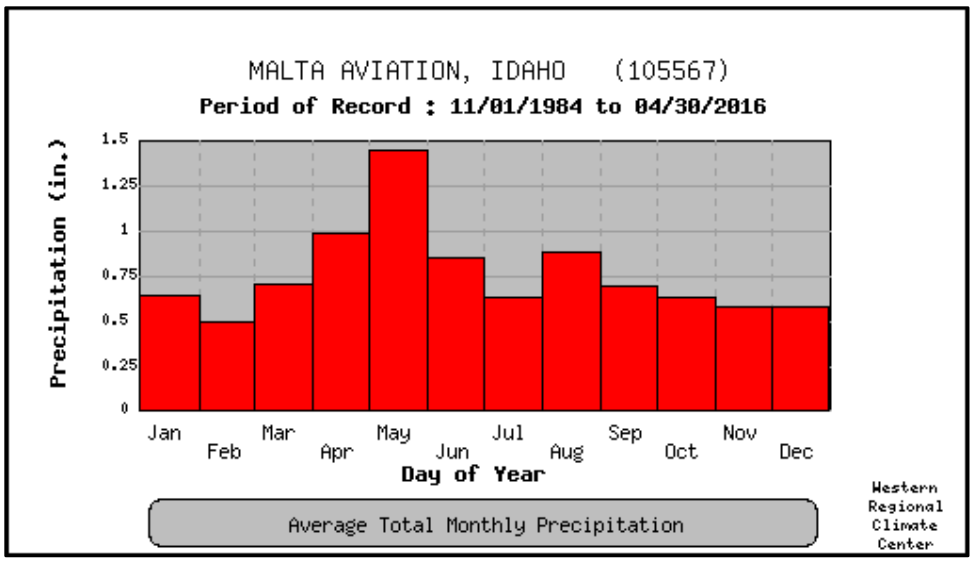


Figure 4. Monthly average precipitation for Malta, Idaho.

Source: Western Regional Climate Center (2021).

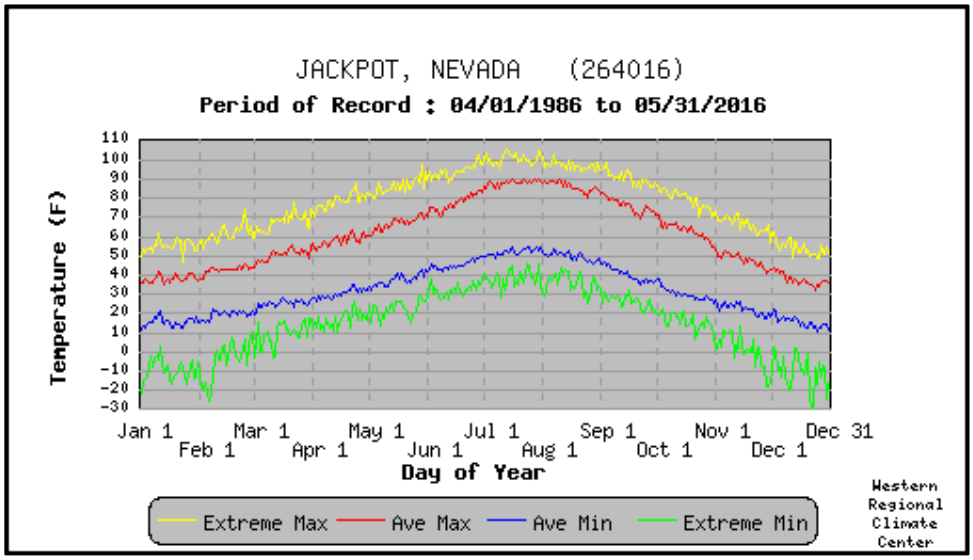


Figure 5. Daily temperature extremes and averages for Jackpot, Nevada.

Source: Western Regional Climate Center (2021).

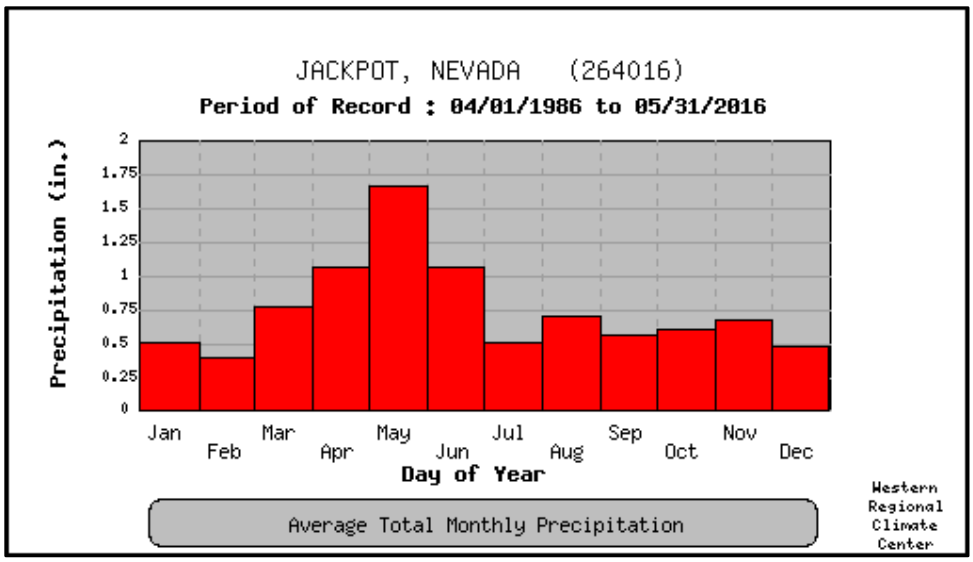


Figure 6. Monthly average precipitation for Jackpot, Nevada.

Source: Western Regional Climate Center (2021).

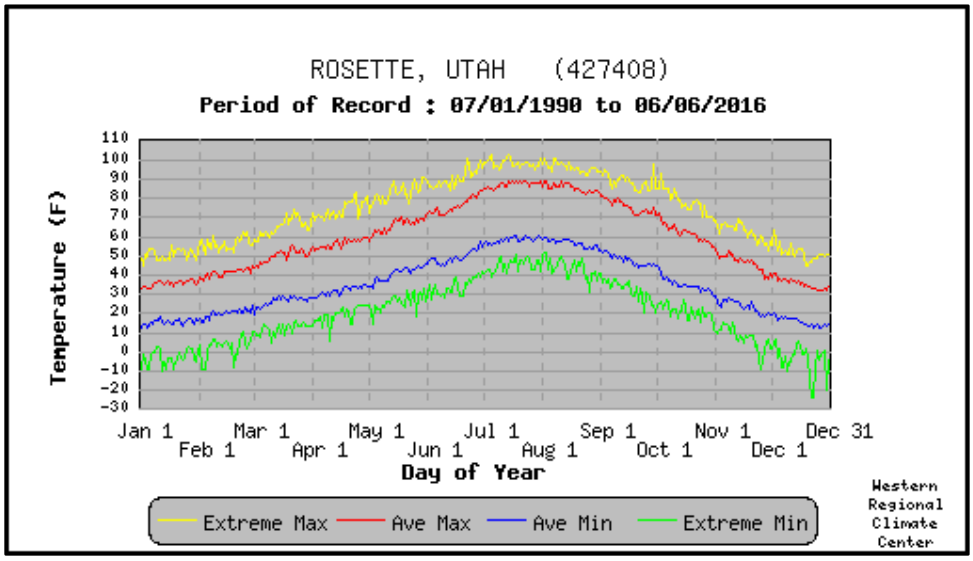


Figure 7. Daily temperature extremes and averages for Rosette, Utah.

Source: Western Regional Climate Center (2021).

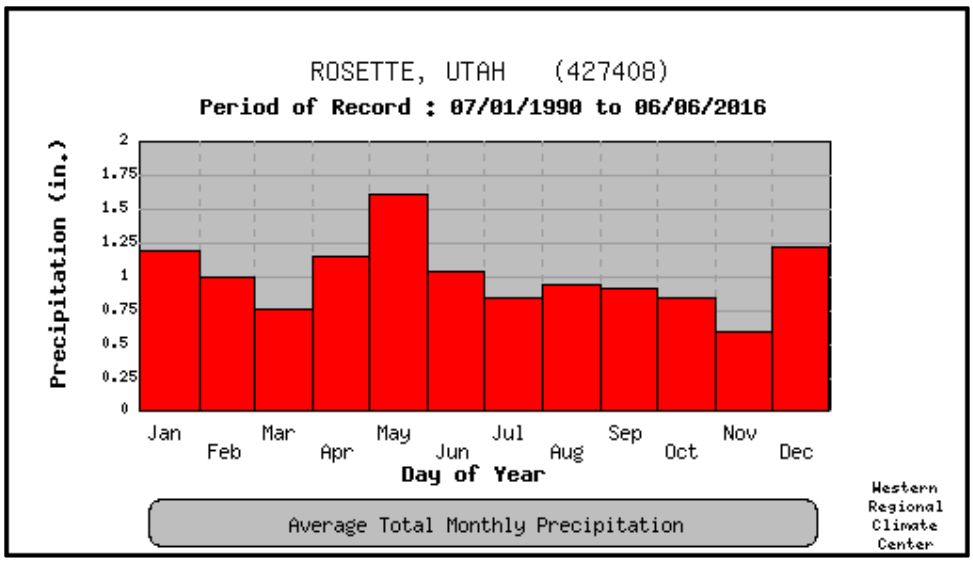


Figure 8. Monthly average precipitation for Rosette, Utah.
Source: Western Regional Climate Center (2021).

The warmest temperatures across all regions occur from May to September, with temperatures reaching into the high 80s and 90s from June through August (see Figures 3, 5, and 7). The average monthly precipitation is low during early spring (February–March) and mid-summer (July) with some increase in precipitation in August. Peak precipitation is typically during April and May, declining in June (see Figures 4, 6, and 8). Dry and hot periods would elevate fire behavior, as vegetation dries and becomes more available for combustion. Vegetation management and other wildfire mitigation measures should be completed prior to the peak fire season (May–October).

3.1.6 Fire Behavior

This Plan utilizes a combination of UWRAP and NRFIP map products in combination with LANDFIRE data to support analysis of fire behavior and risk within the RREC service area. The analysis is described in Appendix B. This analysis assists RREC in identifying areas that are most prone to wildfire to create a plan to prioritize vegetation management actions to mitigate potential fire effects. In areas predicted to have the highest fire behavior, RREC can also consider infrastructure improvements that ensure resilience of the grid. Furthermore, in areas where fire behavior is expected to be high, as a result of fuels, topography, weather, and past fire occurrence, RREC can work with the community to identify actions that communities can take to mitigate against potential ignitions and to alert the community to prepare in the event of a wildfire event.

3.2 Other Natural Disasters for Nevada

As required in the Nevada Senate Bill, 329, this section outlines natural disasters that have the potential to impact the RREC infrastructure throughout Nevada.

3.2.1 Avalanche

An avalanche occurs when snow on a mountain gets loose and tumbles down the side of the mountain. Slope steepness, snowpack conditions, wind/weather, vegetation, and temperature are among some of the impacting factors for avalanches (Elko County 2014). They are most likely to occur during or

immediately after heavy snowfall, making the first 24 hours post snowfall the most important time period. Avalanches pose an incredible level of danger to both people and infrastructure (Elko County 2014). Within Elko County, most avalanche-related fatalities occur in the winter months of January, February, and March. However, as weather warms in the spring, snow and ice shift, thereby increasing the possibility of an avalanche. Within Elko County, Lamoille Canyon has the highest risk of an avalanche; the main road is closed from October to June due to this risk (Elko County 2014). An avalanche may impose significant danger to utility infrastructure as the snow may crush, bury, or tangle equipment, as well as interfere with communication systems (Navigant Consulting 2020).

3.2.2 Dam Failure

Dam failure can be the collapse of a dam, overflow from increased precipitation, damaged spillways, or other consequences from normal operations (Elko County 2014). Dam failures may be caused from natural aging, lack of maintenance, gradual weakening, poor design/construction, weather, or human error. Within Elko County, there are 90 total dams; 11 are ranked as "high hazard" and 19 as "significant hazard." The dam of most concern within Elko County is the Bishop Creek Dam, as it has been declared as an "unsafe structure" by the U.S. Army Corps of Engineers. The dam is technically non-functional but still fills with water due to natural weather events such as precipitation or melting snow (Elko County 2014). Flooding due to dam failure may result in the damage or drowning of pad-mounted gear, poles, and substations (RREC 2019).

3.2.3 Drought

Drought, or a period of deficient precipitation, shows itself in four different versions: meteorological drought, agricultural drought, hydrological drought, and socioeconomic drought (Elko County 2014). All forms of drought may result in damage to agriculture, increased fire risk, increased insect or disease impact, and economic losses. Since 2001, Elko County has experienced five droughts, each ranging from severe to extreme and averaging 16 months in duration. Nevada has experienced devastating insect infestation, wildfire risk, and water shortages due to drought (Elko County 2014).

3.2.4 Earthquake

Earthquakes are caused by the release of strain within the Earth's tectonic plates (Elko County 2014). Earthquakes shake or vibrate the ground, lightly or intensely depending on the amount of energy released, and occur with no warning on most occasions. Earthquakes may cause damage after the event has occurred such as surface faulting and liquefaction, both of which cause severe damage to infrastructure and land stability (Elko County 2014). Nevada is ranked the third most seismically active state with the greatest number of large earthquakes. Elko County contains over 3.2 million square feet of residential or commercial buildings constructed before 1974 building code requirements, leaving them at a greater risk for loss (Elko County 2014). Earthquakes could impact communications, power supply, structures, personnel, and transportation (RREC 2019).

3.2.5 Landslide

A landslide is the tumbling of rock, debris, and earth down a slope (Elko County 2014). If only debris moves down the slope, it is known as a mudslide, which is equally dangerous. These events are caused by disturbances in the stability of the slope and typically accompany heavy precipitation or follow events such as earthquakes, volcanic eruptions, or droughts. While there is no physical documentation of landslide events occurring within Elko County, glaciers still remain atop the Ruby Mountains, leaving the potential for an event (Elko County 2014). A landslide may impose significant danger to utility

infrastructure as the material may crush, bury, or tangle equipment as well as interfere with communication systems (Navigant Consulting 2020).

3.2.6 Severe Weather

Severe weather includes thunderstorms, snow, and/or hail (Elko County 2014). Severe snowstorms occur approximately every 3 to 5 years in Elko County. Snow showers of 1 to 3 inches are more common in Elko County, increasing to 5 to 8 inches at higher elevations. In addition, the severe storms have caused high winds, the worst of which have been recorded at 67 mph, resulting in snowdrifts of several feet in height (Elko County 2014). Elko County has experienced 22 hail events with hail up to 1.75 inches in diameter since 1950. The county can expect a hail event every 2 to 2.5 years. Thunderstorms, which includes downbursts and microbursts, are relatively common in Elko County; 72 recorded events between 1959 and 2007 have caused varied amounts of damages, ranging from $1,000 and $100,000 (Elko County 2014). Snow and ice buildup, as well as lightning strikes, can cause power supply, transportation/access, and communication disruption (RREC 2019).

3.2.7 Windstorm

Wind is the flow of air from an area of high pressure to low pressure; the speed of that wind is dependent on the difference between the high- and low-pressure systems (Elko County 2014). Drylines, warm fronts, and cold fronts are commonly followed by severe winds, or winds of 58 mph or greater. Windstorm damages within the county are similar to those caused by thunderstorms (described above) as these events commonly accompany each other (Elko County 2014). Severe winds impose a threat to power supply lines and may result in fire ignitions from live wires. In addition, water damage and weathering may lead to weakening and instability of wooden infrastructure (Navigant Consulting 2020). Infrastructure affected by water damage and weathering would be further at risk during a windstorm event.

3.2.8 Wildfire

Wildfires, which may be human-caused or naturally caused, can without warning destroy wildlands, wetlands, and infrastructure. Topography, weather, and fuels are the most important contributors to wildfires, while the frequency and severity of a fire is dependent on other hazards such as drought and insect infestation. Elko County has an abundance of both wildfire starters and stressors, increasing the risk of this natural disaster in the region. Fire may cause residential, commercial, and utility structural damage to the point of necessary relocation during repair (RREC 2019).

3.3 Analysis Approach

In order to assess wildfire risk in the service area and provide priority areas for RREC mitigation measures, this analysis focuses on analysis of wildfire hazard and risk (and review of potential natural disasters for the Nevada service territory). The technical approach to this analysis is described in Appendix B.

3.4 Risk Assessment and Action Plan

The wildfire risk assessment maps are presented in Appendix C for the entire service territory.
The purpose of these maps is to identify sections of the RREC service area that are at an elevated risk for wildfire. The maps in Appendix C are scaled to show details associated with high-risk segments of the RREC lines. Tables C-1, C-2, and C-3 in Appendix C describe those high-risk segments with associated

mitigation measures. A priority scale from low to high is applied across all high-risk segments to facilitate implementation based on the intensity of the risk. The risk assessment is based on desktop analysis. RREC will ground truth priority sections prior to proceeding with Plan implementation.

RREC can use Tables C-1, C-2, and C-3 to implement mitigation measures as this Plan is implemented. The tables can be revised during annual reviews and 3-year updates to show progress toward mitigation goals.

4 WILDFIRE PREVENTION STRATEGIES AND PROTOCOLS

4.1 Inspection Procedures

Line inspections help identify potential repair needs throughout the service area, as well as guide crew schedules and evaluation of labor resources. Transmission and distribution lines will be patrolled by pickup or ATV and, in some circumstances, by foot. New distribution powerline construction is built to specifications for raptor protection. Poles equipped with devices have a facility ID number and are easily detected on RREC map products.

The aim of the inspection program is to ensure long-term safe and effective operation of the electric system and informed maintenance. Specific objectives are to:

A. Identify maintenance actions, particularly those that require immediate attention.

B. Develop an implementation schedule of corrective actions.

C. Schedule labor and develop budgets.

D. Identify and initiate ongoing maintenance programs.

4.1.1 Inspection Schedule

Distribution facilities including underground lines will be inspected on 3-year intervals, using systematic visual and drone inspections standards. RREC personnel will also inspect secondary service equipment at intervals to identify needed replacement or maintenance actions. Line inspection, maintenance, and patrol logs will be maintained. Scheduled pole testing and sterilant scatters will be completed during patrols as needed.

For transmission facilities, intervals between systematic visual (and possibly drone) inspections should not exceed 1 year. This also includes updating of line inspection, patrol, and maintenance logs.

4.1.2 Documentation

RREC will maintain all inspection and maintenance records for future reference.

4.1.3 On-site Repair

During the inspection process, RREC operations personnel will implement repairs as feasible. The Line Superintendent will schedule any additional repairs through a service order. All persons performing work on the electrical infrastructure will be qualified electrical workers, or under the direct supervision of a qualified electrical worker.

4.1.4 Responsibility

All ongoing maintenance and inspection programs are the responsibility of the Line Superintendent.

The Operations Manager is responsible for reviewing records involving maintenance and inspection reports. From these reports, an annual summary is to be provided to RREC's General Manager/CEO as a key indicator to the Board of Directors.

4.1.5 Recommendation

Many utilities include insulator washing in areas where distribution or transmission lines experience excessive dirt and dust accumulation. During late summer, when insulators may be most contaminated, a small amount of precipitation can result in insulator flashover and potential fire risk. For Raft River, rather than dirt and dust, salt from the Great Salt Lake can contaminate insulators with rain, causing insulator flashover and increasing fire risk. Furthermore, old and desiccated bird nests can become wet and cause similar problems. For RREC, insulator washing may be a practice for consideration ahead of the fire season and into late summer.

4.2 Wood Pole Test Program

The general condition and care of wood poles provides increased protection against pole failures due to degradation, wind, and/or ice loading. The intent of a wood pole test program is to limit pole related failures, loss of service to customers, and potential risk of wildfire.

4.3 Vegetation Management Protocols

4.3.1 Federal Regulatory Requirements

4.3.1.1 FIRE SAFETY AND RELIABILITY STANDARDS

RREC will comply with all fire safety and bulk-power supply reliability standards and requirements, including the following:

a. North American Electric Reliability Corporation (NERC) FAC-003: the national reliability standard for maintaining the minimum vegetation clearance distance for powerline facilities that carry at least 230 kV of electricity and for certain other powerline facilities identified as critical by NERC;

b. The National Electric Safety Code and the Institute of Electrical and Electronic Engineers Standards: standards that specify the minimum clearance between conductors (wires) and workers, tools, or vegetation under normal operating conditions; and

c. American National Standards Institute (ANSI) A300: the national standard used by industry and governments to develop written specifications for projects involving pruning or removal of vegetation.

4.3.1.2 FLPMA RIGHT-OF-WAY REGULATIONS

The USFS and BLM jointly developed procedures for review and approval of proposed operating plans and agreements for special use authorizations for powerline facilities in Section 512 of the FLPMA. The following sections outline the approach that these agencies are taking to the implementation of the legislation.

This Plan has been developed to inform the future development of an RREC Agreement, which is required for adherence to Section 512.

4.3.1.2.1 Bureau of Land Management Implementation of Section 512 of FLPMA

The 2020 BLM Instruction Memorandum No. IM-2020-009, for the implementation of Section 512 on BLM land, recognizes that electric transmission and distribution facility ROW holders have the authority to conduct routine operations and maintenance (O&M) activities within their ROW (see 43 CFR 2805.14(a)). ROW holders must also do everything reasonable to prevent and suppress wildfire within or near the ROW area (43 CFR 2805.12(a)(4)), and comply with project-specific terms, conditions, and stipulations, including any requirements to control or prevent damage to property, and public safety (43 CFR 2805.12(a)(8)(iii)).

To facilitate and expedite O&M activities necessary to reduce the risk of wildfire, through the Instruction Memorandum the BLM informed ROW holders that they are authorized and responsible for carrying out O&M work to prevent wildfires and requested that they notify the Authorized Officers within 30 days of completing such work. RREC is to inform the BLM of the location, access route, type of work, acreage of treatment area, equipment use, start and end dates, biological data or cultural survey data, best management practices, company contacts, and BLM aerial number for the ROW (BLM 2020).

RREC will ensure that these requirements are addressed during development of the Operating Plan, to occur following completion of this Plan.

4.3.1.2.2 U.S. Forest Service Implementation of Section 512 of FLPMA

As described in the 2020 FSH 2709.11 Special Use Handbook, Chapter 80 (Operating Plans and Agreements for Powerline Facilities), Section 512 of the FLPMA and its implementing regulations govern the development, inspection, and operation and maintenance of electric transmission and distribution line facilities on NFS land. Section 512 operating plans and agreements apply inside the linear ROWs for powerline facilities and on NFS land adjacent to either side of the ROW as provided for in the directive.

The goal of approved operating plans and agreements is to provide for long-term, cost-effective, efficient, and timely inspection, O&M activities, and vegetation management of powerline facilities on NFS land within the linear ROW for the powerline facilities and on NFS land adjacent to either side of the ROW as provided in this directive. Other goals include electrical grid reliability enhancement, public safety promotion, and fire hazard avoidance.

The directive establishes specific requirements and procedures for operating plans and agreements for USFS special use authorizations, consistent with section 512 of FLPMA and USFS special use regulations at 36 CFR 251(b). RREC will ensure that these requirements are addressed during development of the Operating Plan, to occur following completion of the Plan.

4.3.1.2.3 Special Use Authorizations/Right-of-Way Grants

On federal land, vegetation management and O&M activities implemented by RREC or its contractors will adhere to the specifications outlined in each ROW special use authorization/ROW grant. RREC holds multiple existing permits that cover routine maintenance and emergency work within the granted ROW.

4.3.2 Procedure

Vegetation management on RREC lines is focused on maintaining radial clearance around the line, treating vegetation that may be growing from beneath the lines, and removing high-risk trees that pose a threat to the line due to their potential to fall into and across the ROW. Furthermore, although low-growing vegetation is needed in the ROW to prevent soil erosion, tall trees and shrubs should be kept clear to minimize the impacts to the powerlines in the event of a wildfire.

The RREC Operations Manager is responsible for coordinating activities to identify and remove vegetation that approaches high-voltage distribution and transmission lines.

- Trees are trimmed to prevent contact with powerline structures if not able to be removed completely from the hazardous area. Trees that are able to be removed from the ROW are cut down with chainsaws, hauled away, and, in most cases, shredded with a tree shredder attached to an excavator. Vegetation trimming should be employed to avoid contact with, as well as proximity to, infrastructure and to ensure that the tree will not grow to within a hazardous distance before the next inspection (arc distance), resulting in an arc fault. Vegetation clearance will be based on inspection frequency, for example, removing all vegetation that is close enough to cause a fault or that could cause a fault in the next 2 years.
- RREC continually reduces fire risk related to using motorized equipment in highly vegetated areas by walking or carrying a fire extinguisher or other available method of fire suppression.
- RREC will seek required government permits or applicable authorization for vegetation and tree removal or trimming, in accordance with federal, state, municipal, and tribal laws, ordinances, rules, and regulations. RREC shall seek to trim/remove vegetation and/or trees that present an immediate hazard, danger, or substantial risk to the RREC's system, employees, or public safety. In addition, RREC shall seek to trim/remove vegetation that could present a hazard before the next inspection. In drought-prone areas where tree growth is stunted, growth can rebound when drought conditions abate. RREC will consider the fact that growth rates can be nonlinear when establishing inspections frequency.
- RREC defines a hazardous tree as a tree that is "dead, severely damaged, or may present reasonable risks to RREC lines and facilities." RREC may opt to remove a landowner's hazardous tree based on an assessment of public health and safety. A hazardous tree shall be removed or pruned in accordance with this policy to mitigate safety hazards.
- RREC will strive to remove all trees (hazardous or not) that are growing beneath lines in the public ROW or RREC ROW. Trees that can be reasonably removed from a private ROW will be removed with the landowner's permission. RREC will endeavor to remove all trees while they are small and before they pose a hazard to the line. RREC has no affirmative duty to remove trees outside the RREC ROWs. With a written request from a landowner, RREC may assist the landowner with the removal of a hazardous tree outside the ROW, as long as RREC has identified the tree as a hazardous tree. During future development of a Section 512–compliant Operating Plan, RREC will work with federal agencies to address management of hazard trees outside of the ROW. High-risk sections are identified in Appendix C.

  - The landowner is responsible for the removal of branches and other debris following vegetation and tree removal, in or outside of the ROW. All stumps shall be cut to ground level. Complete stump removal is the responsibility of the landowner.

- RREC will maintain and control vegetation and trees on all RREC property, including substations and fenced boundaries.
- Any structure with a facility ID number that has an attached device (e.g., transformers, fuses, capacitor banks, regulator banks, underground take-offs) is treated with herbicides to manage vegetation around its base. Every structure on the 138-kV transmission line is also numbered and treated with herbicides to manage vegetation around its base. RREC will focus vegetation management efforts on those poles and sections of line containing devices that may increase wildfire risk. During development of a Section 512–compliant Operating Plan, RREC will identify poles and sections of line that require increased pole clearance. High-risk sections are identified in Appendix C of this Plan.
- RREC will encourage members to report trees that are potential hazards, in and outside the ROW, that may become a threat to public safety and/or the system's reliability.
- RREC will annually budget an amount sufficient to secure the services of an independent tree contractor, or to utilize in-house resources to assist with its vegetation management program, including tree removal when authorized, tree trimming, and application of herbicide within the ROW.
- RREC will comply with all applicable federal and state laws and regulations concerning the use of herbicides within a ROW, adhering to all stipulations outlined in ROW special use authorizations and grants.
- The activities of the vegetation management program will be documented and maintained annually by the Operations Manager.
- RREC will monitor the growth of vegetation during inspections.
- In the event of a fire, in an effort to protect RREC poles, other forms of vegetation management will be employed, including clearing around poles using backhoes and excavators. Hard-to-reach areas will also accessed by foot and cleared with shovels, axes, and weed-eaters. This would be the case for tangent poles that are in distribution lines that do not contain any devices. Any action taken during an active wildfire on federal lands must be coordinated through the Incident Commander. Communication must be established to ensure safety of incident responders. PPE must be worn at all times.
- Vegetation management actions will be focused on areas of line projected to experience the greatest wildfire hazard and risk. These high-risk sections are identified in Appendix C. During development of a Section 512–compliant Operating Plan, RREC will work with the federal agencies to determine instances when priority vegetation management may trigger surveys and consultation for adherence to the Endangered Species Act and the National Historic Preservation Act.

4.3.3 Inspection Standards

RREC will perform periodic inspections of its distribution and transmission lines to monitor the growth of vegetation. The intent is to ensure that all distribution lines are inspected every 3 years and all transmission lines are inspected every year. RREC will devote the necessary resources to remove any vegetation that has the potential of interfering with its lines.

These inspections will include visual line patrols, vehicle patrols, and potentially drone patrols, and will fulfill the requirement of a vegetation inspection and general maintenance inspection.

4.3.4 Clearance Standards

To adhere to RUS standards, there must be a minimum of 10 feet of clearance on either side of infrastructure. In total, the cleared width for infrastructure will be a minimum of 30 feet (Figure 9).

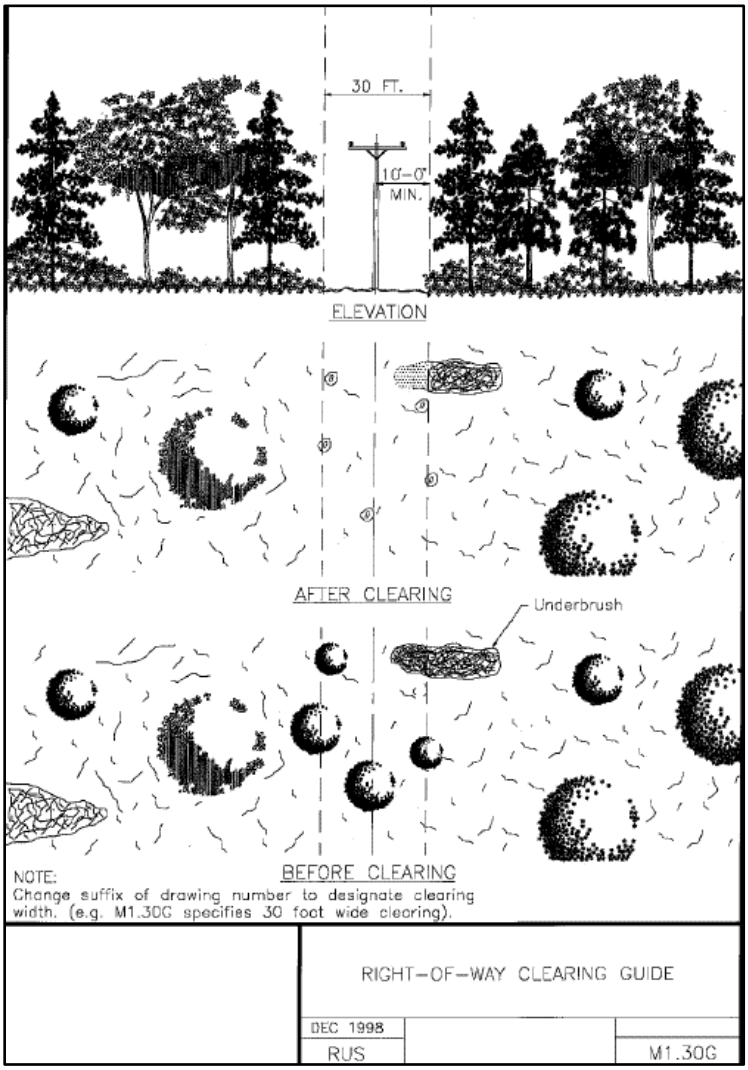


Figure 9. ROW clearing guide.

4.3.5 Responsibility

The Line Superintendent is responsible for ongoing vegetation management, including record keeping of tree trimming to ensure the safety of landowners, employees, and the public.

The Operations Manager is responsible for reviewing records involving vegetation management, modifications, and upgrades to infrastructure.

4.3.6 Recommendations

For ROWs throughout Nevada, Senate Bill 329 requires that RREC adheres to clearance specifications outlined in Appendix A of the International WUI Code (International Code Council 2020). This includes the following specifications:

- Persons owning, controlling, operating, or maintaining electrical transmission or distribution lines shall have an approved program in place that identifies poles or towers with equipment and hardware types that have a history of becoming an ignition source, and provide a combustible-free space consisting of a clearing not less than 10 feet in each direction from the outer circumference of such pole or tower.
- Minimum clearance between vegetation and electrical lines at the time of trimming:
  - Line voltages 2,400–72,000: 4 feet
  - Line voltages 72,001–110,000: 6 feet
  - Line voltages 110,001–300,000: 10 feet
  - Line voltages 300,001 or more: 15 feet

Clearances not less than these shall be maintained during periods of time as designated by the code official. The site-specific clearance achieved at the time of treatment shall vary based on species growth rates, the utility company–specific trim cycle, the potential line sway due to wind, line sag due to electrical loading and ambient temperature, and the tree's location in proximity to the high-voltage lines. The code official is authorized to establish different minimum clearances when evidence substantiating other such clearances is submitted to and approved by the official.

- Minimum clearances between vegetation and electrical lines to be maintained:
  - Line voltages 750–35,000: 6 inches
  - Line voltages 35,001–60,000: 12 inches
  - Line voltages 60,001–115,000: 19 inches
  - Line voltages 115,001–230,000: 30.5 inches
  - Line voltages 230,001–500,000: 115 inches
- During emergencies, the utility shall perform the required work to the extent necessary to clear the hazard. An emergency can include trees falling into powerlines or trees in violation of the above minimum clearances.
- The code official is authorized to give notice to the owner of the property on which conditions regulated by the WUI code exist to correct such conditions. If the owner fails to correct such conditions, the legislative body of the jurisdiction is authorized to cause the same to be done and make the expense of such a correct a lien on the property where such a condition exists.
- Vegetation that, at maturity, would grow to within 10 feet of energized conductors shall not be planted under or adjacent to energized powerlines.

Vegetation clearance should be prioritized by high-risk line segments as delineated in Appendix C.

4.4 System Improvements

RREC's infrastructure is designed, constructed, and maintained to meet or exceed relevant federal, state, industry, and rural utility standards. The RREC also utilizes a Supervisory Control and Data Acquisition (SCADA) device to support system automation.

In addition, RREC monitors and follows as appropriate the National Electric Safety Code. In addition to adhering to all standards, RREC will consider some or all of the following system hardening solutions:

- Provide additional access roads along the powerline ROW and maintain standards.
- Ensure vegetation clearances around transmission structure poles, with a minimum radius of 10 feet.
- Adopt alternative technologies for system improvements. This could include live-feed camera technology, wire-break sensing, and arc detection technology.

RREC's system does not have an impact on the reliability or operability of the national bulk electric system grid. This is because the transmission system is a radial feed, serving only areas within rural communities; it is not directly tied to any transmission-critical pathways. Any event, whether it be natural or human-made, will only affect the system and customers of RREC.

4.4.1 Raptor Protocols

Most new powerlines are constructed for raptor protection, accomplished by having wider spacing between phase-to-phase and phase-to-ground. Line hoses, plastic bird caps, and bird guards are used in specifically potential problem areas. In cases where nesting continues to be a problem, nests are moved, and additional structures may be constructed away from the powerline to prevent contact.

4.4.2 Powerline Construction Procedures

When new powerline construction or replacement occurs during high fire risk, special precautions are followed. Fire extinguishers are verified and readily accessible, backhoes are readily available, and wheeled water tanks with pumps are also close by in case of emergencies. Safety is the top priority when traveling across dry, highly vegetated areas with motorized vehicles. In cases where there is extremely high risk, walking and hand tools are the best option to complete work, if possible, to reduce ignition risk.

4.4.3 Data Acquisition

RREC operates a data acquisition system throughout its network. Every reclosure in all substations, and a few other reclosures that have communication capabilities, send an alert when they sense a fault downstream or have other problems. Alerts are delivered to key personnel, and during high fire danger, personnel are dispatched to inspect the location. This system provides greater situational awareness of potential faults that may elevate wildfire hazard.

4.4.4 System Improvement Schedule

RREC is considering the following system improvements and schedule (Table 7). Priority is given to those improvements that would meet program objectives in the most expeditious and economical way.

Table 7. System Improvement Schedule

Item Description	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Sterilize around all structures with devices on distribution lines			X								
Drone patrolling				X							
Replace porcelain cutouts					X						
Replace knox insulators						X					

4.4.5 System Hardening

System hardening and infrastructure modernization are initiatives that can be followed to mitigate the risk of ignitions and improve resiliency to wildfire from outside sources. Many initiatives would need to be built into long-range budgeting at the RREC.

4.4.5.1 RECOMMENDATIONS

There are several industry best practices that RREC will continue to implement to further reduce the risk of wildfire ignition from its electric facilities as well as to provide greater awareness of possible issues.

1. Fused Cutout Pole Ground Clearing

   It is recommended that, where possible, RREC include this practice with routine tree trimming and ROW clearance work.

2. Overhead Fault Indicators

   Small, medium voltage class, line hung fault indicators can provide quick identification of the location of a faulted circuit. With respect to RREC, these types of low-cost devices could be utilized on single-phase, lateral circuits prone to contact with vegetation. In the case of a minor contact with a tree, the normal line protection, fuse or recloser, may not see sufficient current to trip the circuit, causing the risk to persist. However, a sensitive fault indicator can provide early warning of possible clearance issue before a fault capable of starting a fire occurs. It is further recommended that RREC include this in data acquisition alarms sent to the dispatch operator.

3. Reclosers

   It is recommended that RREC retrofit reclosers for single pole tripping where possible. For older style reclosers, it is recommended these be replaced with modern reclosers with electronic controls capable of single pole tripping. This approach provides for greater service reliability as well as identification of fault location.

   It is also recommended that RREC document all fire season precautions for reclosers.

4. 138-kV and Some Distribution Wood Poles

   Wood poles present a larger fire risk than steel poles, tubular or lattice. RREC might consider replacement with steel structures where wood poles may be aging or otherwise ready for replacement. Similarly, for any distribution pole that has chronic issue with jumper-related fires or hot spots, fiberglass cross arm or full pole replacement with light duty tubular steel is recommended.

5. Operating Procedures

   Developing formal operating procedures for protective device settings for summer versus winter is recommended. In general, all routine utility activities should be documented in operating procedures.

4.5 Emergency Restoration and Disaster Recovery Guidelines

Building on procedures outlined in the RREC ERP (2019), this section provides practices that can help mitigate the risk of fire or other natural disasters to critical facilities or functions.

The RREC ERP includes an asset and loss impact assessment and vulnerability analysis that identifies critical infrastructure which, if severely damaged or destroyed, would have a significant impact on the ability to serve large quantities of customers for an extended period of time, would have a detrimental impact to the reliability or operability of the energy grid, or would cause significant risk to public health and safety. Infrastructure is divided into three categories based on the impact of loss (Category 1 would pose a *significant* risk to public health and safety; Category 2 would pose a *minimal* risk to public health and safety; and Category 3 would pose *no* risk to public health and safety). This analysis is incorporated into the maps in Appendix C.

4.5.1 De-energizing Protocols

The power within this rural service area is predominately a radial feed; shutting down the entire feed is not an option for RREC. The distribution of electrical power to pumps that provide water for livestock, crops, and fire suppression is of the utmost importance. RREC also has members who are dependent on electricity to power their oxygen machines and other types of devices that offer life support. Through a thorough analysis, RREC has balanced the risk of fire with these provisions and has determined that maintaining electric supply to members outweighs the potential wildfire risk.

During extremely high-risk fire conditions (heavy winds and prolonged periods of low humidity) in portions of the service territory that are susceptible to high fire danger (those outlined in Appendix C), the automatic line recloser could be placed in non-reclose mode to further reduce wildfire risk. While this is not a procedure that RREC prefers to employ, it is an option under extreme conditions.

During normal line operation when the power flow is interrupted, the line recloser will try to re-energize. If the fault is temporary and can clear, the power will be restored. If the fault does not clear, the line will remain de-energized. When the power flow is interrupted under high-risk fire conditions, crews respond and will not attempt to manually reclose any line protection devices without first inspecting the section of line to be re-energized. Once the problem is identified and resolved, the crews will re-energize the line manually in order to reduce the risk of starting a fire.

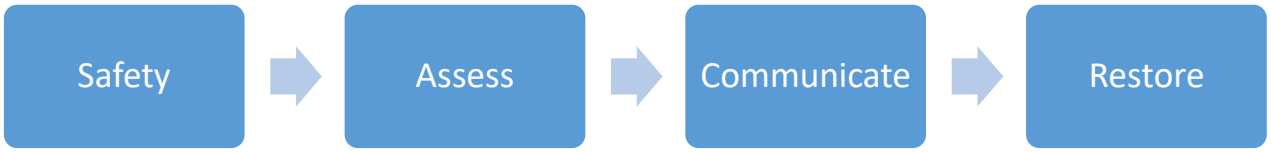
Raft River makes these decisions while considering the safety of members, first responders, the public, and cooperative employees. If danger to these groups is possible, the lines will be de-energized to ensure the safety of everyone. With this in mind, for everyone's safety RREC's transmission systems should always be considered energized.

Each substation and some other devices throughout the system are monitored with the RREC data acquisition system. When there are power flow interruptions, this system sends alerts in the form of emails and text messages to key personnel. It is RREC's standard practice to check for causes for the interruption, monitor that section of line more closely, or possibly dispatch a crew to patrol the line.

RREC will work closely with the incident commander in the event that a hold order is placed on the line. RREC will coordinate as needed with an emphasis on stressing the importance of always treating lines as energized.

4.6 Restoration of Service

RREC is committed to quick response and restoration practices should service be interrupted. RREC's first priority is to make the situation safe for RREC personnel and the general public. Once that is ensured, RREC will assess the damage and determine what is needed, keeping diligent communications both internally and externally. RREC will then focus on restoring power to the greatest number of customers in the most efficient manner.



In the event of a wildfire impacting the RREC service area, RREC will staff up its operations department to coordinate activities to restore service. Restoration of power will be coordinated with County, municipal fire, and public works departments, in coordination with the incident commander in charge of the wildfire operations. In the event additional resources are needed, RREC may also engage contractors on an as needed basis. RREC would follow the following steps during the restoration of electrical service (Figure 10):

Emergency Declaration: Fire declaration will be made by the County or municipality with jurisdiction.

Inspection and Assessment: RREC staff will patrol and record any damage to lines resulting from wildfire. The inspection will include assessing infrastructure repairs, removing debris, and assessing safety hazards. RREC will work with the local agency in charge of the fire before accessing the burn area.

Planning: Following initial assessment, RREC engineers and managers will meet to discuss the extent of any damage and develop a plan of work to restore service. Line segments and infrastructure that support the most critical infrastructure needs will be prioritized.

Mobilization: RREC will coordinate the crews and materials needed to rebuild infrastructure and restore service. Contractors may be employed as needed.

Rebuilding: Any repairs and rebuilding will be undertaken by RREC as soon as the area is safe to access. Initial effort will be focused on replacing lines and restoring any damaged circuits.

Restoration: RREC or contract crews will restore electric services to homes and businesses as soon as possible after the wildfire.

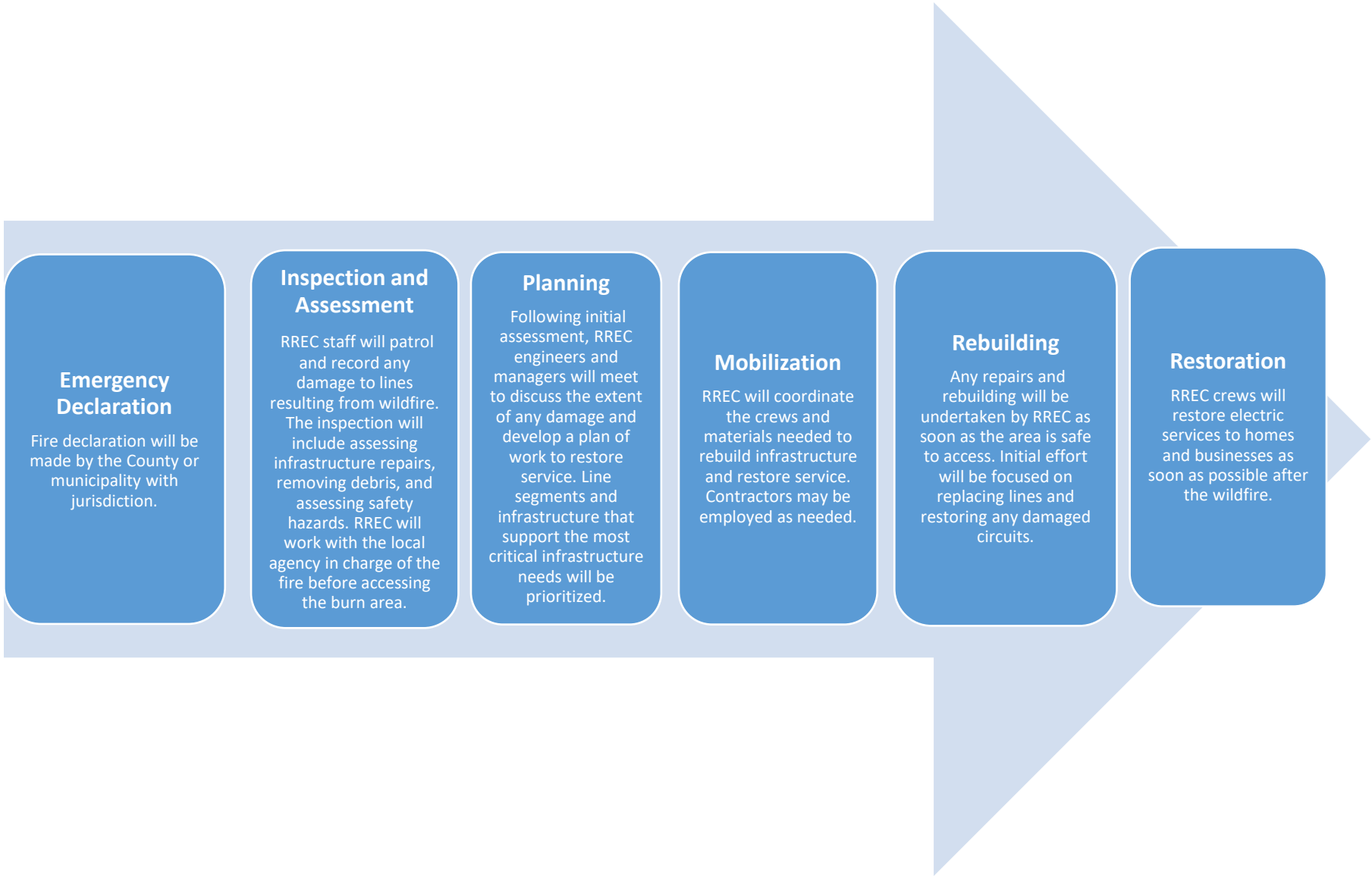


Figure 10. Industry best practice for emergency response and restoration of electrical service during and following a wildfire.

Restoration of services will be prioritized depending on the specific incident, the RREC Emergency Response Plan, and available resources. Priorities for restoration include:

- Public and worker safety
- Members depending on life support and other critical members
- Critical infrastructure, including county and municipal facilities, the Sheriff's department, police and fire departments, other infrastructure (water, sewage, gas, communications), and incident command sites
- Major commercial activities/accounts
- Reducing the total number of members affected
- Reducing the length of time members have been without power.

General guidelines for restoration priorities as outlined in the ERP are as follows:

1. Transmission
2. Substations
3. Distribution circuit breakers and reclosers
4. Distribution fuses/taps
5. Distribution transformers and individual services

4.6.1 Response Teams

A schedule is developed yearly and formulated such that there are always two on-call linemen available within 20 minutes of the main office. The Cooperative Response Center is forwarded this information and notified if there are any temporary or permanent changes to the schedule. These linemen are the first responders to an event. It is the responsibility of these personnel to work together to assess the situation and obtain additional help as needed. The Line Superintendent or Line Foreman will assist the on-call linemen in obtaining additional support if required. The Western Division Line Superintendent will also be involved as needed, especially if the interruption is in the areas of Owyhee/Mountain City.

4.6.2 Work Location Prioritization

Prioritization of work locations will be consistent with restoration criteria and guidelines. Within those guidelines the following will be considered:

- Safety
- Member count
- Outage curation
- Crew availability
- Efficient routing of crews
- Other priority considerations identified by external sources (i.e., critical members, requirements of government agencies, etc.)
- Weather conditions

4.6.3 Resource Utilization

If the first responders determine that additional resources will be required, they will contact the Line Superintendent. The Line Superintendent will review the restoration criteria and guidelines and secure additional resources as required.

If resources are required beyond RREC's existing inventories and in-house workforce, the Line Superintendent will coordinate with the Manager of Operations, and the following resources will be utilized:

- A mutual assistance agreement is in place with the Idaho Consumer Owned Utilities
- RREC is a member of the Utah Rural Electric Association and the Nevada Rural Electric Association and participates in their mutual aid assistance programs.
- Agreements are in place with Probst Electric to provide equipment, construction, and repair contracting services.

5 SITUATIONAL AWARENESS

Situational awareness is a critical element for safe and reliable operation of the electric transmission and distribution systems. RREC addresses situational awareness through three specific operating procedures: 1) monitoring of local and regional weather events, 2) identifying potential for additional resources to address extreme weather events, and 3) evaluation of potential need for mutual aid through coordination with local government agencies. Furthermore, RREC works to make all employees and members aware of the danger of wildfire and potential risk reduction actions through education and outreach efforts such as safety demonstrations to the public, emergency responders, and others and educating the public about the placement of trees relative to the line before they plant.

5.1 Recommendations

Advances in technology are supporting utilities in improving situational awareness related to wildfire. Improved situational awareness tools can help RREC better understand real time and projected weather and fire conditions, respond faster to threats, reduce fire ignitions, and reduce the frequency and severity of potential fire starts. Tools for RREC to consider incorporating into the system include more localized weather reporting tools, increased weather stations, and increased high-definition cameras; utilizing satellite fire detection systems; establishing wildfire safety operations centers to monitor fire threats; and close coordination with fire responders through utilizing active fire mapping and decision support tools.

In addition, RREC may consider field assessments of the service territory that ground truth the desktop analysis completed in development of this Plan and help to further prioritize vegetation management, inspections, and system hardening.

6 COMMUNICATIONS

6.1 Internal communications

Consistent, accurate, and timely assessment of outages, damages, resource capabilities, and needs are fundamental to establishing emergency response protocols. Regular, timely assessments will be provided to the manager of operations with enough detail to enable informed decisions and to determine when or if the incident should be escalated to a higher level of response. The Manager of Operations will ensure that pertinent information is forwarded to the General Manager, emergency centers, and other departments affected.

6.2 External Communications

In order to comply with Nevada S.B. 329, a copy of this approved plan will be provided to the chief officer of each fire department in addition to each state, city, and county emergency manager within the RREC service territory.

The following are actions that RREC currently employs and/or would consider adopting in order to improve public safety and notifications:

- Annual coordination with federal agencies according to existing special use permits and ROW grants. Coordination includes notifications from RREC to the federal agency regarding planned and anticipated routine inspection, maintenance, repair, and reconstruction activities.
- Notifications to federal agencies in adherence to stipulations contained within existing special use permits and ROW grants, e.g., emergency work notifications.
- Coordination prior to fire season with county emergency managers and fire staff to determine fire season outlook and potential red-flag periods.
- Coordination during emergencies or large-scale outages with county emergency managers and fire staff in conjunction with agency dispatch.
- Development of communication protocols with county health departments for emergency notifications to vulnerable members (i.e., medical facilities, schools, etc.).
- Expansion of social media reach across the service area.
- Development of a web-based map for the public to see current outages and estimated restoration.

6.2.1 Recommendations

Additional public outreach options that could be employed in conjunction with county or local emergency managers include:

- Utilizing local radio and television media to broadcast public service messages.
- Compiling and disseminating information to members regarding community wildfire preparedness, evacuation, and vigilance before and during fire season (Ready, Set, Go; Firewise; Fire Adapted Communities) (RSG 2021; FAC 2021; NFPA 2021); working with state and government officials to provide a consistent public message to members regarding wildfire preparedness.
- Engagement in future Community Wildfire Protection Planning projects.
- Developing an ArcGIS Story Map with dynamic content that will alert the public of potential wildfire situations.
- Providing webinars or open house sessions for customers ahead of fire season to discuss initiatives that RREC are taking to reduce wildfire risk.
- Specific outreach required for people visiting the area for recreation.

Additional agency stakeholder outreach that could be employed by RREC includes:

- Formation of wildfire safety working sessions with stakeholders to ensure pre-fire planning, fire response, and readiness protocols are documented and practiced before a wildfire event occurs. This would include pre-planning exercises and scenarios, utilizing a SIMs Table–type approach.
- Ensuring that RREC is involved in annual incident commander coordination meetings, and coordinating with the USFS and BLM to be added to invite list.
- Working with stakeholders in the development of hazard mitigation plans and fire management plans throughout the counties within RREC's service area.
- Developing a living contact list that is constantly updated with internal and external contact information, as well as roles and responsibilities for internal and external parties involved in wildfire response and fire management. Consider an online dashboard format for tracking contacts.

7 PLAN IMPLEMENTATION

Plan implementation and the funding to support these efforts will be integrated into future RREC budgets. Additional external funding may be necessary to implement this Plan.

Anticipated level of expenditures are detailed below. These estimates are based on past experience performing related work and the assumption that external resources will be available (e.g. personnel). This information is subject to change during Plan review and implementation.

Table 8. Anticipated expenditures to implement the Plan

Category	Project or Program	2021	2022	2023	2024
Vegetation Management	Hazard tree removal and tree trimming	$40,000	$50,000	$50,000	$50,000
	ROW grubbing	$20,000	$10,000	$10,000	$10,000
	Applying ground sterilant	$20,000	$20,000	$20,000	$20,000
System hardening	Pole and line cover up	$20,000	$25,000	$25,000	$25,000
	Raptor framing and enhanced hardware spacing	$25,000	$30,000	$30,000	$30,000
	Application of bird deterrents	$5,000	$10,000	$10,000	$10,000
	Advanced protection and control measures	$12,000	$15,000	$15,000	$15,000
	Reconstruction of aging line with shorter spans to reduce contour slapping	$800,000	$900,000	$900,000	$900,000

8 LITERATURE CITED

Bear River Association of Governments. 2015. Pre-Disaster Mitigation Plan. Available at: http://brag.utah.gov/pre-disaster-mitigation-plan-draft-2015/.

Bureau of Indian Affairs (BIA). 2008. *Bureau of Indian Affairs Fuels Management Program*. Available at: https://www.bia.gov/sites/bia.gov/files/assets/public/raca/handbook/pdf/BIA-Fuels-Management-Program_Planning-Implementation-Procedures-Ref-Guide_OIMT.pdf. Accessed May 2021.

_____. 2020. Wildfire Prevention and Education. Available at: https://www.indianaffairs.gov/bia/ots/dfwfm/bwfm/wildfire-prevention-and-education. Accessed May 2021.

_____. 2021. Branch of Wildland Fire Management. Available at: https://www.bia.gov/bia/ots/dfwfm/bwfm. Accessed May 2021.

Bishop, Tara B. B.; Munson, Seth; Gill, Richard A.; Belnap, Jayne; Petersen, Steven L.; St. Clair, Samuel B. 2019. Spatiotemporal patterns of cheatgrass invasion in Colorado Plateau National Parks. Landscape Ecology. 43:925-941.

Bureau of Land Management (BLM). 2005. Utah Land Use Plan Amendment for Fire and Fuels Management.

_____. BLM. 2020. BLM Instruction Memorandum No. IM-2020-009. Available at: https://www.blm.gov/policy/nv-im-2020-009. Accessed May 2021.

_____. BLM. 2021. Nevada Fire Information. Available at: Nevada | Bureau of Land Management (blm.gov). Accessed November 18, 2021.

Boise Interagency Dispatch Center (BIDC). 2021. About Us. Available at: https://www.idahofireinfo.blm.gov/southwest/about_us.htm. Accessed April 2021.

Box Elder County. 2019. County Wildfire Preparedness Plan.

Duck Valley Indian Reservation. 2012. Duck Valley Indian Reservation Tribal Hazards Mitigation Plan. Available at: http://resource-analysis.com/wp-content/uploads/2020/11/DVIRTHMP-20120124R.pdf. Accessed May 2021.

Dynamic Corporation. 2004. Power County Wildland Fire Mitigation Plan. Accessed April 2021.

Eastern Idaho Interagency Fire Center (EIIFC). 2021. About. Available at: https://www.idahofireinfo.blm.gov/east/about.html. Accessed April 2021.

Elko County. 2014. Elko County Multi-Jurisdictional Hazard Mitigation Plan. Available at: https://dem.nv.gov/uploadedFiles/demnvgov/content/About/2014_Elko_County_HMP.pdf. Accessed April 2021.

Elko County Office of Emergency Management. 2019. Emergency Operations Plan. Available at: https://www.elkocountynv.net/departments/emergency_management/community_emergency_plans.php#outer-831. Accessed April 2021.

Elko Interagency Dispatch Center (EIDC). 2021. Resource Status. Available at: https://gacc.nifc.gov/gbcc/dispatch/nveic/. Accessed April 2021.

Fire Adapted Communities (FAC). 2021. What is a Fire Adapted Community? Accessed May 2021. Avaiabale at: https://fireadapted.org/.

Grouse Creek Community. 2016. Community Wildfire Preparedness Plan.

Idaho Bureau of Land Management (BLM). 2019. BLM Idaho Fire Management Plan. Available at: https://nifc.maps.arcgis.com/apps/MapJournal/index.html?appid=42d4f07a685b47c99ed8fbaef60a0504. Accessed May 2021.

Idaho Department of Lands. 2020. Forest Action Plan Resource Assessment and Resource Strategy. Available at: https://www.idl.idaho.gov/wp-content/uploads/sites/2/2020/11/FINAL_2020-FAP-Resource-Assessment_09-03-20.pdf and https://www.idl.idaho.gov/wp-content/uploads/sites/2/2020/11/FINAL_2020-FAP-Resource-Strategy_09-16-20.pdf. Accessed May 2021.

Idaho Fire Chiefs Association. 2016. Idaho Fire Service Resource Response Plan. Accessed May 2021.

Idaho Office of Emergency Management. 2017. Idaho Emergency Operations Plan. Available at: https://ioem.idaho.gov/wp-content/uploads/sites/57/2018/12/2017-IDEOP.pdf. Accessed May 2021.

_____. 2020. State Hazard Mitigation Plan. Available at: https://ioem.idaho.gov/preparedness-and-protection/mitigation/state-hazard-mitigation-plan/. Accessed May 2021.

Innes, R.J. 2019. Fire regimes of Wyoming big sagebrush and basin big sagebrush communities. In: *Fire Effects Information System*. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Missoula Fire Sciences Laboratory (Producer). Available at: https://www.fs.fed.us/database/feis/fire_regimes/WY_basin_big_sagebrush/all.html. Accessed May 19, 2021.

Innes, R.J., and K. Zouhar. 2018. Fire regimes of mountain big sagebrush communities. In *Fire Effects Information System*. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Missoula Fire Sciences Laboratory (Producer). Available at: https://www.fs.fed.us/database/feis/fire_regimes/mountain_big_sagebrush/all.html. Accessed January 22, 2021.

International Code Council. 2020. 2018 International Wildland Urban Interface Code (IWUIC), Appendix A. Available at: https://codes.iccsafe.org/content/IWUIC2018/appendix-a-general-requirements. Accessed May 2021.

Mensing, S., S. Livingston, P. Barker. 2006. Long-term fire history in Great Basin sagebrush reconstructed from macroscopic charcoal in spring sediments, Newark Valley, Nevada. *Western North American Naturalist*. 66(1):64–77.

Monitoring Trends in Burn Severity (MTBS). 2017. MTBS Data Access: Fire Level Geospatial Data. Available at: https://www.mtbs.gov/. Accessed May 2021.

Multi-Resolution Land Characteristics Consortium. 2021. National Land Cover Database 2011 Legend. Available at: https://www.mrlc.gov/data/legends/national-land-cover-database-2011-nlcd2011-legend. Accessed May 2021.

National Fire Protection Association. 2021. Public Education. Accessed May 2021. Available at: https://www.nfpa.org/Public-Education/Fire-causes-and-risks/Wildfire/Firewise-USA.

National Wildfire Coordinating Group (NWCG). 2012. FAMWEB webpage. Available at: https://fam.nwcg.gov/fam-web/. Accessed June 2021.

Navigant Consulting. 2020. NV Energy Natural Disaster Protection Plan. Accessed May 2021.

Nevada Department of Public Safety. 2018a. State Comprehensive Emergency Management Plan. Available at: https://jic.nv.gov/uploadedFiles/jicnvgov/content/About/State%20Comprehensive%20Emergency%20Management%20Plan%20October%202018.pdf. Accessed May 2021.

_____. 2018b. State of Nevada Enhanced Hazard Mitigation Plan. Available at: https://data.nbmg.unr.edu/Public/NEHMP/StateOfNevadaEnhancedHazardMitigationPlan2018.pdf. Accessed May 2021.

_____. 2020. Nevada Utility Vulnerability Assessment and Emergency Response Plan Guide. Available at: https://dem.nv.gov/uploadedFiles/demnvgov/content/Resources/Utility%20ERP%20Guide1.%202020.pdf. Accessed May 2021.

Nevada Division of Forestry. 2020. Nevada Forest, Range, & Watershed Action Plan. Available at: http://forestry.nv.gov/Nevada_FRWAP_2020.pdf. Accessed May 2021.

North Wind. 2004a. Cassia County Wildland Fire Hazard Mitigation Plan. Available at: https://scholarsbank.uoregon.edu/xmlui/bitstream/handle/1794/17676/ID_031_Cassia_2004.pdf?sequence=1&isAllowed=y. Accessed: May 2021.

_____. 2004b. Oneida County Wildland Fire Hazard Mitigation Plan. Available at: https://scholarsbank.uoregon.edu/xmlui/bitstream/handle/1794/17702/ID_071_Oneida_2004.pdf?sequence=1&isAllowed=y. Accessed May 2021.

Northwest Management. 2005.Owyhee County Wildland-Urban Interface Wildfire Mitigation Plan. Available at: https://scholarsbank.uoregon.edu/xmlui/bitstream/handle/1794/17703/ID_073_Owyhee_2005.pdf?sequence=1&isAllowed=y. Accessed May 2021.

Omernik, J.M. 1987. Primary Distinguishing Characteristics of Level III Ecoregions of the Continental United States. Available at: https://www.hort.purdue.edu/newcrop/cropmap/ecoreg/descript.html. Accessed May 2021.

Owyhee County. 2018. Owyhee County Multi-Jurisdictional Hazard Mitigation Plan. Accessed May 2021.

Power County. 2018. Power County Comprehensive Plan. Available at: http://powercounty.us/wp-content/uploads/2018/06/POWER-COUNTY-COMPREHENSIVE-PLAN-working-FINAL-AGH-2018-Ord.pdf. Accessed April 2021.

Raft River Rural Electric Cooperative (RREC). 2019. Raft River Emergency Response Plan. Accessed May 2021.

Ready, Set, Go! (RSG). 2021. Are YOU wildfire Ready? Accessed May 2021. Available at: https://www.wildlandfirersg.org/s/are-you-wildfire-ready?language=en_US.

Resource Concepts Inc. (RCI). 2005. Nevada Community Wildfire Risk Assessment Project Elko County. Available at: https://www.rci-nv.com/reports/elko/. Accessed April 2021.

_____. 2020. Nevada Statewide Wildfire Risk/Hazard Assessment Project. Available at: https://www.rci-nv.com/project/statewide-wildfire-riskhazard-assessment/. Accessed April 2021.

Risk Mitigation Group, LLC. 2021. Box Elder County, Utah Fire Departments. Available at: https://www.firedepartment.net/directory/utah/box-elder-county. Accessed May 2021.

Rothermel, R.C. 1983. *How to Predict the Spread and Intensity of Forest and Range Fires*. Gen. Tech. Rep. INT-143. Ogden, Utah: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station.

State Foresters, 2019. State and Private Forestry Fact Sheet. Available at: Nevada State and Private Forestry Fact Sheet 2019 (stateforesters.org). Accessed November 18, 2021.

Scott, Joe H, and Robert E. Burgan. 2005. Standard Fire Behavior Fuel Models: A Comprehensive Set for Use with Rothermel's Surface Fire Spread Model. Gen. Tech. Rep. RMRS-GTR-153. Ogden, Utah: U.S. Department of Agriculture, Forest Service. Rocky Mountain Research Station. 78 p.

Shoshone-Paiute Tribes. 2021. Shoshone-Paiute Fire Management. Available at: https://shopaitribes.org/spfire/. Accessed May 2021.

SWCA Environmental Consultants (SWCA). 2007. Northern Utah Regional Wildfire Protection Plan. Available at: https://digitallibrary.utah.gov/awweb/awarchive?item=31610.

South Central Idaho Interagency Dispatch Center (SCIIDC). 2020. South Central Idaho Interagency Dispatch Center. Available at: https://gacc.nifc.gov/gbcc/dispatch/id-scc/index.htm. Accessed April 2021.

U.S. Census Bureau. 2019. Quick Facts. Available at: https://www.census.gov/quickfacts/fact/table/US/PST045219. Accessed March 2021.

U.S. Department of Agriculture. 2020. Section 512 of the FLPMA. Available at: https://www.federalregister.gov/documents/2020/07/10/2020-13999/land-uses-special-uses-procedures-for-operating-plans-and-agreements-for-powerline-facility.

U.S. Forest Service (USFS). n.d. Compiled by Intermountain Region. Chapter 48: Ecological Subregions of the United States. Available at: http://wwwfs.fed.us/land/pubs/ecoregions/ch48.html#342B. Accessed May 2021.

_____. 2012. Sawtooth National Forest Land and Resource Management Plan. Available at: https://www.fs.usda.gov/detail/sawtooth/landmanagement/planning/?cid=stelprdb5391896. Accessed May 2021.

_____. 2014. Sawtooth National Forest Fire Management Plan. Available at: https://winapps.umt.edu/winapps/media2/wilderness/toolboxes/documents/fire/sawtooth%20nf%20fire%20mgmt%20plan%2014.pdf. Accessed May 2021.

_____. 2021. Humboldt-Toiyabe National Forest, Fire Management. Available at: https://www.fs.usda.gov/main/htnf/fire. Accessed May 2021.

Utah Department of Agriculture and Food (UDAF). 2013. Catastrophic Wildfire Reduction Strategy. Available at: https://ffsl.utah.gov/wp-content/uploads/CatFireFinalReport120213.pdf. Accessed May 2021.

Utah Department of Natural Resources (DNR). 2019. State of Utah Community Wildfire Preparedness Plan for the Wildland-Urban Interface. Available at: https://www.utah.gov/pmn/files/496605.pdf. Accessed May 2021.

_____. 2020. Utah Forest Action Plan. Available at: https://drive.google.com/file/d/1AaF2Dk_e-mepE9tVvFLEvXPIUc7BAPxe/view. Accessed May 2021.

Utah Department of Public Safety. 2016. State of Utah Emergency Operations Plan. https://site.utah.gov/dps-emergency/wp-content/uploads/sites/18/2018/12/State-of-Utah-EOP-Basic-Plan-Final-2016-2020.pdf. Accessed May 2021.

Utah Division of Emergency Management. 2019. Utah State Hazard Mitigation Plan. Available at: https://hazards.utah.gov/wp-content/uploads/Utah-State-Hazard-Mitigation-Plan-2019.pdf. Accessed May 2021.

Utah Division of Forestry. 2007. Northern Utah regional wildfire protection plan covering Box Elder, Cache, Davis, Morgan, Rich, Salt Lake, Summit, Tooele, Utah, Wasatch, and Weber Counties. Available At: https://digitallibrary.utah.gov/awweb/awarchive?item=31610. Accessed March 2021.

Utah Division of Emergency Management. 2019. Utah State Hazard Mitigation Plan. Available at: https://site.utah.gov/dps-emergency/wp-content/uploads/sites/18/2019/02/1-Introduction.pdf.

Utah Department of Natural Resources. 2020. Utah DNR Wildfire Risk Assessment Portal (UWRAP). Available at: https://wildfirerisk.utah.gov/.

Western Regional Climate Center. 2021. Cooperative Climatological Data Summaries. Available at: https://wrcc.dri.edu/Climate/west_coop_summaries.php

Wildland Fire Associates. 2007. Landscape-Scale Wildland Fire Risk/Hazard/Value Assessment. Available at: http://forestry.nv.gov/wp-content/uploads/2013/12/Elko-Assessment-Final.pdf. Accessed April 2021.

Woods, A.J., D.A. Lammers, S.A. Bryce; J.M. Omernik, R.L. Denton, M. Domeier, and J.A. Comstock. 2001. Ecoregions of Utah (color poster with map, descriptive text, summary tables, and photographs): Reston, Virginia, U.S. Geological Survey (map scale 1:1, 175,000).

World Wildlife Fund (WWF). 2021a. Great Basin shrub steppe. Available at: https://www.worldwildlife.org/ecoregions/na1305. Accessed May 2021.

_____. 2021b. Great Basin montane forests. Available at: https://www.worldwildlife.org/ecoregions/na0515. Accessed May 2021.