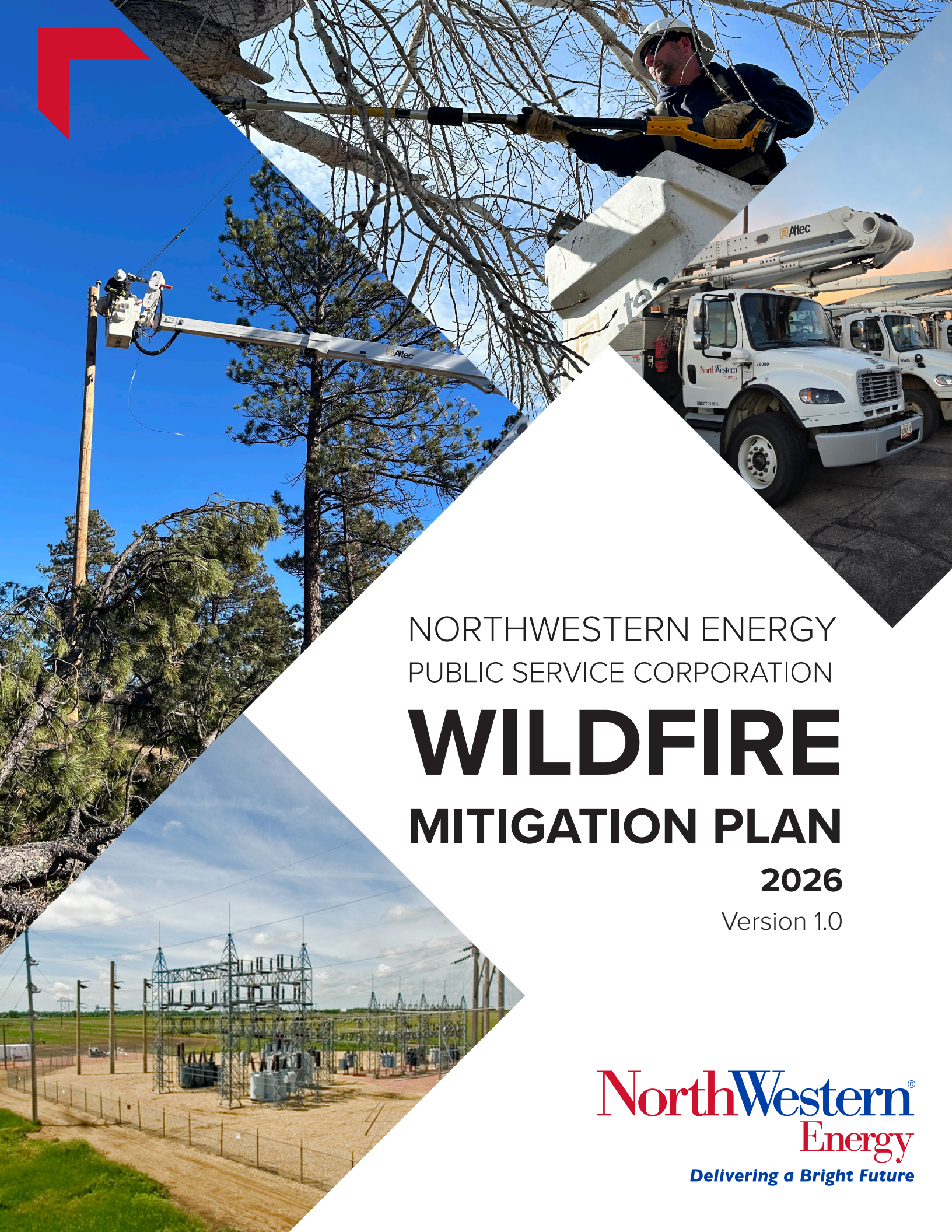




NORTHWESTERN ENERGY
PUBLIC SERVICE CORPORATION

WILDFIRE MITIGATION PLAN

2026

Version 1.0

NorthWestern[®]
Energy

Delivering a Bright Future

Contents

Definitions and Acronyms..... 3

Section 1 – Introduction..... 8

1.1 – NorthWestern..... 8

1.2 – Wildfire Conditions in South Dakota 8

1.3 – Modeling & Risk-Informed Decision Making 9

1.3.1 – Defining Wildfire Risk 9

1.3.2 – NorthWestern’s Suite of Tools 10

1.3.3 – Modeling Prioritization & Application..... 11

1.3.4 – Heightened Risk of Wildfire Proximal to T & D Assets 12

1.4 – Wildfire Mitigation Plan Methodology..... 14

Section 2 – Category Summaries & Activities 16

2.1 – Wildfire Mitigation Plan Summary..... 16

2.2 – WMP Categories and Goals..... 16

Section 3 – Situational Awareness..... 20

3.1 – Overview..... 20

3.2 – Task Activities..... 21

3.2.1 – Situational Awareness Team..... 21

3.2.2 – Modeling and Analysis..... 21

3.2.3 – Realtime Monitoring 21

Section 4 – Operational Practices 24

4.1 – Overview..... 24

4.2 – Task Activities..... 24

4.2.1 – System Performance 24

4.2.2 – Operational Defense Strategies 25

Section 5 – System Preparedness 30

5.1 - Overview 30

5.2 – Task Activities 30

5.2.1 – Assessment & Repair..... 30

5.2.2 – Construction..... 31

Section 6 – Vegetation Management 34

6.1 – Overview..... 34

6.2 – Task Activities 34

6.2.1 – Proactive Wildfire Cycle Trimming 34

6.2.2 – Distribution O1 Hotspots..... 34

Section 7 – Communication & Outreach 36

7.1 – Overview 36

7.2 – Task Activities 36

7.2.1 – Customer Engagement..... 36

7.2.2 – Partnerships & Additional Outreach 37

Section 8 – Conclusion 38

Appendix A – Outage Reporting & Reliability..... 39

Appendix B – NorthWestern’s Suite of Tools..... 40

Appendix C – Incremental WMP Costing Details..... 41

Appendix D – Revision Log..... 42

Definitions and Acronyms

Advanced Metering Infrastructure (AMI) – A modern class of utility meters equipped with communication technology which enables real-time, remote sensing and monitoring. These meters allow utilities to adapt to changes in usage patterns over time, quickly identify which services are impacted by outage events, monitor power quality to services, and provide safety alerts. Customers benefit from these meters through swifter response to interruptions and enhanced understanding of energy usage.

Assessment – An engineering process which visually obtains data on the transmission or distribution systems. This data is used to evaluate future repairs or upgrades. Assessment can be performed aerially or by crews on the ground. The cadence with which this process occurs varies by strategy.

Breaker – These devices interrupt short circuits or overload currents that can occur on the system. Also referred to as a circuit breaker or a substation breaker.

Cutout – A device that is attached to a crossarm or pole to hold a fuse. When the fuse opens, the cutout creates an open point that isolates the downstream system and stops the flow of electricity.. Historically, these devices were made of porcelain. Modern cutouts can be polymer-based, providing increased durability in harsh weather conditions.

Cycle trimming – A utility strategy encompassing the trimming and/or removal encroaching vegetation to overhead electrical facilities, performed on an established frequency. The precise duration between cycle trims is dependent upon resource availability and the growth rate of tree species present.

Distribution – Electrical infrastructure with a voltage below that of transmission or sub-transmission. This system carries electricity from a substation to residential and certain commercial customers.

Electrical Section Identifier (ESID) – A section of distribution line between protective devices.

Enhanced Powerline Safety Settings (EPSS) – Special settings on protective devices which increase the sensitivity to faults during periods of elevated ignition risk. EPSS can assist in faster de-energization of equipment when a fault is detected. This strategy can also be utilized to prevent automatic reclosing.

Exception – A term utilized by NorthWestern Energy to describe a deficiency in identified asset or deviation from standard guidelines. Examples of exceptions include cracked insulators, loose guy wires, vegetation encroachment, missing animal protection, and sagging conductors.

Fault – This describes abnormal current on the electrical system. Faults on utility infrastructure are usually the result of vegetation contacts, downed conductors, or damage to assets, which may result in an interruption to customers.

Fuse – An electrical device which protects the system against over-current. Fuses can be used to isolate individual customers or sectionalize larger unprotected sections of line. The most common form of this device converts overcurrent energy into heat energy and produces an expulsive release of energy when it operates.

Galloping – The oscillation of overhead conductors caused by high amplitude, low frequency motion. Under specific wind conditions, this can result in the contact between phases, creating interruptions.

Grid hardening – A process to mitigate assessed risks on electrical facilities. This proactive strategy includes targeted infrastructure maintenance and upgrade programs.

Hot spotting – A targeted tree trimming process that considers specific locations, rather than the circuit wide approach utilized in cycle trimming. At NorthWestern Energy, this is typically driven by a Vegetation Coordinator or other trained arborists to locally identify potentially problematic vegetation.

Institute of Electrical and Electronics Engineers (IEEE) – A global technical society dedicated to advancing technology and innovation for public benefit. IEEE sets metrics upon which utilities can compare their system’s performance and facilitates peer-utility benchmarking.

Incident Command System (ICS) – A nationally-recognized, standard approach to the command, control, and coordination of an emergency response. NorthWestern Energy and other utilities play a specific role in responses to wildfire, flooding, winter storms, or large interruption events. Typically, this entails the communication of estimated restoration times.

Interruption – A loss of power, regardless of duration, to customers. This term can describe momentary operations or sustained outages.

Momentary operations – Interruptions less than 5 minutes in duration caused by a single fault current triggering an operation on a protective device, such as a recloser or breaker. These events are also referred to as ‘momentaries’ or ‘blinks.’ Operations are immediately followed by restoration of power to the system, without a sustained outage. This can be caused by galloping wires becoming too close, encroachment of vegetation, or avian contacts between phases.

National Electric Safety Code (NESC) – The NESC is a United States standard, published by IEEE. NESC provides safety guidelines for the installation, operation, and maintenance of electric power and communication systems, including substations and overhead and underground infrastructure.

Patrol – A visual inspection to evaluate overhead facilities for deficiencies, prioritize repairs, and mitigate issues requiring immediate action. Patrols are typically performed from the ground. The cadence of patrols is determined by program strategies.

Protection strategies – A term describing the engineered approach to minimize potential undesirable flow of electricity within the system or to the surrounding environment. Strategies can be engineered for a variety of reasons including mitigation of ignition potential, reliability to customers, or physical protection of devices to prevent damage.

Protective device – Electrical equipment designed to break load when current draw exceeds an established threshold. This device protects both the system and customers by breaking potentially damaging electrical connection. Fuses, breakers, reclosers, and switchgears are among several examples of these devices.

Public Safety Partner – An entity with whom NorthWestern Energy plans to collaborate in the event of a safety emergency. In context of the ICS, these often represent government or fire agencies.

Public Safety Power Shutoff (PSPS) – The practice of proactively de-energizing electric equipment during periods of extreme elevated wildfire risk. This safety measure reduces the probability of ignition from electric utility infrastructure during extreme conditions.

Rate review – A legal process wherein an Investor-Owned Utility (IOU) presents a proposal to its governing regulatory body, requesting the adjustment of customers rates in response capital expenditure investments over previous years. The Public Utilities Commission (PUC) is the governing regulatory body in South Dakota.

Recloser – A device with variable settings used to balance reliability and system sensitivity. When a fault is identified, a recloser will operate, causing a temporary interruption. Following a set duration, the device can ‘close’ and re-energize the line. The device will operate again if the fault is still present, thereby reducing potential ignition risks or hazards to the system. This process can be repeated depending on system settings. During periods of elevated ignition potential, devices may be blocked from automatically reclosing. Adjustments can be made to the trip speed and number of reclose attempts.

Rejected pole – NorthWestern Energy’s Electric Operation & Maintenance Guidelines define these poles, at the time of inspection, as having lost 33% or more of structural design strength. These assets are prioritized for replacement once identified.

Protective Relay – A device that compares system information, such as voltage or current, against engineered thresholds which establish set points for device operation. These relays work in conjunction with protective devices, typically breakers or reclosers.

Right-Of-Way (ROW) – Designated easements on private property which grant utilities the legal rights to access to their facilities. NorthWestern utilizes these agreements to establish and maintain systems which serve its customers.

Service territory – An area, typically defined by a government regulatory body or bound within state lines, served by NorthWestern Energy’s facilities and infrastructure. NorthWestern Energy’s South Dakota service territory is outlined in this plan.

Supervisory Control and Data Acquisition (SCADA) – A category of software applications for controlling industrial processes. In a utility context, this system usually provides remote visibility and, in some cases, control of devices within an electrical system.

System Average Interruption Duration Index (SAIDI) – An electric reliability metric which equates the impact of an event to all customers on the system. For example, a multi-day outage event impacting one town could also be equivalent to all customers within the service territory being out of power for 100 minutes. This is typically evaluated at the end of each year to determine the average amount of time each customer on the system is without power.

Splices – A method of connecting two ends of conductor; sometimes resembling a sleeve. Splices are used to re-join damaged spans or connect a new conductor reel during construction.

Sustained outage – NorthWestern Energy defines as an interruption to customers greater than 5 minutes. These can be planned for operations like maintenance.

Transmission – Electric lines above a certain voltage class, which deliver power between substations, or from generation, often across long distances. Also known as a “bulk electric system.” Sub-transmission is a term used to define lower voltage classes not used for distribution.

Vegetation fuels – Live or dead natural materials including grasses, shrubs, trees, leaves, certain plants used for landscaping, and agricultural crops.

Section 1 - Introduction

NorthWestern Energy
Wildfire Conditions in South Dakota
Modeling & Risk-Informed Decision Making
Defining Wildfire Risk
NorthWestern's Suite of Tools
Modeling Prioritization & Application
Heightened Risk of Wildfire Proximal to T&D Assets
Wildfire Plan Methodology

Section 1 – Introduction

NorthWestern Energy Group, d/b/a NorthWestern Energy provides electricity and natural gas utility services to approximately 850,300 customers in Montana, South Dakota, Nebraska, and Yellowstone National Park. Operations in Montana and Yellowstone National Park are conducted through the subsidiary NorthWestern Corporation. Operations in South Dakota and Nebraska are conducted through the subsidiary NorthWestern Energy Public Service. This Plan addresses NorthWestern Energy Public Service Corporation d/b/a NorthWestern Energy's (NorthWestern) systems in its service territory in South Dakota. NorthWestern will submit this Plan to the Public Utilities Commission of the State of South Dakota, consistent with South Dakota statutes. NorthWestern is committed to the safe and reliable delivery of energy within its service territories. This document will provide a comprehensive overview of wildfire mitigation strategies necessary to continue achieving this mission.

This Wildfire Mitigation Plan (WMP) establishes the strategies and actions undertaken to reduce the likelihood of utility-related wildfire ignitions. The Plan recognizes that many key wildfire risk factors, including fuel conditions and environmental characteristics, are beyond a utility's control. Mitigation efforts prioritize the reduction of ignition probability associated with the operation of electric system infrastructure, particularly in areas identified as high-consequence and during periods of elevated ignition risk.

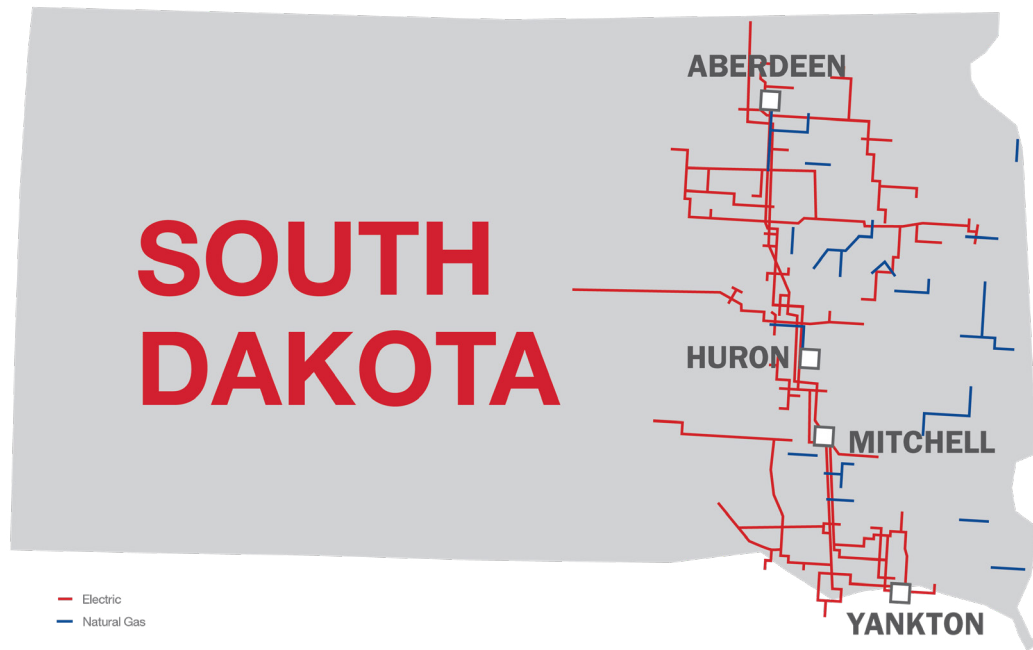


Figure 1: NorthWestern's South Dakota Service Territory

1.1 – NorthWestern

NorthWestern's South Dakota electric utility provides electric service to more than 63,000 metered customers and serves approximately 25 counties. Energy resources are managed through a network of more than 1300 miles of electric transmission and 1700 miles of electric distribution.

The Plan addresses the strategies required to cost-effectively mitigate wildfire risk across NorthWestern's electric transmission and distribution systems within its South Dakota service territory for years 2026-2028.

1.2 – Wildfire Conditions in South Dakota

Owning and operating electrical assets presents inherent challenges. While fire is a natural part of many landscapes, the prevention of consequential wildfires is a top priority for many utilities, including NorthWestern. Understanding fire behavior, system configuration, asset health, and the impact of forecasted conditions are crucial aspects of successful wildfire mitigation strategies.

Fire behavior is the result of the interaction between fuels, weather, and terrain.¹ Fuels encompass flammable material such as grass, shrubs, timber, understory, agricultural crops, etc.² The type(s), density, and moisture content of available fuels impact flame length, intensity, and rate of spread. Fuel conditions change throughout the year in

¹ Scott, J. H. & Burgan, R. E. (June 2005). *Standard Fire Behavior Fuel Model: A Comprehensive Set for Use with Rothermel's Surface Fire Spread Model*. Rocky Mountain Research Station, U.S. Department of Agriculture. https://www.fs.usda.gov/rm/pubs_series

² U.S. Geological Survey (2024). *Annual NLCD Collection 1 Science Products*. U.S. Geological Survey data release. <https://doi.org/10.5066/P94UXNTS>.

South Dakota. In the weeks leading up to harvest, crops undergo moisture removal processes to limit spoilage during transport and storage. Dried fields can result in extreme fire behavior and conflagration. At other points in the year, these same fields could be irrigated, providing a natural fire break. The seasonality in fuel conditions associated with various land types is a critical component in fire mitigation and communication strategies.

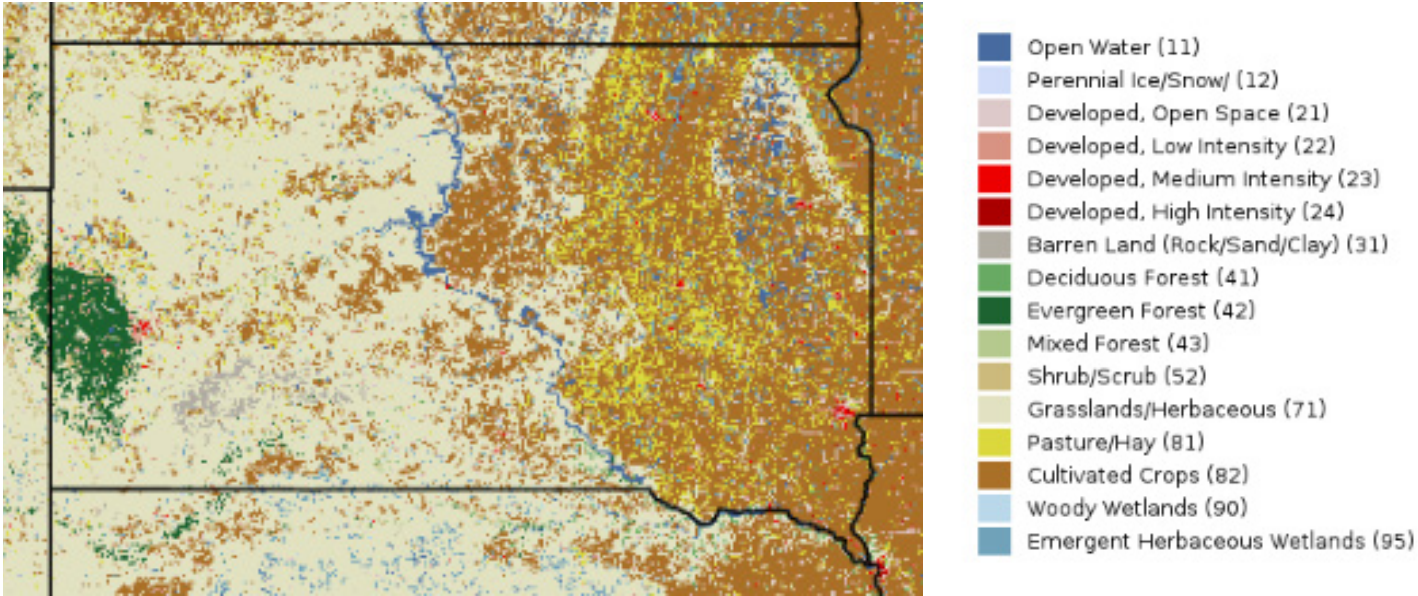


Figure 2: South Dakota NLCD Land Cover Types

The South Dakota service territory presents a unique set of challenges in terms of fuels present (Figure 2). Wildfire Consequence Modeling (WCM) reveals that fire spread is driven primarily by cultivated agricultural fields. These crops may be irrigated and possess high moisture content throughout early summer months. Prior to harvest, crops are cured and prepared for transport and storage. Ignition in a field, coupled with high wind speeds, could result in conflagration to structures. Additionally, high wind speeds can result in fire behavior known as ‘spotting’ in which embers are cast beyond the flaming front of the spread.³ Accurately assessing this risk is paramount in developing effective mitigation strategies.

1.3 – Modeling & Risk-Informed Decision Making

NorthWestern Energy utilizes its Suite of Tools to guide risk mitigation (Appendix B). These resources help identify locations in which electric facilities intersect with high-consequence areas, as established by a third-party fire spread model. The output of these models, in conjunction with input from subject matter experts (SMEs), are used to determine the most effective form of mitigation. The appropriate mitigation type is dependent upon the unique characteristics and risk profile of the line selected.

1.3.1 – Defining Wildfire Risk

NorthWestern defines wildfire risk as the combination of system probability and consequence. System probability is established using available historic data. This data can include outages, number of splices on the line, number of phases, exception history, and maximum span length. These factors approximate the aggregate likelihood of system-caused ignitions based on construction and performance characteristics.

Probability

&

Consequence

=

Risk

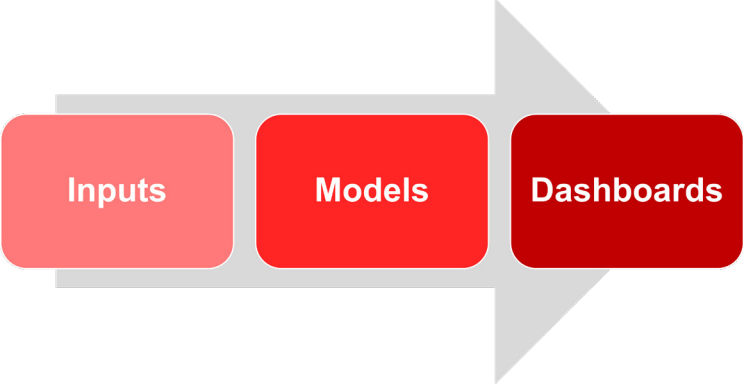
Consequence is produced from a third-party vendor through advanced fire spread simulation. The model simulates millions of ignitions under historical weather conditions, near NorthWestern’s electric facilities. The output of this model quantifies the average spread, number of structures impacted, and area for all fires simulated near each electric section. Model data is relative within the system in which it is simulated. As such, high-consequence areas in NorthWestern’s South Dakota service territory are not equivalent to high-consequence areas in other regions of South Dakota or surrounding states. Treating each service territory independently ensures that nuances within each region are addressed.

³ Scott, J.H. & Burgan, R. E. (June 2005). Standard Fire Behavior Fuel Model: A Comprehensive Set for Use for Rothermel’s Surface Fire Spread Model. U.S. Department of Agriculture Forest Service, Rocky Mountain Research Station.[fs.usda.gov/rm/pubs_series/rmrs/gtr/rmrs_gtr153.pdf](https://www.fs.usda.gov/rm/pubs_series/rmrs/gtr/rmrs_gtr153.pdf)

System probability values are also relative within their own systems. The transmission and distribution systems are distinct in terms of their construction, operations, and maintenance practices. While certain philosophies apply to both systems, differences exist in the data collection and management processes. Therefore, system probability values are based on the best available proxies of asset health for each system. The mathematical relationship between these values and consequence produces relative risk; from which, prioritization of mitigation projects can be established.

1.3.2 – NorthWestern’s Suite of Tools

NorthWestern’s Suite of Tools is a specialized framework consisting of internally developed products, models from third-party vendors, and open-source data (Appendix B). Components include inputs, models, and dashboards, all serving a unique wildfire mitigation purpose. Inputs represent standalone datum such as fuel conditions, forecasted weather conditions, or historical asset performance which quantify metrics for models. Models then synthesize these inputs through mathematical scoring logic processes or qualitative relationship modeling. Dashboards integrate inputs and models in a single user-interface which provides enhanced decision-making capabilities. The Suite of Tools provides a comprehensive, system-wide understanding of risks from which appropriate wildfire mitigation strategies can be implemented.



The Suite of Tools encompasses two primary functional modes, static and dynamic. Products are defined by the update frequency of their input data. Dynamic data is updated on a near real-time basis; which could be hourly, daily, weekly, or seasonally. Static data can be updated quarterly, biannually, or annually. Dynamic data is critical to drive operational mitigations during periods of elevated ignition risk. In contrast, long-range strategies like system-hardening require a historical understanding of performance and generalized forecast of future conditions. For these use cases, static models are more applicable because they are not influenced by the ‘noise’ of continual change. The primary models and dashboards outlined in the Plan include:

- **Wildfire Consequence Model (WCM):** a static resource that utilizes fire consequence modeling to quantify impacts to assets at risk within the service territories. This model simulates millions of fires ignited in proximity to overhead lines under historical wind and weather conditions using a fire spread model. This resource can be updated and rerun to align with advancements in fire science or modeling technologies.
- **Infrastructure Resilience Model (IRM):** a static model that integrates system probability and external consequence data to prioritize assets for various hardening and operational strategies. This model breaks the system into small sections on the distribution side, called ESIDs. There are more than 7,000 ESIDs in South Dakota. The transmission system is broken into five-mile sections. Breaking the system up in this manner allows risk to be quantified at every section to target mitigation for specific locations to ensure cost effectiveness. This model is updated on a regular basis, typically annually.
- **Wildfire Risk Index Model (WFRI):** a spatial dynamic risk model which combines fire weather indices, asset health information from the IRM, and consequence data from the WCM to drive NorthWestern’s EPSS Efforts.
- **Fire Weather Dashboard:** a dynamic dashboard which evaluates real-time weather and environmental conditions for associated EPSS and/or PSPS considerations.
- **Work Practice Dashboard:** a dynamic dashboard incorporating forecasted fire weather indices and burn restrictions to indicate which curtailment or adjustment methods may be appropriate based on NorthWestern’s Work Practices Matrix.

While each resource serves a dedicated, generalized purpose, NorthWestern can combine or enhance them beyond their original scope to better serve emerging needs within its service territory. The tools in their current state represent years of inter-departmental collaboration and external vendor expertise. The industry is constantly

innovating with new methods and technologies. Over time, models may change due to evolutions in best practices or validation. NorthWestern will evaluate models and technologies to find the most effective solutions for its service territory.

1.3.3 – Modeling Prioritization & Application

NorthWestern’s models drive dashboards which facilitate actionable mitigation strategies. The IRM is a core component of many strategies outlined within the Plan. The IRM identifies sections of lines whose corresponding system probability and consequence scores are above an established risk threshold. When surfaced by the model, these sections of line undergo assessment and engineering processes which aim to reduce the type of risk present at each unique location.

The IRM uses a simple quadrant system to designate risk profiles for each section of line and determine the most appropriate mitigation(s). Separate models are used for the distribution and transmission systems since the construction types and data collection processes vary between the two major voltage classes.

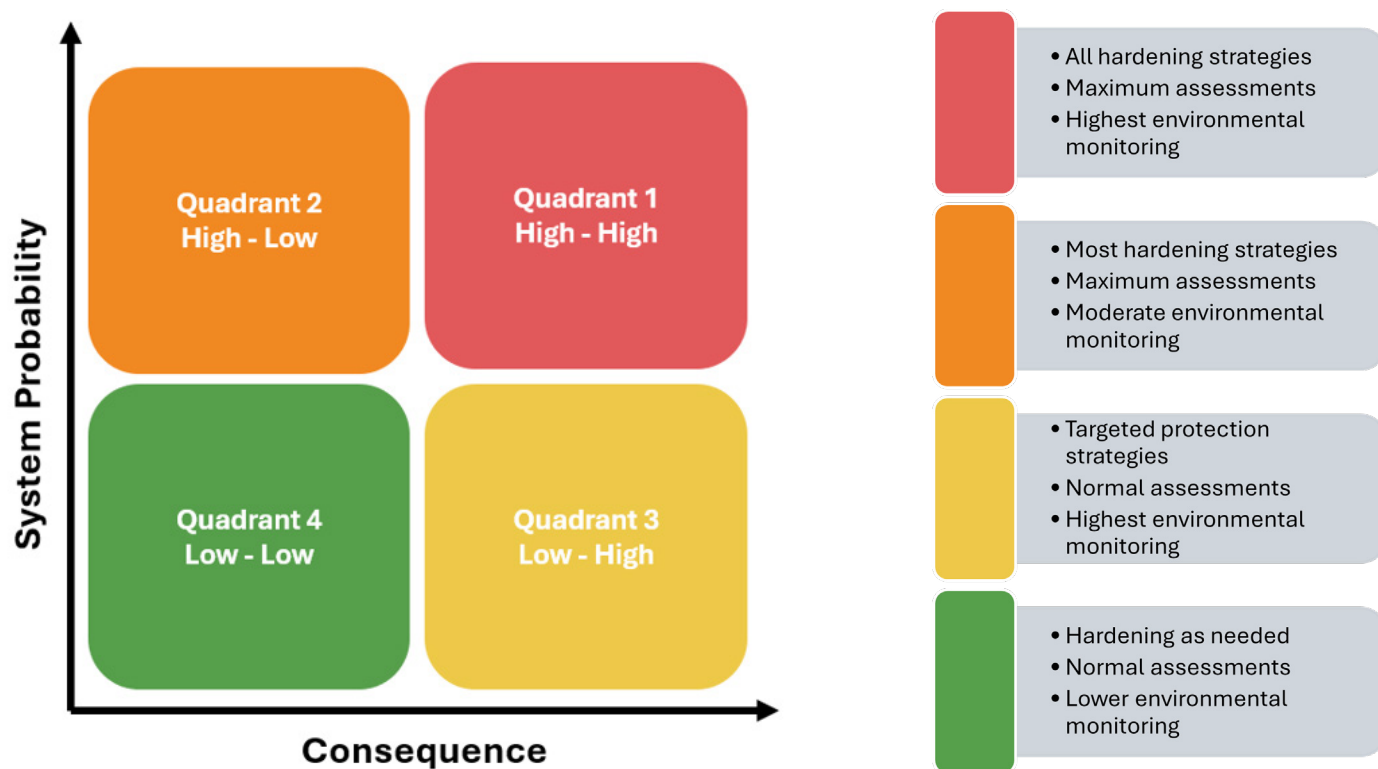


Figure 3: IRM Risk Categorization

Figure 3 illustrates the type of hardening, assessment, and environmental strategies best suited for each quadrant of the IRM. Generally, a higher system probability score indicates an increase in the likelihood of potential ignition-causing conditions. Ground patrol and assessments help identify early signs of failure and premature aging. Sections of line with a lower system probability score most likely have a younger asset life profile or excellent historical performance. These areas are still inspected thoroughly, but may not need additional system hardening compared to those with a higher system probability score.

Likewise, environmental monitoring practices are extended across the entire service territory. The extent to which depends on present risk factors and long-range ignition consequence as determined by the WCM. A section of line in an urban area might score as lower consequence due to the decreased likelihood of ignition propagation. However, residential landscaping can go dormant and lose moisture content much like natural fuels. Should these conditions occur simultaneously with extreme winds and low humidity, areas like these will receive additional monitoring scrutiny. Modified work practices, EPSS, or PSPS strategies can be applied as necessary.

Mitigation strategies are not uniformly cost-effective. Consider a newly constructed section of line that runs through a shelter belt of trees. This section of line may have an extensive outage history due to vegetation contacts. While resources could be spent to rebuild this line or underground it, the more affordable and effective strategy would be to increase vegetation management activities. The IRM provides a high-level overview of which mitigation strategies may be the most effective.

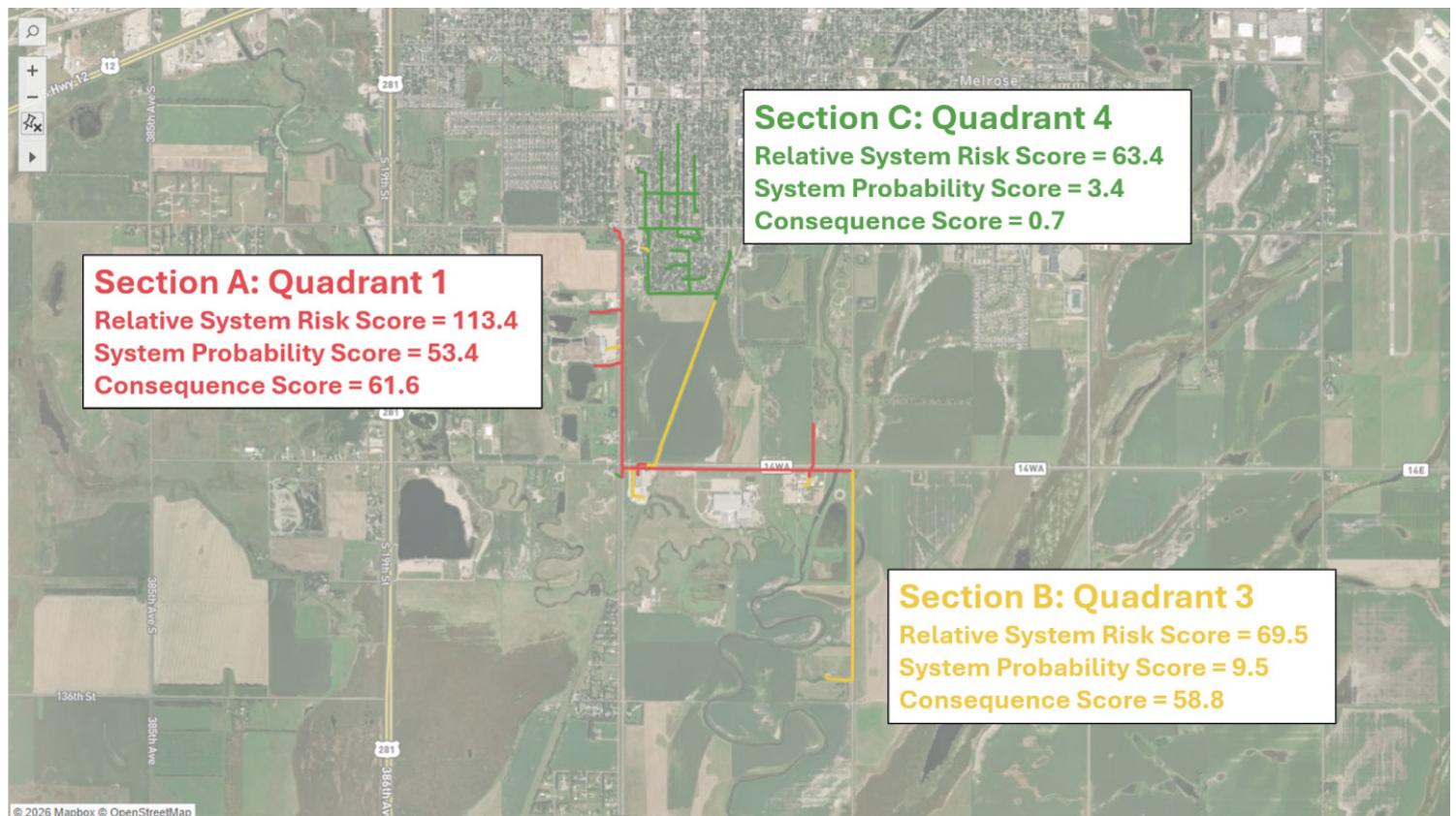


Figure 4: IRM Example Sections

Figure 4 illustrates 3 ESIDs found in the 2026 South Dakota Distribution IRM. Section A represents the highest level of risk. This ESID is a Quadrant 1 with a system probability score of 53.4 and consequence score of 61.6, both on a scale of 0-100. This ESID would receive maximum monitoring and assessments and also become a potential candidate for system hardening measures. Section B represents an ESID with excellent asset health, indicated by its low system probability score. The consequence score is above the threshold. Therefore, this ESID would be evaluated for targeted protection strategies and receive maximum monitoring. Ignition likelihood from the system is low. Should an ignition propagate, however, the potential impact of the fire would be consequential. Section C represents an ESID with excellent asset health and low risk of ignition resulting in a fire. Mitigation-wise, investments would be better spent to reduce higher risk sections elsewhere.

1.3.4 – Heightened Risk of Wildfire Proximal to T & D Assets

Several wildfire risk assessment maps are available for the state of South Dakota. These resources often model wildfire risk indiscriminate against cause. Fires can propagate for a variety of reason including lightning strikes, mechanical equipment, improperly extinguished controlled burns or campfires, and other anthropogenic causes.

NorthWestern has developed an internal wildfire risk model designed to address the relative likelihood of ignition propagation from its system. The IRM leverages a relative risk approach. It integrates available historical data, SME input, and statistical banding methods to compare the wildfire risk of individual sections relative to the rest of the system.

Two distinct models have been developed for South Dakota:

- Distribution (including 34.5kV)
- Transmission

Each model operates independently. As such, risk scores and quadrant designations within one model are not comparable to the other model. The results presented herein were produced in July 2026 using available consequence and asset health data. All models are subject to change over time as refinement and updates become available. The IRM is generally updated on an annual basis to reflect changes in outage data and inspection records.

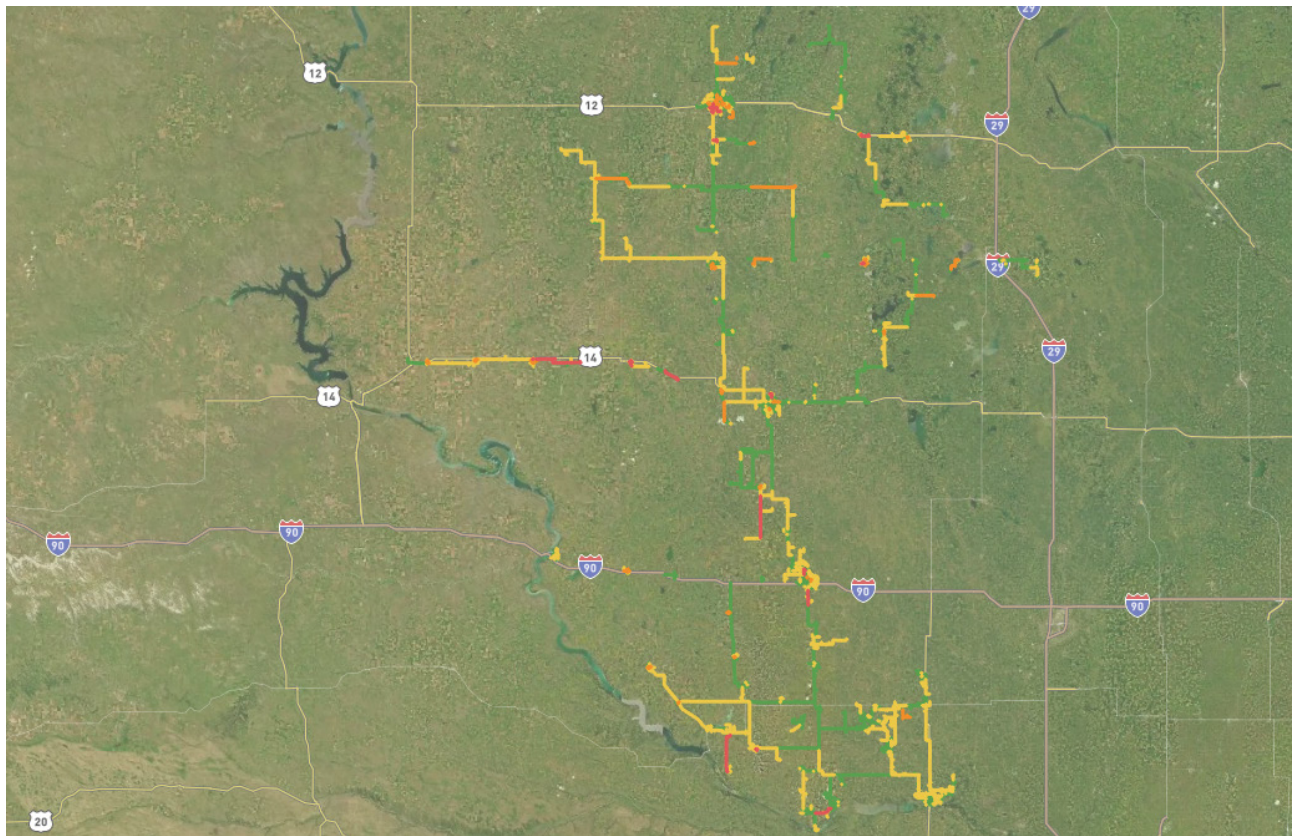


Figure 5: 2026 South Dakota Distribution IRM Map

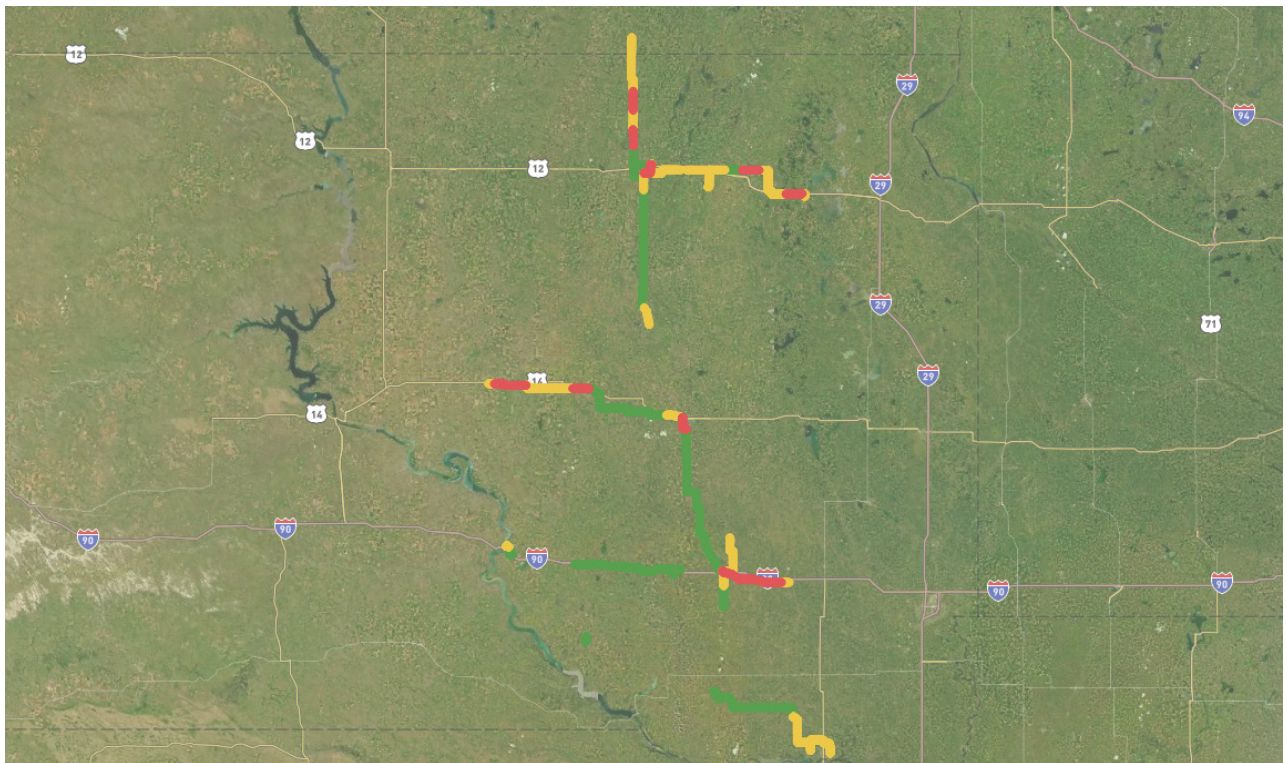


Figure 6: 2026 South Dakota Transmission IRM Map

The sections of line shown in red are categorized as Quadrant 1. Areas surrounding these assets are considered to be at a heightened risk of wildfire from electrical infrastructure as compared to other areas within the service territory. Figures 5 and 6 show the sections of the line on the transmission and distribution systems which may be subject to a heightened risk of utility-caused wildfire.

1.4 – Wildfire Mitigation Plan Methodology

Successful wildfire mitigation requires multilayered strategies to comprehensively reduce the risk of high consequence fires from electrical facilities and related operations. NorthWestern has established decades of experience in proactively operating and maintaining electrical facilities to maintain reliable service. NorthWestern has established the objectives of this Plan through this extensive history and a clear understanding of areas of increased wildfire risk within its service territories (Figure 7).

WILDFIRE MITIGATION PLAN OBJECTIVES

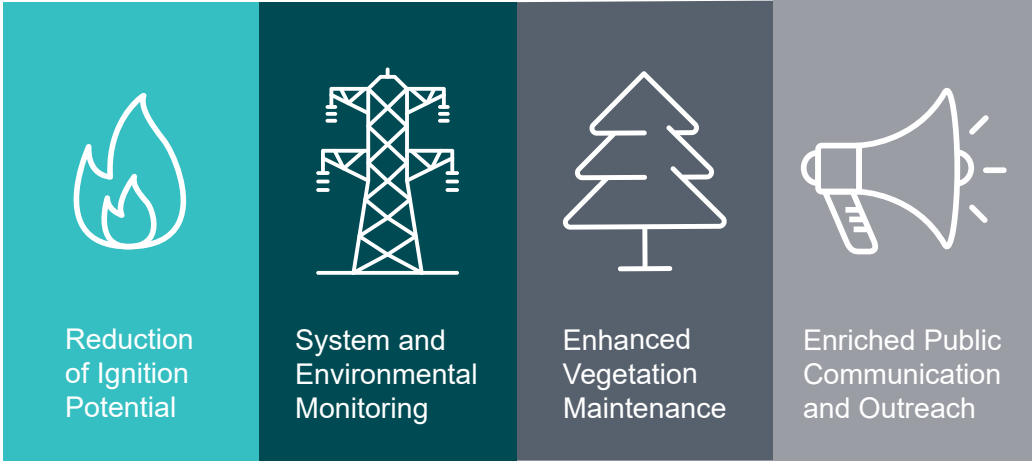


Figure 7: Four Objectives of the Plan

The four objectives provide a foundation upon which specific strategies can be targeted and deployed. No single strategy, in isolation, is effective in eliminating all risks. The five categories of the Plan were formed to integrate the four objectives into a holistic mitigation philosophy. Each category provides coverage within more than one of the objectives identified (Table 1). This ensures that mitigation efforts are disseminated prudently across all areas of risk within the service territory.

Plan Category	Ignition Potential	System & Environmental Monitoring	Vegetation Management	Communication & Outreach
Situational Awareness				
Operational Practices				
System Preparedness				
Vegetation Management				
Communication & Outreach				

Table 1

Section 2 - Category Summary and Activities

Wildfire Mitigation Plan Summary
WMP Categories and Goals

Section 2 – Category Summaries & Activities

2.1 – Wildfire Mitigation Plan Summary

NorthWestern has a long-standing history of diligent asset maintenance. While many reliability and compliance-based strategies have also been effective at reducing the risk of ignition, it has become evident that targeted wildfire mitigation activities are necessary. The Plan consists of five key categories with investments budgeted and forecasted for years 2026-2028 (Appendix C). The forecasted investments are based on operational and engineering knowledge honed through decades of established practices. Overtime, strategies may need to adapt to reflect changes in industry best practices or lessons-learned from evolving WMP maturity. NorthWestern is committed to continuous improvement of its system as a means to continue serving customers safely and reliably.

2.2 – WMP Categories and Goals

Situational Awareness

Situational Awareness describes continual analysis and monitoring of changing conditions within the service territory, which ensures NorthWestern can respond accordingly with its Operational Practices.

- Established Wildfire Operations department with responsibility to monitor the South Dakota service territory
- Real-time assessments from the Situational Awareness team with resources including meteorological, GIS analysis, and fire behavior expertise
- Cutting edge technology
 - ↳ WCM to simulate projected fire spread throughout the service territory
 - ↳ WFRI dashboard to identify operational zones which may require EPSS
 - ↳ Smoke detection cameras and weather stations which provide early warning and detection of potential events
 - ↳ Forecasted weather outlooks developed with open source and private models

Operational Practices

Operational Practices are preventative strategies which can be applied system-wide to modify functions commensurate with the level of risk present.

- System Performance team with responsibility to monitor the South Dakota service territory
 - ↳ Formalization of Momentary Interruption Review Program
 - ↳ Field follow-up of momentaries to be completed by local personnel
- EPSS guided by the WFRI dashboard; developed by the Situational Awareness team
- Formalization of PSPS strategy, tailored to the service territory
- Adherence to Work Practices guidelines, as determined by the Work Practices Matrix
 - ↳ Routine training of personnel prior to fire season to enhance awareness of proactive and reactive measures to mitigate the risk of ignition.

System Preparedness

System Preparedness describes the targeted hardening measures taken proactively to mitigate potential ignition-causing conditions present in electrical infrastructure.

- Construction hardening projects guided by IRM results
- Development of Cutout Refurbishment and Inventory programs
- Routine asset inspections
 - ↳ 100% of Distribution inspected annually
 - ↳ 100% of Transmission inspected annually
 - ↳ P1 exceptions to be repaired within 12 months from the date of collection where feasible
- Installing and replacing line devices in key high-risk areas



Vegetation Management

Vegetation Management addresses the hazard of vegetation contacting energized electrical facilities. This simultaneously improves customer reliability while decreasing the risk of ignition potential.

- 100% of distribution line miles assessed on a 24-month cycle
- Formalization of transmission assessment data collection process
- Continuation of proactive cycle trimming activities
 - ↳ Additional proactive trims of feeders identified as high-risk
- Collaboration with landowners and agencies

Communication & Outreach

Communication & Outreach encompasses proactive public education and collaboration with partner agencies; in addition to the real-time distribution of key information during potential safety events.

- Broad reach advertisement campaigns prior to fire season
- Development of relationships with key stakeholders
 - ↳ Local Emergency Planning Committees (LEPCs)
 - ↳ Local, state, and federal agencies
 - ↳ Public safety providers
- Formalization of the PSPS communication channels and public dissemination of relevant information

Section 3 – Situational Awareness

- Overview
- Situational Awareness Team
- Modeling and Analysis
- Realtime Monitoring



Section 3 – Situational Awareness

3.1 – Overview

Situational Awareness describes the year-round monitoring and analysis of the service territory and operating environment. Long-range risk models, like the IRM, are beneficial in quantifying generalized risk across the system. Whereas understanding real-time factors, such as fuel conditions, helps identify areas of heightened risk within the service territory. Situational Awareness activities help identify the forecast or presence of certain conditions which may reflect elevated wildfire risk. Weather conditions, such as high winds and low relative humidity, in conjunction with dried fuels, may necessitate the modification to system operating conditions or work practices. Situational Awareness activities aim to enhance system visibility, facilitate early detection, and monitor forecasted conditions.

Key Activities:

- Observation and analysis from the Situational Awareness team, whose resources include:
 - ↳ A Meteorologist, GIS analyst, and Wildfire Specialist
- WCM produced by an external vendor, specializing in fire science
 - ↳ Weather monitoring zones in identified Tier 3 areas
- Dynamic forecasting tools which assess conditions and guide Operational Practices
- Installation of wildfire detection cameras and weather stations

3.2 – Task Activities

3.2.1 – Situational Awareness Team

NorthWestern employs Situational Awareness personnel to monitor changing conditions. These personnel provide vital expertise including skills in meteorology, geospatial data analytics, and fire behavior. NorthWestern regularly evaluates staffing needs to ensure the team is equipped to handle the unique issues present within the service territories.

The Situational Awareness personnel evaluate environmental trends, weather conditions, and comprehensive wildfire risk. The team will collaborate with local operations leaders and ensure appropriate measures are taken to avoid unnecessary risks.

Decisions are supported by a variety of tools including fire spread simulations and real-time weather data. The installation of weather stations will provide additional accuracy to an existing network of open-source stations. Fire detection cameras will enhance system visibility and provide early ignition detection. The combination of fire spread modeling, real-time condition data, and SME knowledge will help define weather monitoring zones and areas which may be subject to modified Operational Practices in the event of high-fire risk conditions.

3.2.2 – Modeling and Analysis

NorthWestern's Suite of Tools contains a variety of products which are adept at analyzing weather conditions and potential hazards. Advanced fire simulations provide an understanding of which areas within the service territory may elicit more intense fire behavior compared to simulated ignitions from other areas of the system. The WCM is produced by a vendor specializing in fire spread simulations. This model simulates ignitions originating near NorthWestern's electrical facilities, and quantifies the spread, impact, and intensity under different weather scenarios. Portions of the system identified as Tier 3 represent the highest consequence derived from the model. Tier 2 tranches represent moderate risk. Tier 1 represents areas of lower risk, relative to the rest of the South Dakota system.

The WCM is beneficial for estimating consequence across the service territory given historical prevailing weather patterns. Real-time tools are necessary to understand present conditions which may differ from simulations based on windspeeds, fuel types, and system configuration. Installation of weather stations in key areas will provide the Situational Awareness team with enhanced clarity of current and forecasted weather conditions. These additional weather stations will complement existing open-source data by refining spatial and temporal resolutions.

3.2.3 – Realtime Monitoring

The various types of models and analysis can help drive Operational Practices. Sections of line identified as Tier 3 by the WCM receive additional focus during periods of elevated ignition risk. Fire metrics such as the USFS Severe Fire Danger Index (SFDI), Burning Index (BI), Energy Release Component (ERC), or internally computed Fire Potential Indices (FPIs) help identify areas of risk.⁴⁵ Analysis of these metrics and other qualitative factors by the Situational Awareness team can guide recloser settings or recommend work curtailment. Weather conditions may vary significantly throughout the service territory. Visibility into conditions at precise locations ensures that appropriate actions are taken to mitigate wildfire risk.

The installation of wildfire detection cameras will allow NorthWestern and its public safety partners to respond more rapidly to ignition events. These cameras can help detect fires regardless of cause.

⁴ Jolly, M. W., PhD, et al. (2019). *Severe Fire Danger Index: A forecastable metric to inform firefighter and community wildfire risk management*. U.S. Department of Agriculture Forest Service, Rocky Mountain Research Station. <https://doi.org/10.3390/fire2030047>

⁵ Jolly, M. W., PhD, et al. (2024). *Modernizing the US National Fire Danger Rating System (version 4): Simplified fuel models and improved live and dead fuel moisture calculations*. U.S. Department of Agriculture Forest Service, Rocky Mountain Research Station. <https://doi.org/10.1016/j.envsoft.2024.106181>

Section 4 – Operational Practices

Overview

System Performance

Operational Defense Strategies

Enhance Powerline Safety Settings (EPSS)

Public Safety Power Shutoffs (PSPS)

Work Practices & Internal Training

Section 4 – Operational Practices

4.1 – Overview

Operational Practices include adjustments to the system and curtailment of work in the field in response to Situational Awareness recommendations. Advanced technologies and observations from personnel in local areas can help determine which precautions should be taken. Response to atypical conditions allows NorthWestern to balance reliability and the paramount concern of fire avoidance. During periods of elevated ignition risk, it may become necessary to postpone work on the system or select settings which may result in temporary impacts on customer reliability.

Key Activities:

- Development of Momentary Interruption Review Program
 - ↳ Investigation of momentaries to mitigate potential ignition-causing conditions
- EPSS guidelines to prioritize safe reclosing during adverse conditions
- Formalizing of PSPS strategy as a measure of last resort during high-risk events
- Regular updates to Work Practices matrix to inform safe decisions in the field
- Enhanced employee training regarding proactive ignition prevention and reactive responses to public safety events
- Development of a mobile generator deployment strategy to mitigate the impacts of impaired reliability resulting from ignition-avoidance measures

4.2 – Task Activities

4.2.1 – System Performance

Momentary interruptions are fault events on the system that do not result in a sustained outage. Consider a hypothetical scenario in which a tree branch falls into a line. This phase-to-phase or phase-to-ground contact would result in a fault, recognized by an upstream protective device, such as a recloser. If the branch falls out of the line before the recloser's final attempt to re-energize, then a sustained outage, requiring manual restoration would not occur. Instead, customers on the line would see a temporary 'blink' in their power, lasting less than five minutes. This event, however, could still cause an ignition. Therefore, it is necessary to track and monitor these events.

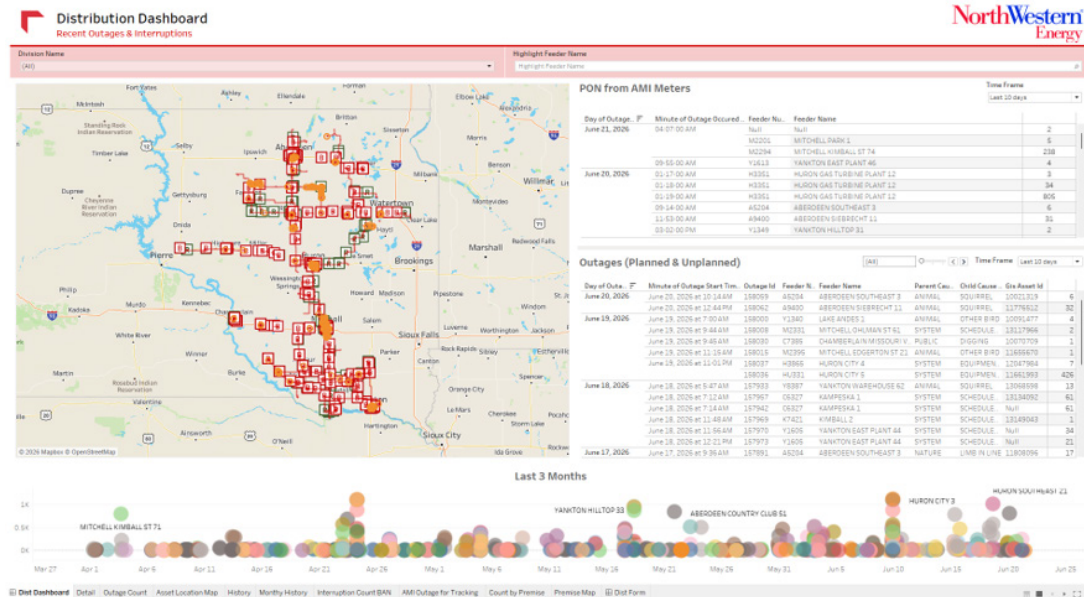


Figure 8: Example of Momentary Interruption Investigation Dashboard

The System Performance team will investigate momentaries to identify areas of concern and mitigate potential ignitions before they occur. Investigation of momentaries benefits both customer reliability and wildfire risk. During this Plan cycle, the System Performance team will formalize data flows and processes for effective follow-ups. Engineers will work in conjunction with field personnel to identify issues and develop remediation strategies unique to the conditions of the assets present.

Public Safety Power Shutoff (PSPS)

PSPS involves proactively de-energizing electrical infrastructure as a means of avoiding potential ignition events. This strategy is a measure of last resort for many utilities. NorthWestern prides itself on reliable service to its customers. However, there may be situations in which the operational risk is unacceptably high and de-energization becomes the necessary action to prioritize safety over reliability.

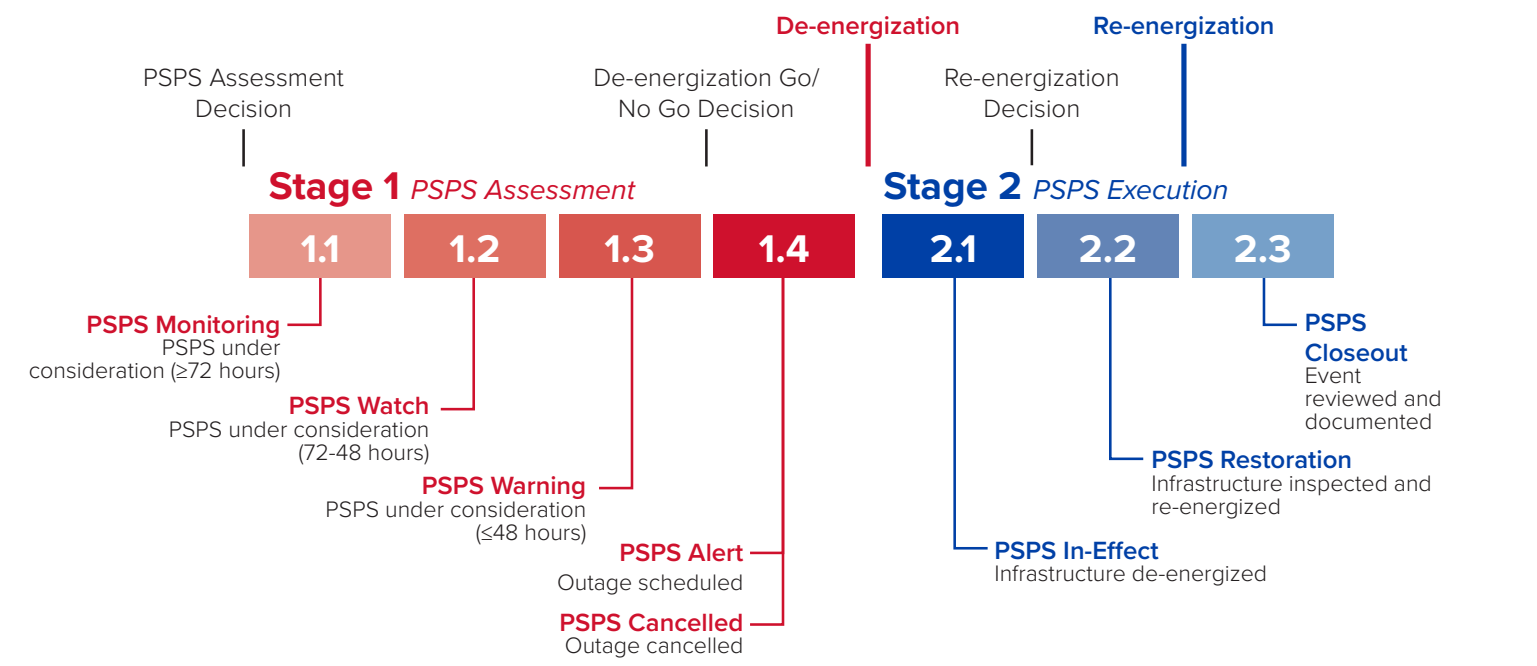


Figure 10: NorthWestern Energy PSPS Timeline

The PSPS strategy is a sequential process consisting of 2 key stages. Situational Awareness functions are performed across the entire system, year round. NorthWestern evaluates appropriate precautions as forecasts begin to reveal conditions which may result in increased wildfire risk. Proactive measures, such as EPSS or work curtailment, may be sufficient to mitigate risk. PSPS Stage 1 begins when the Situational Awareness team determines risk conditions are unacceptably high. This decision is informed by relevant models and SME input. This Stage would most likely occur 72 hours before the potential de-energization and progress through 4 distinct phases within Stage 1. PSPS Stage 2 begins when proactive de-energization occurs. The duration and geographical scope of Stage 2 is dependent upon the unique factors of the present conditions. Ideally, the stepwise process of PSPS occurs with ample warning between each step. Expedited timelines may be necessary in the presence of extreme conditions.

Asset failures can still occur with de-energized equipment. High winds can snap poles and result in downed conductors and vegetation can fall through lines. Restoring power in these instances could result in accidental ignitions when facilities are brought back into service. Therefore, NorthWestern plans to manually patrol de-energized segments to verify functionality prior to safely restoring power to its customers. Crews will visually inspect equipment and rights-of-way to ensure normal operating conditions and rectify any failures identified. The restoration timeline could be significant depending on the damage that occurred. NorthWestern may deploy emergency resources, such as mobile generating units, to restore service to critical infrastructure in the event of catastrophic, prolonged interruptions.

Work Practices & Internal Training

Construction and maintenance on the system is a key pillar to NorthWestern’s successful reliability metrics. Throughout the year, crews respond to unplanned outages and work proactively to upgrade infrastructure. Like other Operational Practices, the presence of heightened wildfire risk on the system can necessitate adjustments or curtailment of work.

NorthWestern Energy Risk and Work Practices Matrix:	
SEVERE	No Non-Emergency Work All Emergency Work Needs Approval Follow Wildland Fire Restrictions Including Exemptions Utilization of Prevention Field Practice Required
VERY HIGH	Non-Emergency Work Approval Required Follow Wildland Fire Restrictions Including Exemptions Utilization of Prevention Field Practice Required
HIGH	Proceed with Work Follow Wildland Fire Restrictions Including Exemptions Utilization of Prevention Field Practice Required
LOW/ MODERATE	Proceed with Work Follow Wildland Fire Restrictions Including Exemptions
Risk and Work Practices Matrix Legend:	
Proceed with Work	Normal operating procedures including tailboard documentation
Wildland Fire Restrictions	See Fire Restrictions for your work area, and check with supervisor for possible exemption to restrictions: Montana Fire Restrictions Dashboard . South Dakota check with you local counties.
Utilization of Prevention Field Practices	Review and must use Prevention Field Practices See below:
Non-Emergency Work	Work that is not deemed emergency work as determined by *Division Operations Supervision
Emergency Work	Work that is deemed emergency work as determined by *Division Operations Supervision
Work Approval required*	Work to be done must be approved by *Division Operations Supervision (Division Manager, Electric Supervisor, Gas Supervisor, Ops Planning Supervisor)
<u>NO</u> Non-Emergency Work	No work unless determined emergency and approved by Division Operations Supervision

Figure 11: NorthWestern Energy Risk and Work Practices Matrix

Wildfire metrics such as the Severe Fire Danger Index produced by the United States Forest Service can indicate when it may become appropriate to make modifications. Figure 11 represents example risk levels and corresponding work adjustments. Features of urban areas including infrastructure like roads or concrete sidewalks can decrease the likelihood of ignition propagation. Urban Exclusion Areas provide safer work environments and can therefore support work under more extreme conditions than areas outside of the built environment.

The Work Practices matrix is complemented by the Work Practices Dashboard, a helpful resource which is updated daily using the best-available fuels and weather conditions. These tools and other relevant resources are available to crews in the field via company issued mobile devices. Personnel are encouraged to use discretion when approaching an area for work. Crews can follow the Stop Work Authority at any time when conditions are deemed to be unsafe. Ignitions can still occur from non-electrical work functions including driving through dry grass to access easements. These guidelines apply to all activities, including gas and related utility functions.

NorthWestern employees are required to complete regular trainings on wildfire risk and associated proactive and reactive measures. This training covers basic fire terminology, identification of fire behavior risk, use of standard tools, and methods of extinguishing potential fires ignited from work related activities. Service trucks are equipped with fire extinguishers. During periods of elevated ignition risk, crews may bring along water tanks or additional mitigation resources. NorthWestern's Suite of Tools includes a variety of relevant apps which field crews can utilize to inform themselves of current conditions and modification guidelines. These trainings equip employees to respond to risks they may encounter in the field and prepare them to answer customer questions regarding NorthWestern's wildfire mitigation activities.

- Overview
- Assessment & Repair
 - Ground Patrol & Assessment
 - Exception Repairs
 - Rejected Component Repairs
- Inventory
- Construction
- Line Device Upgrades
- Remote Fault Sensing Technology
- Section Hardening
- Cutout Refurbishment



Section 5 – System Preparedness

5.1 - Overview

Hardening the system to withstand extreme conditions is the first line of defense for many utility wildfire mitigation programs. NorthWestern has an extensive history of system hardening programs designed to improve reliability metrics and proactively address compliance issues. As a result, NorthWestern's South Dakota operations consistently rank within the top quartile for customer reliability (Appendix A). Prevention of ignition-causing conditions proved to be an auxiliary benefit.

NorthWestern recognizes the importance of supplementing historical reliability programs with additional ignition mitigation strategies. Effective mitigation examples include strategic deployment of advanced technologies on the transmission and distribution system, replacement of aging infrastructure, routine inspections of the system, and reframing to prevent conductor clash and avian contacts. The best hardening strategies are unique to each group of assets identified.

Key Activities:

- System-hardening initiatives targeted at addressing ignition-causing conditions
 - ↳ Cutout Refurbishment and Section Hardening Programs
- Bolstered ground assessment and repairs, going beyond the scope and cadence of historical programs.
- Development of an Inventory Program to identify specific components which may present an increased risk of ignition
- Advanced line technologies
 - ↳ Installation of electronic reclosers in strategic replacement and sectionalizing locations
 - ↳ Installation of remote fault sensors to enhance troubleshooting and root cause analysis

5.2 – Task Activities

5.2.1 – Assessment & Repair

NorthWestern has a long-standing history of routine asset inspection on its transmission and distribution systems. Routinely assessing infrastructure for deficiencies helps proactively mitigate reliability and compliance issues. Resources were allocated as necessary to resolve system issues.

Ground Patrol & Assessments

System Preparedness assessments go above and beyond these established practices. Ground patrols and assessments will be performed at an increased cadence to better track aging infrastructure on the system. Qualified resources will inspect 100% of distribution and transmission systems annually; denoting corrective actions for repair on the system.

The transmission system has historically been inspected on a regular basis, with exceptions being resolved as needed. System Preparedness efforts will be focused on formalizing the data collection and documentation processes.

Exception Repairs

The Plan calls for addressing applicable corrective actions within 12 months from the date of collection were feasible.

Rejected Component Repairs

Transmission structure components that are identified during these inspections will be prioritized for repairs. In the event components are rejected, but the pole remains in good condition, the identified assets will be replaced in conjunction with other construction activities in that location. This process will be formalized to enable proactive replacement into the future.

Inventory

NorthWestern is developing a process to identify and catalogue specific components in the field which may present an increased risk of system-caused ignitions. Tailored strategies will be developed for the transmission system starting in 2027, and the distribution system starting in 2028. Identification of these components will enhance engineering efforts under the construction section described below.

5.2.2 – Construction

Hardening the system with advanced technologies or more robust construction can be one of the most cost-effective long-term investments in wildfire mitigation. Construction activities enhance the system's ability to withstand adverse conditions.

Line Device Upgrades

Strategies like EPSS exist to reduce the likelihood of ignition in the event of a failure by operating devices in a sensitive detection mode. Installing reclosers in strategic locations can complement hardening efforts by providing flexibility of system performance. The installation of line devices, like reclosers, is a part of System Preparedness activities.

Line Devices will be installed in strategic replacement or sectionalizing locations in high-consequence areas. Existing line devices like hydraulic reclosers provide sectionalizing and protective functions, which include the ability to disable automatic reclosing. Modern, electronic reclosers have additional features like fault data retention, increased flexibility to enable sensitive protection settings, improved visibility into the system, and the ability to operate remotely.

Remote Fault Sensing Technology

Existing protective devices like fuses, reclosers, and substation equipment can help identify an approximate location of a disturbance on a line. Modern advances in fault sensing technology enhance troubleshooting capabilities. Fault sensors and other remote technologies can help reduce the time to restore an outage and help identify causes of momentary interruptions. Installation of these devices will be prioritized in high-risk zones.

Section Hardening

Hardening programs will address deficiencies in the system through rebuilding targeted portions of the system. This will be done at the ESID for distribution, and five-mile segment level for transmission. The IRM will surface candidate sections for initial engineering reviews. Engineers will analyze conditions which may be prone to failure and develop an applicable scope of work for a hardening project. Each project will be unique to the portions of the system identified. Common solutions include installing a pole midspan to eliminate risks associated with long spans, replacing existing poles to current construction standards, upgrading conductor, replacing porcelain cutouts, and in some cases, undergrounding.

Cutout Refurbishment

All cutouts are susceptible to damage, such as cracking, which can result in the mechanical failure of the asset to properly insulate the system. The utility industry has observed porcelain cutouts to experience cracking at an unacceptably high rate. This initiative will proactively replace identified porcelain cutouts with a polymer alternative. These assets are being identified in conjunction with the inventory program to appropriately allocate resources.

Section 6 – Vegetation Management

Overview

Proactive Wildfire Cycle Trimming

Distribution O1 Hotspots

Section 6 – Vegetation Management

6.1 – Overview

NorthWestern has a long-standing vegetation management program across all service territories. Vegetation management strategies are adapted to fit regional needs. The South Dakota electric systems are inspected on approximately a 24-month cycle, ensuring top tier reliability and compliance. The land cover in eastern South Dakota is primarily comprised of Cultivated Crops, Pasture/Hay, and Grasslands. Small pockets of riparian wetlands are among the only naturally occurring forests within the service territory. Therefore, vegetation management targets urban forests, proximal to electric facilities, such as shelter belts, windbreaks, and ornamental trees used for landscaping.

Species of ash trees which are commonly utilized in urban landscaping applications are at risk of infestation from the Emerald Ash Borer. This invasive beetle species has a range which extends into southeastern South Dakota. Stressed trees are especially susceptible to larval infestation, however, healthy trees can also become affected in concentrated ash stands. Landscaping trees can have low genetic diversity which impacts resiliency and can result in dead branches or whole tree failure. Addressing diseased ash trees within striking distance of electrical facilities can help reduce the risk of ignition, while simultaneously mitigating threats to reliability. Vegetation funding outlined in the Plan will be incremental to existing practices. Activities will go beyond established work to address areas wherein tree growth, proximal to electric facilities, intersects with high consequence zones.

Key Activities:

- Additional proactive cycle trimming targeted at high-consequence distribution circuits and transmission segments
- Remediation of vegetation exceptions discovered during Ground Patrol & Assessments
 - ↳ 100% of O1 hotspots addressed within 12 months where feasible

6.2 – Task Activities

6.2.1 – Proactive Wildfire Cycle Trimming

Proactive cycle trimming occurs on a scheduled basis, approximately every five years. This can be modified depending on resource availability and the regrowth timeline of tree species. Vegetation contact with electrical facilities is commonly driven by whole-tree or whole-limb failure. Trees beyond the right-of-way, or limbs with adequate clearance, may still pose a risk under adverse conditions like high winds. Proactive cycle trimming helps address vegetation before it impacts reliability or ignition probability.

The Vegetation Coordinator and associated resources work closely with private landowners to ensure trees within the right-of-way or potentially at risk of a fall-in, are addressed before issues occur. This could include more aggressive trimming or tree removal. The incremental costing outlined in the Plan will allow for select distribution circuits and transmission segments to be trimmed at an increased frequency. This funding will help proactively maintain clearances on the transmission and distribution systems.

Consequence in the South Dakota service territory is influenced by the proximity of cultivated fields to structures. Generally, these fields do not have trees near electric facilities. Vegetation proximal to rights-of-way tends to exist surrounding urban areas with lower consequence values. The Suite of Tools will be leveraged to identify distribution circuits and transmission segments which present high-consequence values and have trimmable vegetation.

6.2.2 – Distribution O1 Hotspots

Qualified vegetation resources inspect the electric system approximately every 24 months. Frequent observation of the system enables small vegetation issues to be resolved as they are found. Ground Patrol & Assessments, outlined in the System Preparedness section, provide additional review of the system. Vegetation exceptions are noted during this process. Vegetation exceptions, such as encroachment into clearance zones, are addressed within 12 months where feasible. Ground Patrols & Assessments will cover 100% of the distribution and transmission systems annually, as outlined in the System Preparedness section of the Plan. The existing vegetation assessments allow internal crews to address vegetation issues as they are identified.

Historical proactive maintenance activities have been effective in achieving top tier reliability. Additional proactive maintenance programs are necessary to further reduce ignition potential in high-consequence areas.

Section 7 – Communication & Outreach

Overview

Customer Engagement

Print & Media Communication

PSPS Readiness

Partnerships & Additional Outreach

Public Safety Partners & Wildfire Summit

Peer-Utility Collaboration

Section 7 – Communication & Outreach

7.1 – Overview

Communication & Outreach activities enable NorthWestern to interface with customers, members of the public, and public safety partners. The Plan will dedicate funding to develop and distribute educational resources that promote awareness of wildfire preparedness actions, increase understanding of the PSPS strategy, and support the facilitation of stakeholder collaboration events.

Existing resources like the Outage Map and Voice Response Unit serve as vital channels of communication during all stages of a potential event. Customers can access the outage map during an interruption to learn about the location of an outage and estimated restoration time. NorthWestern provides a variety of additional resources on its website including emergency contact resources, natural disaster preparedness tips, utility safety educational resources, and instructions on updating contact information through Preference Center.

The Plan will allocate funding to help further educate customers about wildfire mitigation efforts and facilitate collaboration with public safety partners. Wildfire communication efforts are built on three pillars: communicating NorthWestern Energy’s mitigation efforts, building awareness of tools to prevent wildfires, including PSPS, and encouraging outage and wildfire preparedness. These pillars guide how NorthWestern Energy communicates operational strategies to reduce ignition potential, increases understanding of Public Safety Power Shutoffs (PSPS), and promotes proactive customer actions before wildfire related events.

Key Activities:

- Paid advertising campaigns prior to and during fire season
 - ↳ Cable, radio, digital, social media, emails, etc.
- Specialized materials to customers in near high-consequence zones
 - ↳ Printed fact sheets, direct mailers, and bill inserts
- Collaboration with public safety partners
 - ↳ Local Emergency Planning Committees (LEPCs)
 - ↳ Fire agencies
- Development of PSPS strategy and tabletop exercises

7.2 – Task Activities

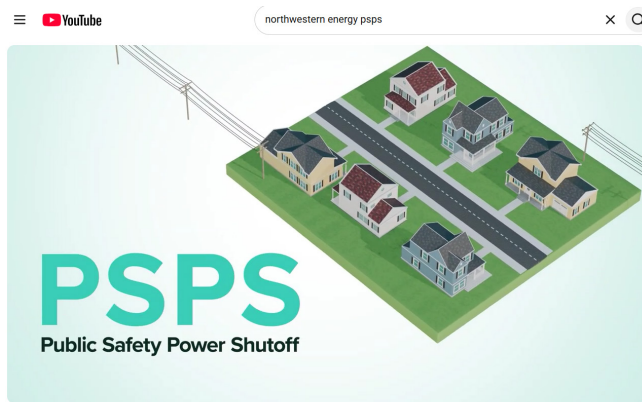
7.2.1 – Customer Engagement

Print & Media Communication

Wildfire communication towards customers and stakeholders occur year-round through education and preparedness messaging. Activity increases during the peak of wildfire season. A multi-channel approach maximizes reach across all customer groups. Outreach channels will include cable television spots, radio advertisements, digital advertisements, social media outreach, fact sheets, news articles, and community presentations. Customers may experience impacted reliability as a result of wildfire mitigation efforts like EPSS. Educating the public on why these strategies are important for ensuring safety will prepare them for any impacts to their reliability.

Targeted communication will be directed towards customers living near high-consequence areas. Mailers and emails will be sent out prior to fire season to help educate these customers on the mitigation strategies NorthWestern is utilizing to help ensure their safety and readiness.

Category	Channels	Purpose
Mass Media (Awareness)	Broadcast TV, Streaming (YouTube, Hulu, Netflix), Radio, Social Media (Meta)	Broad wildfire awareness, PSPS and outage preparedness messaging
Community & Physical Outreach	Public meetings, community events, stakeholder presentations (LEPCs, fire agencies, AFN partners)	Localized awareness and community engagement
Direct Customer Communications	Emails, Direct Mailers, Website	Targeted alerts, education, and PSPS/ outage information
Earned Media / Public Information	Press releases, Radio interviews, Media coverage	Public information coordination and message amplification

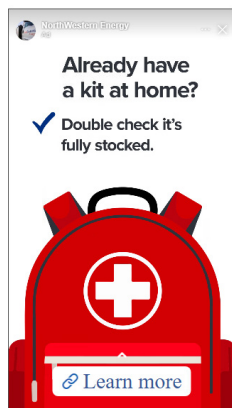


What Is a PSPS? | Public Safety Power Shutoff Explained

NorthWestern Energy 615 subscribers

Analytics Edit video

Like Comment Share Promote Save



Public Safety Power Shutoff (PSPS)

If extreme weather conditions increase wildfire risk and threaten our ability to safely operate the electrical grid, we will temporarily turn off power in high-risk areas to help prevent wildfires and keep our communities safe.

What a PSPS is:
A Last Resort: A PSPS is a last resort safety measure used only during extreme weather conditions when it's dangerous to operate the electrical grid.
A Safety Action: We proactively shut down power in specific areas to prevent electrical equipment from igniting wildfires.
Weather-Driven: A PSPS is triggered when extreme environmental conditions such as strong winds, hot temperatures, dry vegetation and low humidity create high wildfire risk.

What a PSPS is Not:
A Normal Outage: Unlike an unexpected outage from a broken wire, a PSPS is a planned, proactive action to reduce the risk of electrical equipment igniting wildfires.
Permanent: Power is restored after extreme conditions pass and inspections and repairs are complete to confirm the equipment is safe to be re-energized.
Compensated: Lost revenue or spilled fuel is not reimbursed during these safety-related outages.

Know the Process
 A PSPS involves a planned approach that guides the decision to implement a shutoff. Throughout these stages, customers will receive notifications of the current status of a PSPS. We plan to notify customers of a PSPS at least 48 hours in advance, depending on the forecast, and will continue to send status updates throughout the PSPS event.

Learn more about PSPS at
NorthWesternEnergy.com/PSPS

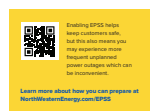


Enhanced Powerline Safety Settings (EPSS)

We use EPSS to make the electrical system more sensitive to potential hazards. If a fault occurs, such as a tree branch contacting a powerline, these settings immediately cut electricity — often within 170 of a second — to reduce the chances of starting a wildfire. These settings are enabled on high-risk days within high-fire-risk communities.

What a EPSS is:
Height Ignition Prevention: The primary goal is to shut off power faster when an issue is identified, for the purpose of preventing a spark that could result in a fire ignition.
High-Sensitivity Detection: The system acts as a circuit breaker, reacting instantly to faults caused by high winds or trees and burning brush powerlines.
A "Manual Reboot" Protocol: After equipment settings shut off power, crews must patrol the entire line before safely restoring power, which can take several hours.

What a EPSS is Not:
A Scheduled Outage or a PSPS: EPSS is a selective, unplanned outage to stop the flow of electricity by immediately going along a fault line (like a branch touching the line).
Guaranteed to Eliminate Outages: Because of the neighborhood sensitivity, powerlines may turn off more frequently and without notice.
A Proactive Solution: It requires active maintenance and manual inspection of the lines to restore power, unlike traditional systems that automatically re-energize.



PSPS Readiness

NorthWestern's PSPS Plan is a measure of last resort in the event wildfire risk becomes unacceptably high and hazardous weather conditions are forecasted. The PSPS Plan is a detailed document which outlines the general process of a potential event. Assessment exercises like tabletops will be evaluated during this Plan cycle. A dedicated PSPS webpage is available to customers and would display relevant information in the event of a potential PSPS. Customers would receive as much communication as feasible in the steps leading up to each stage. The PSPS webpage will help display the impacted area and any restoration estimates. Additional resources and preparedness assessments will be explored to establish the best methods for developing customer PSPS readiness.

7.2.2 – Partnerships & Additional Outreach

Public Safety Partners & Wildfire Summit

NorthWestern already collaborates with local agencies during emergencies to help identify utility asset locations and de-energize or shut off gas to ensure the safety of first responders. As part of the Plan, NorthWestern will build relationships with federal, state, and county agencies to share information, gather feedback on mitigation strategies, and identify mutually beneficial activities that reduce cross boundary wildfire risk.

NorthWestern will also engage with emergency management officials, Local Emergency Planning Committees (LEPCs), public safety partners, critical facilities, local elected leaders, health and human service agencies, and other key stakeholders to raise awareness and better understand localized mitigation needs. Collaboration with community organizations that provide services and support to vulnerable populations, including customers with access and functional needs (AFN), will further strengthen community resilience during events like outages. This form of outreach aligns wildfire mitigation and response efforts, promoting the transfer of information in the event of a public safety incident. Funding has been allocated to host a wildfire summit and facilitate partnerships.

Peer-Utility Collaboration

Additionally, NorthWestern participates in conferences, working groups, and peer-utility discussions to advance industry-wide mitigation strategies. These dynamic relationships allow for a sharing of best-practices and experiences with new technologies. Utilities can learn from the experience of others to develop the most cost-effective mitigation strategies for their respective service territories.

Our Public Safety Power Shutoff Plan
 NorthWestern Energy's complete PSPS Implementation Plan can be found at
NorthWesternEnergy.com/PSPS.



Section 8 – Conclusion

NorthWestern Energy recognizes the inherent risks associated with owning and operating electric facilities. Utilities nationwide face this same risk. Wildfires devastate communities and require modifications to existing practices. WMPs have become an industry-standard practice which outlines the steps utilities take to reduce the risk of utility-caused ignitions within their service territories. NorthWestern's South Dakota Plan focuses on utility-specific mitigation efforts.

The South Dakota Plan encompasses four objectives (1) Reduction of Ignition Potential, (2) System and Environmental Monitoring, (3) Vegetation Management, and (4) Public Communication and Outreach. These objectives build upon decades of established practices, which can be modified to target wildfire risk. NorthWestern can achieve these objectives cost-effectively through strategic deployment and progress tracking.

NorthWestern estimates investing approximately \$12.5 million incrementally within the South Dakota service territory between 2026-2028 (Appendix C). These prudent investments will support NorthWestern's ongoing commitment to the safe, affordable, and reliable delivery of energy.

Appendix A – Outage Reporting & Reliability

NorthWestern Energy delivers consistent reliability year-over-year to its customers. Benchmarking with peer utilities provides a basis of comparison for metrics like SAIDI, which normalize annual customer interruptions across the system. IEEE facilitates a benchmarking process which compares SAIDI with and without Major Event Days (MEDs) as defined by IEEE std 1366-2022. Catastrophic Event Days (CEDs) are excluded from all metrics and analyzed separately. MEDs define a day in which the system experiences strain beyond that which it is designed to withstand. This can be the result of extreme weather conditions, or failure of critical components on the bulk electric system. These events are statistically uncommon.

Since 2020, the South Dakota service territory has consistently ranked in the 1st quartile compared to NorthWestern’s peers, both including and excluding MEDs. MEDs in South Dakota are typically the result of ice storms or extreme winds. These reliability metrics illustrate that NorthWestern responds swiftly and efficiently to restore service following major disruptions to the system. The figures below represent NorthWestern’s South Dakota service territory SAIDI metrics, including and excluding MEDs, for the years 2020-2025. Please note that quartile results were not available during the time of this publication.

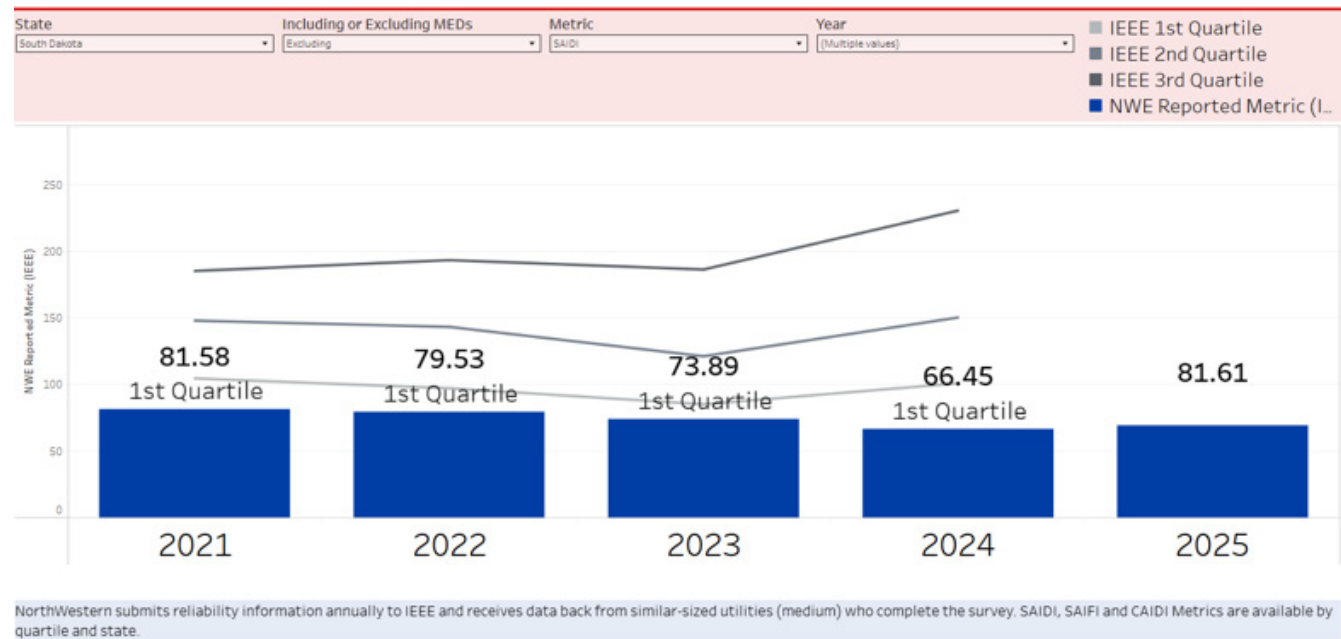


Figure South Dakota SAIDI Benchmarking Excluding MEDs

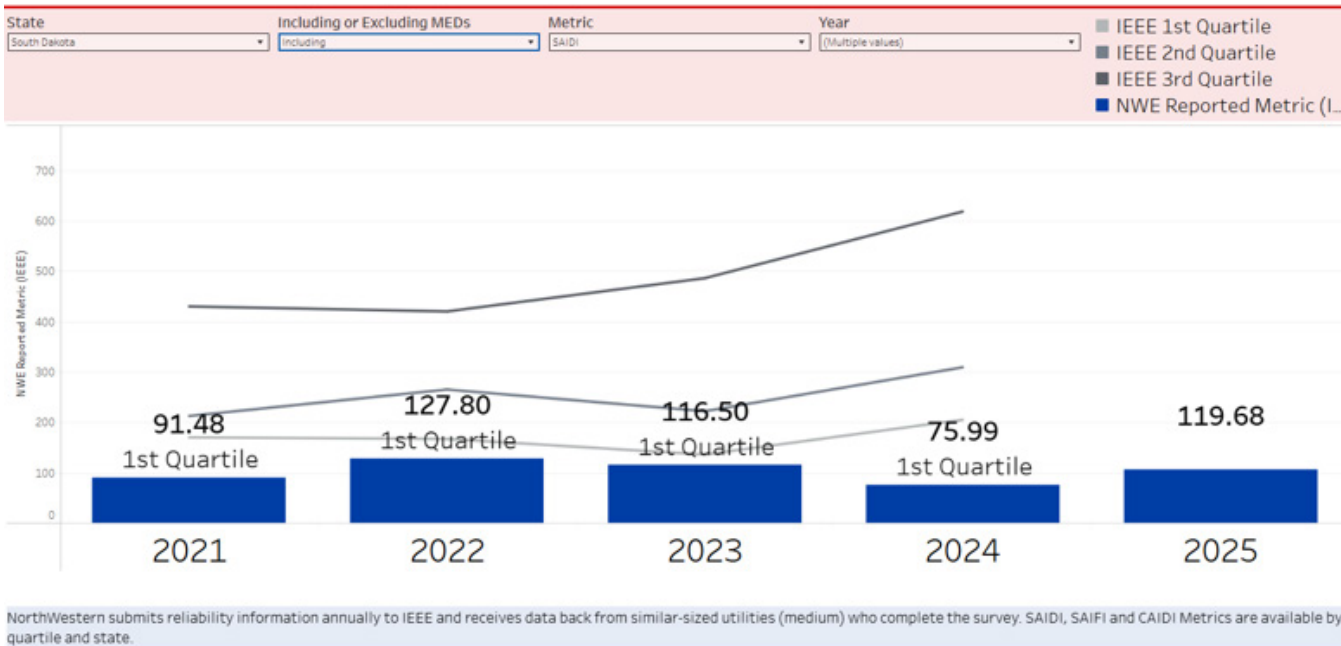


Figure South Dakota SAIDI Benchmarking Including MEDs

Appendix B – NorthWestern’s Suite of Tools

NorthWestern’s Suite of Tools is a specialized framework for decision making. The Suite of Tools encompasses inputs, models, and dashboards sourced from internal proprietary information, external vendors, and open-source data.

These resources can be static or dynamic in nature depending upon the update frequency of the data. Tool types within this framework include:

Inputs – standalone data which quantify specific metrics like wind speed, fuel conditions, or system health.

Models – a mathematic synthesis, scoring logic process, or simulation which produces a composite output.

Dashboards – a user-friendly display of one or more tools to facilitate actionable decision making.

The table below outlines the mode, title, general inputs, and purpose of each tool. Initial iterations of the Plan discussed two primary models: the “static model” and the “dynamic model.” Enhancements to these models and the development of new resources warranted an expansion of the framework. Key tools were chosen to display the broad scope of work addressed. NorthWestern may modify the scope of each tool to fit the regional needs within the service territories. New resources will be evaluated for integration as technology becomes available and validated for an appropriate use case.

Mode	Tool	Input(s)	Purpose
Static	Wildfire Consequence Model (WCM)	Historical fire behavior	Simulates the path, spread, and intensity of fires potentially ignited from electrical infrastructure. The output quantifies consequence throughout the Montana and South Dakota service territories.
		Available fuels	
		Structure locations	
		Forecasted conditions	
	Infrastructure Resilience Model (IRM)	System probability	Determines relative risk across the system and guides prioritization of long-range program planning.
		Consequence	
Dynamic	Wildfire Risk Index Model (WFRI)	System probability	Combines risk data with current conditions to evaluate appropriate defensive strategies like EPSS and modified line patrols.
		Fire weather indices	
		Consequence	
	Fire Weather Dashboard	Current conditions	Assesses real-time weather forecasts and fuel data to initiate PSPS procedures based on established thresholds.
		Relevant forecasts	
		Consequence	
	Work Practice Dashboard	Fire weather indices	Assesses real-time indices and fire agency advisories to select Work Practice Matrix level to be observed by field personnel.
		Burn restrictions	

Appendix C – Incremental WMP Costing Details

The costing details outlined in this Plan represent incremental investments made to the system. Existing practices may provide auxiliary wildfire mitigation benefits, but are excluded from the following table as their primary purpose is not affiliated with the Plan. Costing details reflect budgeted expenditures for 2026 in addition to forecasted estimates for 2027 and 2028.

All costing details are subject to change. Forecasts and budgets represented herein reflect a best estimate of the required costs necessary to complete prudent mitigation efforts. Estimates will be updated annually during an internal process to reflect any changes that may occur during the work planning process. Costs are represented under their respective Plan category.

Proposed Enhanced Incremental Costs*	2026 B	2027 F	2028 F
Situational Awareness	\$594,532	\$839,481	\$765,801
Operational Practices	\$60,000	\$755,500	\$775,500
System Preparedness	\$1,832,052	\$2,457,601	\$3,132,713
Vegetation Management	\$85,000	\$435,000	\$435,000
Communication & Outreach	\$80,000	\$110,000	\$110,000
Total :	\$2,651,584	\$4,597,582	\$5,219,014

*Costing is subject to change and updated on an annual basis.

B - Budgeted

F - Forecasted

Appendix D – Revision Log

Review Date	Revision	Revisions
August 2026	1.0	The Wildfire Mitigation Plan was filed with the South Dakota Public Utilities Commission and posted to the NorthWestern Energy website.