Montana Public Service Commission
Docket No. 2022.07.078
Electric and Natural Gas General Rate Review

PRE-FILED DIRECT TESTIMONY

OF GREGORY F. BAILLY

ON BEHALF OF NORTHWESTERN ENERGY

TABLE OF CONTENTS

Witness Information

Q. Please provide your name, employer, and title.

A. My name is Gregory F. Bailly. I am NorthWestern Energy's ("NorthWestern") Asset Manager in the Distribution Asset Management Department.

Q. Please provide a description of your relevant employment experience and other professional qualifications.

A. I have 20 years of experience working for NorthWestern in various engineering, operational, and management roles, within the Electric and Gas Distribution Utility. My experience includes:

- Three years (2002-2004) as a planning engineer in the Division Services department working on electric and natural gas long-range plans.
- Three years (2005-2007) working as a distribution field engineer in the Bozeman/Livingston/Yellowstone National Park division, interfacing with customers on new growth as well as supervising electric and natural gas craft personnel in day-to-day operations.
- Three years (2008-2010) as the Havre District Manager in a similar role as the field engineer in the Bozeman areas with added managerial responsibilities.
- Nine years (2011-2019) as Helena Operations Manager, managing a supervisor group and leading craft personnel in day-to-day operations.
- Two+ years (2020-present) as Asset Manager in the Asset Management department leading the System Planning, System Integrity, Joint Use, and Department of Transportation Coordination groups.

Purpose and Summary of Testimony

Q. What is the purpose of your testimony in this docket?

A. My testimony supports four of the five components of NorthWestern's Enhanced Wildfire Mitigation Plan ("Wildfire Plan") and the associated annual operating costs and capital investments required to implement them. The fifth component of the Wildfire Plan, vegetation management, is addressed in the Pre-filed Direct Testimony of Nathaniel P. Linder.

Q. Please summarize your testimony.

A. My testimony describes the actions NorthWestern intends to take to mitigate wildfire risk. The Wildfire Plan addresses the following areas that I testify about focused on reducing risk to the electric grid and risk from a wildfire ignited by the electric grid:

- **Situational Awareness** addresses a gap identified where dedicated resources will utilize technology to quickly react to ever-changing environmental conditions allowing NorthWestern to adjust work practices and operations with the goal of reducing risks to the electric grid;
- **Operational Practices** will address gaps identified in consistent processes for following up on momentary electrical faults, which have the potential of igniting a wildfire;

- **System Preparedness** identifies opportunities for grid hardening, system protection schemes, and deploying advanced technology all aimed at reducing the potential of an ignition.
- **Public Communication and Outreach** identifies opportunities to increase our effectiveness at communicating with our stakeholders and customers while continuing to provide service during an active event where services have been disrupted.

Details of the Enhanced Wildfire Mitigation Plan

Q. Please summarize NorthWestern's Wildfire Plan.

A. The Wildfire Plan includes five main categories: (1) Situational Awareness, (2) Operational Practices, (3) System Preparedness – Assessment, Repair, and Protection, (4) Vegetation Management, and (5) Public Communication and Outreach. These five categories detail how NorthWestern intends to reduce the risks associated with wildfire. Each category allows NorthWestern to reduce the probability of igniting a wildfire, manage the consequence of and mitigate damages from a wildfire, and assist customers whose electric or natural gas service may be impacted by a wildfire.

The Wildfire Plan costs are spread over a five-year implementation time frame and are estimated to be approximately $193 million in capital investments and $95 million in operations and maintenance expenses for

that period. The Wildfire Plan is attached to my testimony as Exhibit GFB-1.

Q. Why is an Enhanced Wildfire Plan necessary?

A. One of the risks associated with owning and operating electric utilities in wildfire-prone areas is the probability of igniting a wildfire. In order to mitigate the risk and the damages that could occur due to that risk, NorthWestern must continually study its system to understand the consequences of where and when an ignition may occur and the resiliency of the grid in the face of wildfire regardless of ignition. NorthWestern believes it would be financially and operationally impossible to reduce this risk to zero, given the factors associated with wildfire ignition.

Environmental (climatic and demographic) changes outside of NorthWestern's control drive the risk of wildfire ignition. To best manage these risks, NorthWestern developed a plan to primarily address the probability of igniting a wildfire, with additional emphasis on maintaining awareness of changing situations throughout the region and the year.

Wildfires are an ever-increasing threat to the livelihood of all Montanans and anyone recreating in our state. Available public data shows that the length of wildfire seasons and intensity of large wildfires are increasing. Just in Montana alone, the length of the wildfire season could increase by

600% by 2050.[1] The population in the most hazardous parts of the Wildland-Urban Interface ("WUI") is growing the fastest compared to other rural development,[2] increasing the consequence of any wildfire ignition. A plan provides a formalized road map for key stakeholders to see NorthWestern's overall goal of providing wildfire-resilient services and the steps it intends to take to achieve that goal.

Q. What is the current status of the Wildfire Plan?

A. The Wildfire Plan is in the early development stages. The next steps are to organize the subject matter experts to finalize the specific scope and schedule required to achieve the goals in the allotted time frame. Given that the related implementation plan is still in development, NorthWestern has made a good faith estimate on the anticipated costs of executing the Wildfire Plan and will adjust these estimates as required.

Q. What programs are included in the Wildfire Plan?

A. The Wildfire Plan identifies current programs to maintain, existing programs to accelerate, and new programs to fund and implement.

Current programs to maintain include:

- Distribution and Transmission Forest Management;

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[1] *See* www.climate.gov

[2] *See* www.baynature.org

- Distribution Section Reliability;
- Bulk Transmission Aerial Assessment; and
- Transmission and Distribution Pole Inspection and Replacement.

Existing programs identified to accelerate scope and schedule include:

- Transmission, Sub-Transmission (aerial) and Distribution (ground) assessments with associated repairs;
- Substation electronic breaker and communication installation;
- Lidar (Light Detection and Ranging); and
- Vegetation Management programs.

New programs to fund and implement include:

- A dedicated Wildfire Team with Data Integration dashboards focused on situational awareness;
- Wildfire Modeling;
- Line Operations Maintenance Engineer with dedicated program funding for patrolling and fixing momentary line operations;
- Transmission ground assessment and repairs;
- Distribution aerial assessment and repairs;
- Specific Inventories with associated engineering analysis;
- Transmission Section Reliability and Refurbishment;
- Distribution Section Refurbishment;
- Correction of Rejected Components;

- Rural Substation Communications; and
- Mobile Generating Unit Deployments.

Q. Can you please describe the term "Situational Awareness"?

A. Situational Awareness involves the continuous recognition of a changing environment, constant appreciation of the risks posed in that environment, and continual development of mitigating measures to address those risks. An example of changing risks is developing weather patterns, such as high wind warnings. Mature situational awareness tools allow for the utility to target operational practices in specified areas, as opposed to applying what could be counterproductive operational measures broadly. These particular weather changes increase the potential for an ignition to occur, as well as exacerbate a situation should an ignition occur. Another example of changing risks would be the increasing number of people building homes and living in areas traditionally uninhabited. These areas, known as the WUI, present some of the highest potential risks that NorthWestern manages. Coupled with longer, drier seasons, this demands a level of situational awareness not experienced previously. These environmental changes will require different ways to operate the grid safely and effectively balancing reliable service with a constant vigilance against wildfire hazards.

Q. What are the components of NorthWestern's Situational Awareness initiative addressed in the Wildfire Plan?

A. The Situational Awareness component of the Wildfire Plan focuses on four separate initiatives: (1) environmental dashboard; (2) localized weather station deployment; (3) wildfire modeling, and (4) dedicated wildfire team.

Q. Please describe the environmental dashboard initiative.

A. The environmental dashboard initiative will provide an analytic tool to gather and coordinate pertinent data. That data would include items such as climatic and environmental factors applied at targeted locations on the grid. The outcome of the changing factors along with analyzing how they impact ignition potential and consequence would consistently influence appropriate changes to operational practices.

Q. Please describe the localized weather station deployment initiative.

A. The localized weather station deployment initiative will help supplement the data provided to the environmental dashboard by deploying localized weather stations in selected areas to gather targeted weather data.

Q. Please describe the wildfire modeling initiative.

A. The wildfire modeling initiative involves a developed science utilized by utilities, through third-party vendors, that takes into account a number of geographical data sets to determine potential rates of wildfire spread and

burn probabilities in different areas, including consideration of housing density. This model will help categorize the severity of potential wildfire ignitions and the extent of possible losses.

Q. Please describe the wildfire team initiative.

A. The wildfire team initiative involves creating a new department within NorthWestern staffed with local subject matter experts. This team will analyze the data gathered from the other initiatives as well as ensure execution of the Wildfire Plan. Using their local subject matter expertise and knowledge, the wildfire team will continually assess the data gathered from the environmental dashboard and wildfire modeling initiatives and use it to promote appropriate changes to operational behavior.

An example of changing operational behavior could be changing settings on electronic re-closing devices during high-wind, dry-climate weather patterns. While this action could negatively affect reliable service in the short term, it will aid in the prevention of an accidental ignition by limiting available fault energy should a fault occur. Another example of changing operational behavior is working with local areas to re-schedule work in high-risk areas, when possible, to avoid any accidental ignition through work activities. The wildfire team would ensure that other departments within NorthWestern are executing the Wildfire Plan appropriately and keeping current on any changes to it. The wildfire team will further keep

NorthWestern's Wildfire Plan up to date with best practices identified among utility/industry peers and through communication with key stakeholders (U.S. Forest Service, Montana Department of Natural Resources and Conservation, private landowners, etc.).

Q. Please further elaborate on how the four sub-components of the Situational Awareness initiative will operate together to promote the purpose of the Wildfire Plan.

A. The environmental dashboard, weather stations, and wildfire modeling initiatives will use data to assist in understanding changes to the environment. The wildfire team will use this data to provide consistent and appropriate decisions. These decisions will allow for NorthWestern's Operation Department to have the best opportunity to manage the electric grid during times when the probability of igniting a wildfire is high. In terms of the System Preparedness component of the Wildfire Plan, the modeling will also assist in understanding how a severe wildfire could affect NorthWestern's critical infrastructure. This information will drive changes as appropriate to design criteria and materials used in the building and maintaining of this critical infrastructure.

Q. How will the Situational Awareness initiative assist NorthWestern in providing safe and reliable service to customers?

A. Situational Awareness is a broad brush. It will influence the way NorthWestern operates the system and when work activities can be safely completed, including changes to how the system is built and maintained. Situational Awareness is really the cornerstone to effectively manage the risks of operating an electric utility in wildfire-prone areas.

Q. Please describe the Operational Practices component of the Wildfire Plan.

A. The changes in Operational Practices in the proposed plan take a more formal approach to understanding how the system is operating. The plan identifies a full-time position to develop a process for following up on automatic protective system operations recorded on the system. This process will identify the nature and cause of these operations, as well as identify corrective actions for those operations. When a protective device, like a breaker, senses a sharp increase in current over a pre-determined setting, it will break connection, or open the electrical path and prevent current flow. After a pre-determined amount of time (cycles), the breaker will close the connection to test the line. If the current flow is at levels below the trip setting, it will remain in a closed position allowing continued normal operations. This operation is often referred to as a momentary event. When this happens, Grid Operations will record the event and send (usually the next day) an email to local supervision. Depending on the situation, there may or may not be a follow-up to determine what

caused the protective device to operate. If this happens multiple times spanned over several weeks, it is easy for local operations to miss the connection on multiple momentary events indicating larger problems on the line. The new position created by the Wildfire Plan will develop a process where all momentary events are analyzed and then, if necessary, patrolled for cause. Corrective action will occur if a cause can be found. As Situational Awareness develops, current Operational Practices concerning wildfire ignition and impact will adapt to meet those changes.

Q. How does NorthWestern plan to update its Operational Practices in response to the Situational Awareness initiative?

A. As described above, the wildfire team will use data gathered from the Situational Awareness initiative to update NorthWestern's Operational Practices based on the team's local subject matter expertise. The updates to the Operational Practices will allow NorthWestern to change its programs to adapt to the risks posed by environmental conditions. After assessing the data and analyzing the best approach to address the risks identified from it, the wildfire team will communicate its findings and provide its recommendation to those departments most impacted, whether it be Distribution Operations, Distribution Operations Control, Electric Transmission, Grid Operations, Hydro or other impacted departments. The departments will review the findings and recommendations and determine if the impacts to their standard operating procedures is

appropriate. If approved by the respective department, the recommendations will be implemented.

Q. Please describe the System Preparedness – Assessment, Repair, and Protection component in the Wildfire Plan.

A. The Assessment, Repair, and Protection component involves two categories. One of them is the fieldwork required to achieve the goals of the Wildfire Plan. The second is staffing resources for project management and engineering to execute the Wildfire Plan.

The Wildfire Plan breaks down the fieldwork category further with Assessment and Repair activities, which include the line assessments, corrective actions identified from the assessments, an inventory on concerning components, as well as completing Lidar data gathering for engineering analysis. Distribution ground assessments are identified for acceleration from current scope and schedule. Distribution aerial assessments is a new activity identified for use of drones in our forested segments. Transmission ground assessments is a new item for both Sub-Transmission (34.5 kilovolts ("kV") to 100kV) and Transmission (over 100kV). Modifications to corrective actions on exceptions found will be modified where appropriate from existing practices outlined in our Operation and Maintenance Guidelines. All exceptions found will be corrected in an appropriate time frame within local area work plans. This

modification will only be in place for five years from the beginning of the Wildfire Plan, and re-evaluated upon completion. Construction activities include improved substation automation through advanced relay technology, installation of electronic breakers, and communication deployment to rural substations.

Each category identifies items to continue at current scope and schedule, in addition to items to accelerate the scope and schedule, as well as new programs to fund and implement. Construction activities to maintain at current scope and schedule include pole replacement as described in our Operation and Maintenance Guidelines as well as our current Forest Management Programs for Transmission and Distribution.

Currently, NorthWestern anticipates staffing needs associated with the System Preparedness section of the Wildfire Plan will be significant, including potentially 38 full-time employees. The development of the implementation plan will dictate the number of internal or contract resources that will make up this requirement. These positions are necessary to manage the project as a whole through the first five years of implementation.

Q. How will NorthWestern execute the Assessment, Repair, and Protection component of the Wildfire Plan?

A. NorthWestern will use a combination of increased resources and a re-prioritization of current identified non-wildfire mitigation work. A study of NorthWestern's five-year capital plan allows for an understanding of impacts of work re-prioritized against identified wildfire mitigation work.

Q. How long will it take to execute the Assessment, Repair, and Protection component?

A. There are three different scope and schedule categories within the Wildfire Plan for this component. There are one-time costs, items to complete within a five-year period, and some that will be annual and ongoing beyond the first five years. An example of one-time costs include: Internal Server/Environmental Dashboard, inventory of concerning components, and repeater resiliency equipment. Examples of items to complete within the five-year time frame include all the construction activities identified such as electronic breaker installations and communications to rural substations, and Lidar and refurbishment programs. Ongoing or annual costs will include items that have accelerated scope and schedule to complete within five years but for which such costs could continue beyond the five years. These include items such as ground and aerial patrols, corrective actions on identified exceptions and rejected components, and salary for the wildfire team. At the end of the first five years, the patrols and inspections will be re-evaluated. Scope and schedule for these costs

after the first five years will be determined to either slow down, keep at current pace, or be accelerated.

Q. Please describe the Public Communication and Outreach component of the Wildfire Plan.

A. The Wildfire Plan identifies two programs for Public Communication and Outreach. Both are new initiatives. The first is to enhance safety training for employees concerning communications with the public before, during, and after an event. The second is to invest in mobile generating units. The units will assist electrical needs in areas impacted by wildfire where feasible.

Q. Please describe any additional benefits of the Wildfire Plan.

A. NorthWestern recognizes the extent of its footprint within the state, the valuable state resources that its system runs through, and all of its neighboring property owners. The Wildfire Plan will help NorthWestern preserve and protect Montana's resources and all of its neighbors from potential harm. The Situational Awareness component of the Wildfire Plan is the cornerstone to making changes demanded by the environment. This allows NorthWestern to actively manage the potential of igniting a wildfire and, to some extent, the consequences should there be an ignition. The System Preparedness portion of the plan will provide additional benefits of increased reliability even outside of wildfire season.

The system will become more flexible and will be able to run in different modes depending on changing climatic conditions. During the winter months when fire is less of a concern, the system will operate as originally intended using re-closing devices and fuse coordination during faults. The enhancements of the assessments, corrective actions from them, and modified construction practices will also drive toward higher reliability.

Costs of the Wildfire Plan

Q. How much additional funding will be necessary to implement and execute the Wildfire Plan during its first five years?

A. High-level estimates are approximately an additional $288 million ($193.3 million in capital investments and $94.8 million in operating expenses) during the first five years. These costs include the categories – one-time costs and annual/ongoing – explained above. The one-time costs are spread over five years. The annual/ongoing operating costs are included in the plan for the first five years, but will continue beyond the Wildfire Plan's five years. That future amount will depend on the re-evaluation of scope and schedule after the first five years. NorthWestern's proposal for cost recovery of the Wildfire Plan is discussed in detail in the Pre-filed Direct Testimony of Cynthia S. Fang.

Q. Please provide a breakdown of those additional costs between capital investments and operating expenses for each of the five components of the Wildfire Plan.

A. NorthWestern Energy's Enhanced Wildfire Plan, Exhibit GFB-1, provides the breakdown of costs for each of the five components of the Wildfire Plan.

Q. How were those costs derived?

A. As stated earlier in this testimony, NorthWestern classified each item as either maintaining at current scope and schedule, accelerating from current scope and schedule, or as a new addition. Per-unit costing from past practices set the foundation for understanding projected costs for accelerated activities. Estimations through research and subject matter knowledge provided for projected costs on activities with no known past per-unit costing.

Q. How long will it take to implement and execute the Wildfire Plan?

A. The Wildfire Plan calls for a scope and schedule over a five year period. Some activities require completion before that timeline and some aspects will continue after five years. As discussed in the Direct Testimony of witness Cyndee Fang, NorthWestern is requesting cost recovery beginning 2024, upon approval by the Montana Public Service

Commission through 2028. Given the critical nature of this work, NorthWestern has already begun to implement some of these initiatives.

Q. Will the identified costs remain consistent over the five-year time frame? Please explain.

A. Due to the nature of implementing such a large plan, 2023 and even 2024 will see some kind of a ramp-up production schedule where costs will not be at the same full production level as the following years 2025-2028. Some costs could remain consistent year over year from the beginning. However, items found during assessments and inspections drive anticipated costs. These costs are typically stable year over year, but the health of the system and action items determined through the Situational Awareness initiative will dictate the overall funding required.

Q. Why did NorthWestern project costs for five years?

A. Using subject matter expertise and knowledge with known data drivers, NorthWestern concluded a five-year timeline appropriately balances feasibility with risk.

Q. After five years, will the Wildfire Plan terminate?

A. No, as long as NorthWestern owns and operates utility facilities in wildfire prone areas, there will always be some aspect of the Wildfire Plan to execute. NorthWestern will continue to evaluate the Wildfire Plan in the

future and revise it as necessary to respond to ever changing environmental conditions.

Q. Does this conclude your testimony?

A. Yes, it does.

VERIFICATION

This Pre-filed Direct Testimony of Gregory F. Bailly is true and accurate to the best of my knowledge, information, and belief.

/s/ Gregory F. Bailly
Gregory F. Bailly