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

PRE-FILED DIRECT TESTIMONY

OF THOMAS D. PANKRATZ

ON BEHALF OF NORTHWESTERN ENERGY

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Witness Information

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

A. My name is Thomas D. Pankratz. I am NorthWestern Energy's ("NorthWestern") Director of Electric Transmission Engineering and Project Management.

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

A. I have been in my current position with NorthWestern since 2017. In this position, I am responsible for electric transmission planning, transmission line engineering, and major project management. I have worked in the utility industry for 28 years – first in the engineering consulting field and the last 23 years for NorthWestern leading to my present position. My relevant experience is in electric transmission engineering, project management, system planning, and capital portfolio management. I am a licensed Professional Engineer (PE) in Montana and a certified Project Management Professional (PMP).

Purpose of Testimony

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

A. I describe NorthWestern's electric transmission system planning and electric transmission system costs since our 2018 electric general rate

review (2017 test year) before the Montana Public Service Commission ("Commission").

Electric Transmission System Planning

Q. Please describe the transmission infrastructure that is necessary to provide customers with reliable service.

A. Transmission facilities carry bulk power over longer distances from generation facilities to cities and communities or across state lines and regions where it is needed. They carry bulk power to local substations where the voltage is converted or 'stepped-down' to lower distribution voltages and facilities to serve residential and commercial customers. Large industrial customers such as the refineries in Billings and Great Falls receive their power at the transmission level voltage.

Q. Please provide an overview of NorthWestern's electric transmission system planning.

A. NorthWestern's transmission planning processes ensure the transmission system can operate reliably and safely to meet our customers' expected load forecasts now and into the future. NorthWestern engages in both local and regional planning to ensure the transmission system is well maintained and improved in order to continue to provide customers with safe and reliable service.

For regional planning, NorthWestern participates in the planning organization for the Pacific Northwest known as NorthernGrid. NorthernGrid uses power flow contingency analysis to assess which projects could best meet system reliability performance requirements and transmission needs for a 10-year planning period. This analysis applies to the NorthernGrid footprint, which primarily includes the states of Washington, Oregon, Idaho, Montana, Wyoming, Nevada, and Utah. The 2020-2021 Regional Transmission Plan is attached as Exhibit TDP-1. This plan satisfies Federal Energy Regulatory Commission (FERC) Order No. 1000 requirements for each region to produce a plan.

For local planning, NorthWestern develops a Local Area Plan every two years for 5-, 10-, and 15-year planning horizons. The 2020-2021 Local Area Plan is attached as Exhibit TDP-2. As explained in NorthWestern's Local Area Plan, after the completion of system studies, NorthWestern prioritizes system issues. Table 1 below depicts NorthWestern's consideration of issues based on potential consequences and likelihood of an event and the associated issue with the four key policy drivers behind investments: (1) Asset Life, (2) Reliability, (3) Compliance, and (4) Capacity, as discussed in the Pre-filed Direct Testimony of Michael R. Cashell.

Table 1

Strategic Alignment	Asset Life = proactive (asset condition and performance)	Reliability = reactive (impact to system deliverability if failure occurs)	Compliance = risk (consequence and probability)	Capacity = system availability (current availability and projected growth)
Company Approved Performance Target	Asset age compared to useful life	Business function or customer impacted	Level of compliance	Current system demand
System impacts if event occurs	Asset's current condition (health)	System impacts	System condition (conditions that must exist to create consequence)	System Improvements
History of the asset	History of performance	Historical level of service	Probability of event (frequency)	How often are systems currently overloaded
Operational Issues	Operation and Maintenance Costs	Operational impacts	Safety	Projected Growth

Q. Please describe the four key policy drivers in Table 1.

A. The Asset Life category includes costs for investment in existing infrastructure to maintain those assets that are near the end of their useful life and replacements of transmission assets such as structures, poles, lines, substation equipment, and related equipment.

The Reliability category includes investment in infrastructure and related improvements focused on maintaining or improving reliability of the transmission system.

The Compliance category includes projects focused on maintaining compliance with laws and regulations such as North American Electric Reliability Corporation ("NERC") and Western Electricity Coordinating Council (WECC) requirements.

The Capacity category focuses on the demands on the current availability of the system and investments for maintaining or improving transmission capacity.

Electric Transmission System Costs

Q. Do all of NorthWestern's transmission system costs fall into the four key policy drivers in Table 1?

A. For the most part, yes. NorthWestern uses the Table 1 scoring matrix to score and rank the majority of its planned capital investments but not all. Some system costs such as reactive storm repair, interconnection-related costs, and costs associated with the Colstrip Transmission System are not part of the scoring matrix.

Q. Are NorthWestern's transmission system costs increasing?

A. Yes. NorthWestern's investment in the electric transmission system has continued to grow year over year from approximately $53 million in 2018 to approximately $76 million in 2021. This represents an increase of approximately 43%, and an average annual increase of approximately

10.7%. This includes significant investment in Asset Life projects such as transmission pole replacements on the nearly 7,000 miles of the electric transmission system and Capacity & Reliability improvement projects directed at increasing or improving transmission capacity and reliability for our customers.

For example, in this time period, NorthWestern's costs included approximately $31 million in the Helena area transmission system to rebuild the 1915-era 100-kilovolt ("kV") transmission line from Holter to Helena and to construct the new Lake Helena Switchyard and the new Custer Avenue Substation. At the same time, NorthWestern's costs also included approximately $13 million in upgrading transformer capacity in the Butte area and approximately $7 million rebuilding the 69kV transmission line from Livingston to Emigrant. These are examples of projects aimed at improving capacity and reliability of the transmission system to serve our customers.

Q. Please describe the significant projects associated with the Asset Life category.

A. Asset life projects include investments and replacement of existing assets such as transmission poles and switches along with substation breakers and other equipment that is at the end of its useful life or approaching obsolescence. For example, wood transmission poles have a life

expectancy of 60 years. NorthWestern invests in and maintains each wood pole to maximize life expectancy and reliable performance by testing and treating them at certain prescribed intervals. If tests reveal those poles no longer meet program metrics or reliability expectations, NorthWestern replaces them as part of its system integrity program. NorthWestern's electric transmission system consists of nearly 7,000 miles of transmission lines, and the average age of the current wood pole plant is 45 years. Similarly, aging substation equipment replacement is part of the Asset Life cost category. NorthWestern's pole replacement costs alone continue to grow year over year from approximately $13.8 million in 2018, $16.2 million in 2019, $20.5 million in 2020, and $26 million in 2021. This growing investment represents costs associated with maintaining critical aging facilities and equipment.

Q. Please describe the significant projects associated with the Reliability category.

A. Reliability improvement projects include costs to improve system performance and reduce system and customer impacts due to poor performing assets. Example costs since 2018 include the aforementioned Livingston to Emigrant 69kV rebuild, segmentation projects, and other transmission circuit projects designed to modernize and improve system performance when the asset facility is not meeting reliability expectations. Example segmentation and circuit projects since 2018 include upgrades to

the Havre to Chester 69kV transmission lines, upgrades to the 50kV and 100kV Roundup area transmission lines and the relocation of 161kV transmission lines in Missoula due to river flooding.

Q. Please describe the significant projects associated with the Compliance category.

A. NorthWestern's costs from 2018 to 2021 on compliance-related projects were over $35 million. These costs were primarily associated with a NERC Facilities Alert requirement that required NorthWestern to review and comply with NERC requirements for transmission line facility ratings. As part of that effort, NorthWestern was required to rebuild and improve ground clearance to meet power rating capacities on certain transmission lines. These projects ensured the transmission lines could be operated at required capacities and in compliance with National Electric Safety Code (NESC) ground clearance requirements.

Q. Please describe the significant projects associated with the Capacity category.

A. Capacity limitations are continuing to grow in certain parts of the electric transmission system due to customer growth in Montana and use of the transmission system. The Bozeman area, the greater Billings area, and the Bitterroot Valley are examples of high growth areas where NorthWestern has identified the need for significant capacity

improvements on the transmission system. NorthWestern invested approximately $65 million from 2018 to 2021 on capacity-related projects. Example Capacity investments since 2018 include the aforementioned upgrades in the Helena and Butte areas, upgrades to transformer capacity at East Gallatin Substation near Bozeman, transmission rebuilds in Big Sky, transmission upgrades in Billings, and new reactive devices at Wilsall.

Q. Does this conclude your testimony?

A. Yes, it does.

VERIFICATION

This Pre-filed Direct Testimony of Thomas D. Pankratz is true and accurate to the best of my knowledge, information, and belief.

/s/ Thomas D. Pankratz
Thomas D. Pankratz