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

PRE-FILED DIRECT TESTIMONY

OF MICHAEL R. CASHELL

ON BEHALF OF NORTHWESTERN ENERGY

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Witness Information

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

A. My name is Michael R. Cashell and I am the Vice President – Transmission at NorthWestern Energy ("NorthWestern").

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

A. I have worked in the electric and natural gas utility industry for 36 years. I have served as NorthWestern's Vice President-Transmission for over 11 years. In this role, I am responsible for all aspects of NorthWestern's electric and natural gas transmission systems and substations in Montana and South Dakota, including the systems' safe, reliable and efficient operation, transmission services, operations, planning, engineering, and maintenance. I am also responsible for the activities related to transmission and transportation contracts, interconnection agreements, and transmission service under NorthWestern's Federal Energy Regulatory Commission ("FERC") Open Access Transmission Tariff ("OATT"), and compliance activities related to all FERC regulation and North American Electric Reliability Corporation ("NERC") reliability and

cyber and physical security standards. I hold a Bachelor of Science in Engineering Science from Montana Technological University.

Purpose and Summary of Testimony

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

A. My testimony provides an overview of the role of NorthWestern's electric and natural gas transmission systems and infrastructure in providing safe and reliable service for our Montana customers.

Q. Please summarize your testimony.

A. My testimony provides an overview of NorthWestern's electric and gas transmission systems and describes the role they play in ensuring safe and reliable service for our customers. In addition, I describe our major electric and gas transmission initiatives and provide the policy objectives behind these initiatives. I also explain why NorthWestern recommends continuing use of the revenue crediting methodology for purposes of setting rates for transmission service for our retail customers.

Overview of the Electric Transmission System

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

A. NorthWestern's Montana electric transmission system covers over 97,000 square miles in the western two-thirds of Montana[1]. This integrated system includes about 7,000 miles of transmission lines with voltages ranging from 50 kilovolt ("kV") to 500 kV. The system includes over 280 circuit segments, 79 transmission or transmission/distribution substations, and over 100,000 poles and towers. The transmission system integrates resources and loads through 500 kV, 230 kV, 161 kV, 115 kV, 100 kV, 69 kV, and 50 kV lines to efficiently deliver power to the various load centers dispersed throughout NorthWestern's service territory. The 500-kV Colstrip Transmission System ("CTS") operated by NorthWestern extends from the Colstrip Generating Station ("Colstrip") in eastern Montana to western Montana where it interconnects with the Bonneville Power Administration's ("BPA") 500-kV facilities (known as the "Eastern Intertie") at Townsend, Montana. NorthWestern and the other owners of Colstrip (excluding Talen Montana) jointly own the CTS. Exhibit MRC-1 provides a geographic representation of NorthWestern's transmission system.

Q. You mentioned the 500-kV Colstrip Transmission System (CTS). What is the importance of this system to Montana customers?

[1] NorthWestern also serves Yellowstone National Park in Wyoming. The facilities that serve Yellowstone National Park are not in the scope of this rate review.

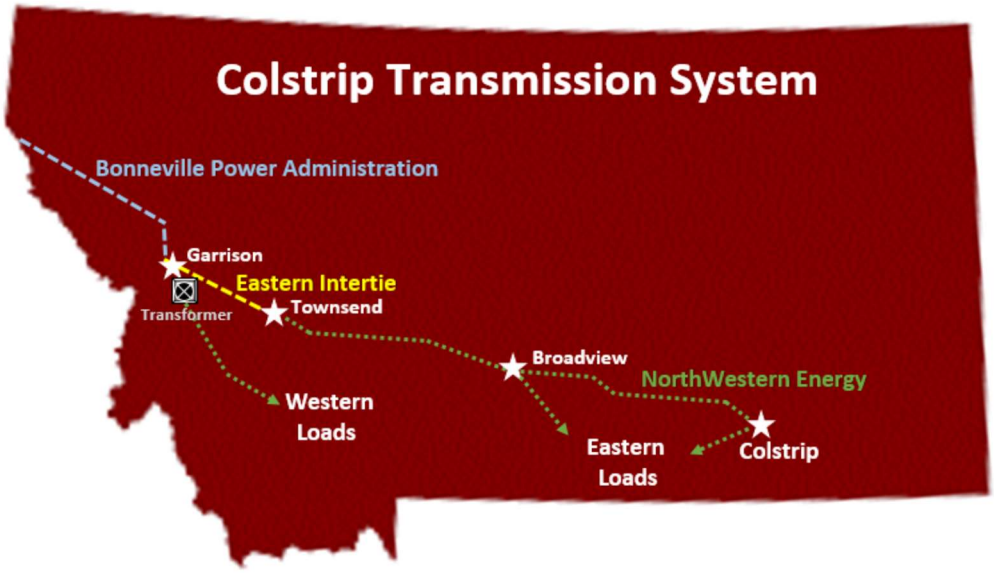
A. The CTS was built at the time that Colstrip generation plants were constructed in the early 1980s and provides a large portion of the transfer capability needed to deliver the other Colstrip owners' shares of the generation out of Montana to load centers in Washington and Oregon. The CTS is extremely valuable to Montana customers. The CTS is the backbone of the Montana transmission system, providing a very strong path from east to west and west to east across the state to reliably deliver bulk power to all of NorthWestern's Montana transmission customers. In addition, the CTS provides Montana customers access to power supplies, specifically the Mid-Columbia (Mid-C) regional market, and provides suppliers' access to Montana customers. This is extremely important to allow NorthWestern the ability to import power into Montana to reliably serve our customers.

Q. What is the Eastern Intertie and why is it important to NorthWestern's customers?

A. The NorthWestern 500-kV CTS transmission lines run from Colstrip, Montana, to the Broadview Substation in Billings, Montana, and then on to an interconnection with the BPA 500-kV lines at Townsend, Montana. The CTS interconnects to the BPA 500-kV Eastern Intertie at Townsend. NorthWestern has 420 megawatts ("MW") of contracted capacity with BPA for use of the Eastern Intertie transmission lines from Townsend to Garrison, Montana. This capacity is used to support network transmission

capacity across Montana. Without the Eastern Intertie portion of the 500-kV system, there is no connection from the Colstrip / Broadview / Townsend 500-kV system to the western side of Montana at Garrison. This connection to Garrison where NorthWestern's underlying transmission system is connected is important to serving our retail customers. The graphic below shows the CTS and the Eastern Intertie.

Figure 1: Colstrip Transmission System



Q. Please describe NorthWestern's electric transmission customers.

A. NorthWestern's transmission system serves three types of customers – network, point-to-point ("PTP"), and interconnection service customers.

- Network customers include
  - NorthWestern, on behalf of its end-use customers taking bundled retail electric service under rates regulated by the

Montana Public Service Commission ("MPSC" or "Commission") ("Bundled Customers");

- unbundled retail customers that, under Montana's deregulation statute, purchase electric commodity service from a competitive electricity supplier of their choice ("Choice Customers");
- electric cooperatives ("Co-ops"); and
- federal power marketing agencies ("FPMAs").

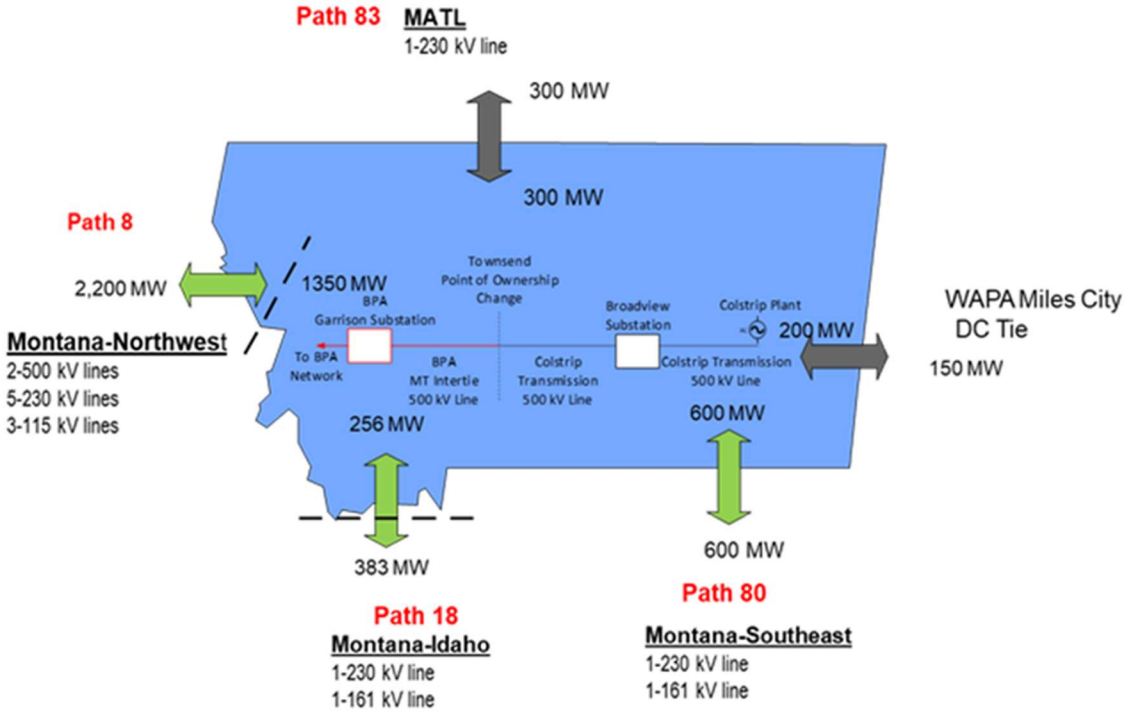
The Network Integration Transmission Service ("NITS") that Choice Customers, Co-ops, and FPMAs receive under NorthWestern's OATT permits them to use the NorthWestern transmission system to integrate their loads and resources in the same or comparable manner as NorthWestern does to serve its Bundled Customers. Currently, NorthWestern has 28 NITS customers.

PTP customers use firm (reserved priority) and non-firm (as-available priority) point-to-point transmission service under the OATT to move power out of or through NorthWestern's transmission system. Currently, NorthWestern has 57 PTP customers.

Figure 2 below shows, in general, the routes that PTP and Network customers, including NorthWestern, for service to retail customers, may utilize to serve customers. Figure 2 is a representation of Total Transfer

Capability, or TTC, on NorthWestern's transmission system. TTC is the total designed and approved transmission capacity of a transmission path. TTC is not what is available for customers' use. Available Transfer Capability ("ATC") is TTC less all commitments as defined in Attachment C of the NorthWestern OATT. ATC for all paths is posted on NorthWestern's Open Access Same-time Information System ("OASIS").

Figure 2: Total Transmission Capability (TTC)



Interconnection service customers are generation customers that have interconnected or are seeking interconnection of their facilities to NorthWestern's transmission system. The figure above can also be

relevant to interconnection customers as they or their customer(s) would use either Network or Point-to-Point transmission service to deliver their energy.

Q. Does NorthWestern provide additional electric transmission services benefitting all customers?

A. Yes. NorthWestern manages the transmission system as a Balancing Authority Area ("BAA") operator, with responsibility for ensuring that system supply and demand are in constant balance. To support the continuous flow of electricity, NorthWestern provides ancillary services such as scheduling, system control, and dispatch; regulation and frequency response; and contingency reserves. When demand and supply are not in balance, equipment damages, cascading outages, or blackouts can result. This affects frequency within the Western Interconnection. As a BAA operator, NorthWestern must meet and operate within NERC's reliability standard requirements.

Q. Please describe the impact of variable energy resources on NorthWestern's electric transmission system.

A. Since NorthWestern began to interconnect and integrate variable energy resources, such as wind and solar, to the transmission system, we have had to add other resources to our system in order to provide the capacity needed for balancing the supply with demand on the system. As baseload

and flexible generation continues to decline and variable energy resources continue to be added to the transmission system, integrating these resources has been and will continue to be increasingly more challenging.

Q. How has NorthWestern managed the impact of the COVID-19 Pandemic on its electric transmission operations?

A. NorthWestern has experienced significant impact to the operations of the entire system including to the transmission system. The impacts have included staffing challenges in order to keep critical operations effectively running, retirements and other turnover, and challenges in recruiting and filling open positions. We have mitigated staff-related issues, in particular within our 24-hour transmission control room operations, by utilizing our back-up control centers to separate crews to limit potential exposures.

We have and are currently experiencing long materials and equipment lead times, rising costs, and materials availability issues associated with constraints in the supply chain and increased demand within the market. The supply chain impacts create increased cost and schedule risks for capital projects and ongoing maintenance activities. This is a broad-based national and international market issue, as well as an industry issue.

Q. What has NorthWestern done to mitigate the supply chain issues?

A. To mitigate supply chain impacts, NorthWestern has and will continue to take actions from extending planning and sourcing horizons to coordinating closely with our supply chain alliance partners and closely managing inventory levels to address materials availability and lead times. Additionally, we have aggressively searched for alternate vendors that can meet our technical specifications for equipment and materials and are continually evaluating the risks in the marketplace and our operational needs and appropriate contractual terms and conditions. The market is dynamic and continual attention is needed to address these complex supply chain problems.

Q. Have you experienced similar supply chain and COVID-related issues on your gas transmission system?

A. Yes. And we have used similar strategies to mitigate the issues.

Electric Transmission System Investments

Q. Since NorthWestern's last electric rate review in 2018, has NorthWestern invested in electric transmission plant to ensure reliable service to its customers?

A. Yes. NorthWestern has added approximately $233 million additions less retirements to its electric transmission plant. This increase in transmission plant is not unusual given the age of NorthWestern's system and our focus in the transmission planning process on maintaining appropriate reliability

and capacity levels, meeting compliance requirements, and optimizing the useful life of these assets.

NorthWestern has invested substantially more than the depreciation of the total electric transmission plant investment included in rate base over the same time frame (approximately $179 million more, or 76% greater than depreciation) in order to keep up with infrastructure requirements on the transmission system.

The Pre-filed Direct Testimony of Thomas D. Pankratz discusses our planning and investments in the electric transmission system in more detail.

Q. What were the key policy drivers behind that investment?

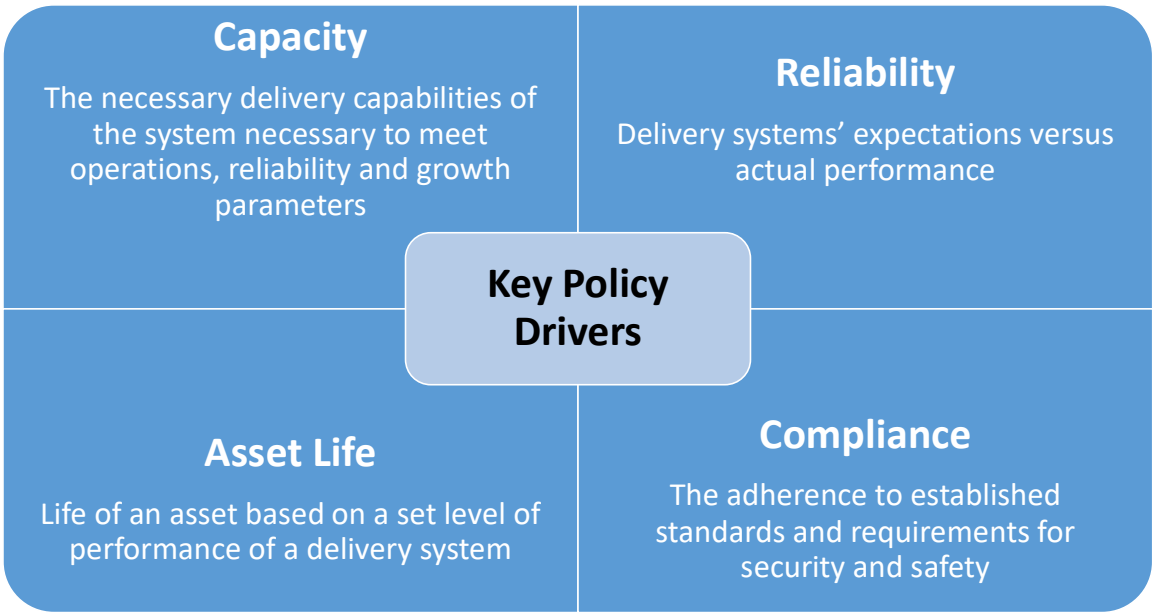
A. Generally, NorthWestern makes investments in its transmission system to:

- Meet capacity requirements;
- Address reliability needs;
- Replace aging infrastructure/asset life; and
- Satisfy compliance requirements.

In addition, NorthWestern makes some investments in response to generation interconnection requests and transmission service requests.

The graphic below shows the category and a high-level description of investments we make on the transmission system to provide safe and reliable service to our customers.

Figure 3: Key Policy Drivers for Transmission Investment



Q. What do all of these investments have in common?

A. NorthWestern makes each of these investments in order to provide reliable and safe service to our customers.

- Capacity projects are planned and executed to meet the ever-growing customer demand on the transmission system.
- Reliability projects are planned and executed to ensure that our customers are able to receive delivered energy when it is needed,

even under difficult situations. We plan for contingencies on the system as part of our reliability efforts.

- Asset life/infrastructure projects are planned and executed in order to ensure we are keeping up with aging infrastructure.
- Compliance projects ensure that we are meeting industry standards and other mandated or required criteria for safe and reliable service.

Many of our planned and executed projects actually fall into multiple areas and meet more than one policy driver.

Beyond these investments, I note that, in several instances, NorthWestern is also a party to long-standing agreements for rights on the transmission systems of third parties to provide least-cost, reliable transmission service to NorthWestern's retail customers. These arrangements are a long-standing practice on the NorthWestern system, dating back to The Montana Power Company's operation of the system.[2] I will discuss these contractual arrangements later in my testimony.

[2] For example, NorthWestern contracts with the Western Area Power Administration ("WAPA") and the Southwest Power Pool ("SPP") for transmission rights to provide service in Montana within the WAPA system that is part of the SPP, and NorthWestern also has arrangements for dedicated capacity to provide service over the Eastern Intertie which is owned by the BPA.

Q. How does NorthWestern determine what capital investments to pursue?

A. Our Transmission Planning group models our transmission system to determine needs for reliability, capacity, and compliance while our Asset Management group collects and analyzes data regarding asset life. NorthWestern utilizes these processes to develop investment plans. Each year, during our capital planning process, NorthWestern identifies and assigns projects to one of these investment categories of capacity, reliability, asset life, or compliance. For budgeting purposes, NorthWestern assigns the projects a priority based upon a number of criteria that are applied to transmission and distribution projects. For example, an emerging reliability or compliance issue may receive a greater relative ranking in the overall annual budgeting process.

In addition, our Asset Management group is charged with developing and maintaining strategies for assessing asset life and planning for appropriate replacement of facilities. Unplanned failures of equipment do occur. However, in order to minimize impact from equipment failures, we conduct inspections of our transmission structures, poles and lines, substations and related equipment, and perform preventive and reactive maintenance while planning for replacements of major components as they near the end of their useful life.

Mr. Pankratz further addresses our planning processes as well as our capital investments since the last electric rate review in 2018 and the importance of these processes in providing safe and reliable service to our customers.

Electric Transmission System's Role in Providing Reliable Service

Q. You previously discussed reliability projects driving investment in the existing electric transmission system. Are you aware of challenges to reliably serving Montana customers in the future?

A. Yes. NorthWestern transfers power in and out of Montana through Western Electricity Coordinating Council ("WECC") rated paths to the west and south on Paths 8, 18, and 80, and to the north on Path 83, on the Montana Alberta Tie Line ("MATL"), as shown in Figure 2 above. Referring to Figure 2, the largest single path to the Pacific Northwest and other Western Interconnection markets is Path 8. Path 8 consists of the interconnections with BPA and Avista. Figure 2, above, is a representation of Total Transmission Capability, or TTC, on NorthWestern's transmission system. TTC is the total designed and approved transmission capacity of a transmission path. TTC is not what is available for customers' use as noted above.

Q. Would you elaborate on transmission challenges impacting Montana customers?

A. With the 2015 closure of the 150-MW J. E. Corette plant and the 2020 closure of the 614-MW Colstrip Units 1 and 2, Montana is quickly moving from being a net exporter of energy to a net importer of energy. Consequently, now during the most critical periods, NorthWestern relies heavily on imports into the system to meet customer needs. This significant import reliance is now on a transmission system and interconnection to other areas that was not designed to serve such a large portion of NorthWestern's customer load.

Q. Does NorthWestern's current electric transmission system have the capacity to reliably import the power necessary to meet retail customers' needs into the future?

A. No, not entirely and not reliably. The NorthWestern transmission system was not planned and designed to serve such a large portion of NorthWestern's BAA load by importing energy into Montana over the transmission interties. The system was designed with a significant amount of in-state generation available to also serve the BAA load. In addition, regional transmission outside of NorthWestern's system is required to provide a path to NorthWestern. The regional transmission system, similarly, was not designed to reliably deliver energy and capacity to NorthWestern's system in the magnitude that we are now requiring to

serve our customer load. Over reliance on short-term transmission availability, both in our system and outside of NorthWestern's system, and reliance on external generation capacity are becoming greater risks to NorthWestern's ability to reliably serve the BAA load, which largely includes NorthWestern's retail customers, in Montana. The electric transmission system alone is not adequate to import energy and meet customers' needs into the future. As noted above, the transmission system was developed over decades and it was developed with co-reliance on significant in-state generation sources.

Q. Are there any consequences if NorthWestern is unable to provide reliable electric transmission service to its electric transmission customers?

A. Yes. Transmission service is a critical component to a well-integrated utility system, including generation sources and distribution systems, which is necessary to ensure safe and reliable service to our customers. A lack of adequate planning, design, and execution of our capital plan or inadequate maintenance of our existing transmission system can result in customer outages, damages, and other concerns related to safety.

Q. Are there other challenges that the NorthWestern electric transmission system faces?

A. Yes. In addition to the challenges of importing to serve load, there are also a number of key internal transmission system challenges/constraints.

Q. Would you say more about these issues?

A. Yes. Due to significant additional variable generation that has been developed in north central and central Montana, much of the latent transmission capacity in the path that we refer to as “south of Great Falls” has been used up and the problem will get worse if/when added generation is developed. Figure 4 below shows the current transmission system, the south of Great Falls path, and its relationship to other load centers in Montana. As a result of the constraints in the south of Great Falls path, our investments in the transmission system in that area will need to increase significantly.

Q. Are there other internal constraints?

A. Yes. The Billings area represents about one-third of the overall load in our balancing authority. It is the largest single area load. Increasing customer load in this area and reduced eastern Montana generation described above in this testimony is making it very difficult to serve the Billings area.

Q. Why is this a transmission concern?

A. As can be seen in Figure 4 below, the Billings area is tightly tied, from a transmission perspective, to the Broadview Substation, which in turn is primarily served by the 500-kV system, which is primarily served by Colstrip.

Q. What does this mean in terms of reliability?

A. Reliability is extremely impacted without major investment in the transmission system and substations in the Billings area. NorthWestern has been planning for these changes; however, rapidly changing load and generation reductions have put us in "just in time" mode for transmission system upgrades. The upgrades in the Billings area have been and will continue to be a significant capital investment area for NorthWestern.

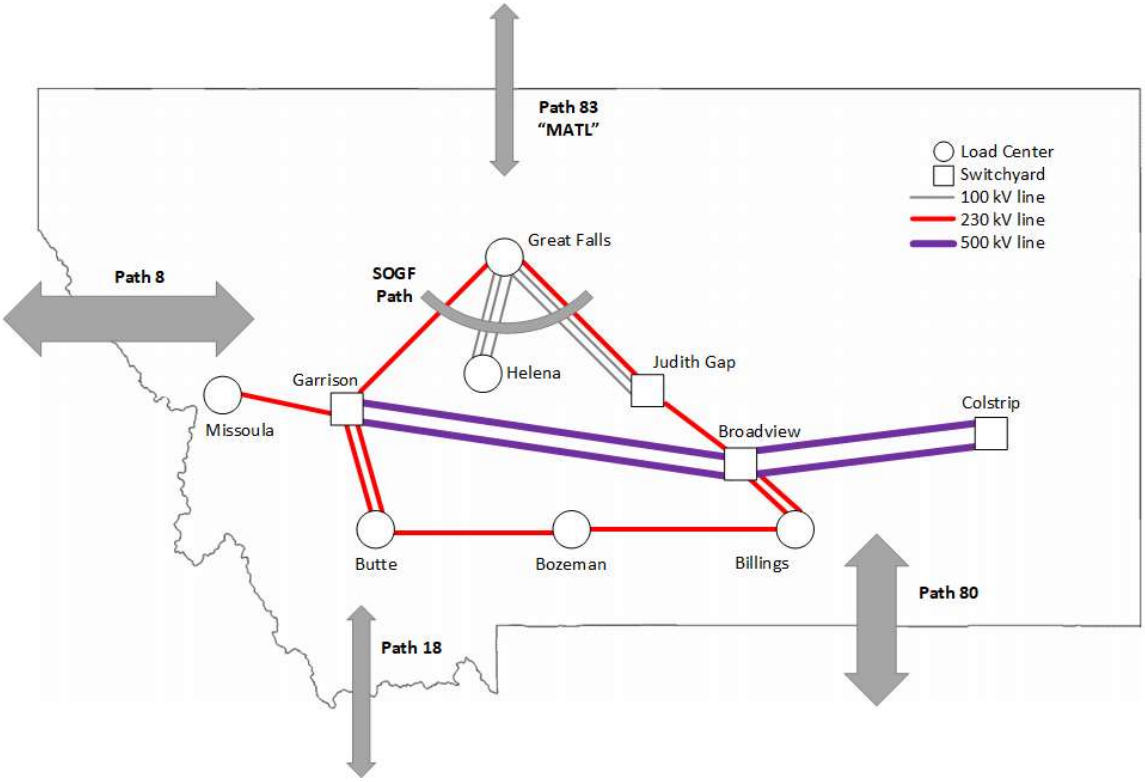
Q. Do you have concerns about being able to make the required system upgrades in time for the need?

A. Yes, while we have been planning appropriately, there are many conditions that are somewhat out of our control, such as permitting timelines and challenges, supply chain issues and lead times, all of which contribute to our concern about being able to meet our planning timelines. However, from a prudent project management standpoint, we do everything possible to maintain project scope and schedule and also to manage financial budgets appropriately.

Q. What other key assumptions have you made in your planning for service to the Billings area?

A. A key component to our planning is that the Yellowstone County Generating Station is going to be available by late 2023 or early 2024 to support the transmission system and overall load in the Billings area. The Yellowstone County Generating Station is critical to reliably serving the Billings area.

Figure 4: Internal Transmission Challenges



Electric Jurisdictional Cost Study

Q. What is the jurisdictional cost study?

A. As part of Docket No. 2018.02.012, Order No. 7604v, in response to advocacy from the Montana Consumer Counsel opposing the revenue crediting methodology, the MPSC found that:

> NorthWestern is not precluded from advocating for continuation of a revenue credit approach, but must include in its application complete cost-of-service information, including allocations of the cost of service attributable to the transmission function for each of the retail and wholesale rate classes so that parties and the Commission can evaluate the reasonableness of revenue crediting compared to alternatives.

The requirement above has become known as "the jurisdictional cost study". NorthWestern has completed a jurisdictional cost study, which is described in the Pre-filed Direct Testimony of Glenda J. Gibson and in the Pre-filed Direct Testimony of Paul M. Normand, Principal of Management Applications Consulting, Inc.

Q. Having completed the jurisdictional cost study, is NorthWestern asking the Commission to use this study to determine which customers pay for transmission costs?

A. No. NorthWestern is asking the Commission to maintain the revenue credit methodology discussed below.

Transmission Revenue Credits

Q. Why is NorthWestern recommending to maintain the historical transmission revenue crediting methodology in this docket?

A. NorthWestern is proposing to continue treating transmission revenue credits and the transmission revenue requirement following past practice accepted by the Commission. NorthWestern has historically presented 100% of its Montana transmission system costs (plant and expenses) in its revenue requirement calculations in filings made at FERC and at the Commission. The FERC-jurisdictional transmission rates are computed using 100% of the load (both retail and wholesale), but the resulting rates apply only to customers taking service under the FERC Open Access Transmission Tariff ("OATT"), i.e., wholesale customers. In turn, the Commission-jurisdictional transmission rates (retail rates) are computed by applying the OATT revenues as a credit toward the Montana revenue requirement. Put another way, 100% of transmission costs are included in the Commission-jurisdictional revenue requirement, and the normalized revenue generated by the FERC OATT customers in the test year is included as a revenue credit that offsets the overall Commission-jurisdictional revenue requirement. NorthWestern is recommending that the "test year" FERC OATT revenue credits in this case be the average of the 2019, 2020, and 2021 FERC OATT transmission revenues, which is consistent with prior practice. We are also proposing to use the three-year

average of ancillary services revenues as a credit in the fixed generation revenue requirement.

Q. What is the three-year average transmission revenue credit?

A. The three-year average FERC OATT transmission revenue is $62,150,182.

Q. How does this amount compare to the jurisdictional cost study that you discuss above?

A. The jurisdictional cost study calculates $58,604,985 as the rate schedule revenue required from FERC customers.

Q. Why does NorthWestern propose the three-year average revenue credit over the jurisdictional cost study results?

A. Because in our 2019 FERC Rate filing we adopted an annual formula rate process for setting our FERC OATT rates, the three-year average FERC revenue represents the most up-to-date use of the transmission system by FERC customers and costs associated with the system. In addition, it is much easier to implement and to understand compared to the complexities involved with the jurisdictional cost study analysis that was completed as a requirement of this filing. Finally, the results of both the jurisdictional cost study and the three-year average revenue credits are similar. That result is understandable given that the FERC Formula Rate

process and the jurisdictional cost study use the same transmission system costs and 12-Coincident Peak data, which provides the foundation for both outcomes. While the advocacy of the results of the jurisdictional cost study to be applied in this rate review may result in less cost responsibility to FERC customers than the three-year average revenue crediting methodology, NorthWestern believes that the revenue crediting method is a more accurate representation of the contribution to overall costs of the transmission system that is provided by our FERC customers – hence our continued recommendation.

Q. Why does NorthWestern propose a three-year average to compute the FERC revenue credits?

A. Because both point-to-point and network revenues fluctuate from month to month and year to year, it is reasonable to use a three-year average. NorthWestern's proposal to use a three-year average smooths out the impacts of any short-term fluctuations in revenues.

Q. Do you believe that NorthWestern's proposal to use a three-year average of transmission revenues is the most appropriate methodology for determining the credit?

A. Yes, for the reasons explained above. Further, this method most fairly assigns costs to the cost-causer while ensuring that the utility recovers all of its costs. Since both wholesale and retail customers use the

transmission system, both types of customers should pay their appropriate share of the costs, including investments.

Q. Are there certain costs of providing transmission service that are not included in costs recovered under the FERC OATT Tariff, but that should be included in the transmission costs associated with transmission service to retail customers?

A. Yes. There are costs included in FERC Account 565, including several contracts with other transmission providers that are used to provide service to NorthWestern's retail customers, that are not included in NorthWestern's FERC Formula Rate calculation. The most significant contracts with other transmission providers include the following:

1. Service Agreement for Network Integration Transmission Service and Network Operating Agreement between Southwest Power Pool, Inc. and NorthWestern Energy (SPP Service Agreement No. 3128). This agreement is needed in order to provide for transmission service to NorthWestern's retail customers that are located within the SPP balancing authority area in northcentral/northeast Montana.

2. Amended and Restated Transmission Agreement between United States of America, Department of Energy, acting by and through the Bonneville Power Administration and Montana Intertie Users

(Colstrip Project/Eastern Intertie Agreement) (NorthWestern Rate Schedule No. 185). This agreement is also referred to as the Eastern Intertie Agreement, which I discussed earlier in this testimony.

Q. Are there any other needed cost adjustments to transmission rates for retail customers?

A. Yes. As a result of the 2019 FERC Rate filing, a credit was needed to reflect the fact that some of the NorthWestern distribution system is carried on transmission infrastructure as “underbuild”. This means that the transmission poles/structures serve as the distribution conductor carrying infrastructure. This is a benefit to the distribution system as the distribution system does not need its own poles/structures. As one example, this physical alignment can occur when both transmission and distribution is in the same corridor where space is limited. Since this distribution underbuild is an efficient use of the transmission system, in this rate filing, we are including this credit in the jurisdictional cost study and allocating a share to retail (distribution) customers. This is an appropriate cost of providing retail customer service and is a lower cost alternative to building separate distribution infrastructure.

Q. What about the ancillary services?

A. Ancillary services are part of the specific service and rate schedules provided to our FERC customers. These services are provided from NorthWestern's generation fleet. As a result, the cost to provide ancillary services to our MPSC customers is embedded within the costs of our generation fleet, which are also being presented in this rate review.

NorthWestern is proposing to continue to credit the ancillary services revenue that we receive from our FERC customers to our fixed generation revenue requirement. This would be accomplished through a credit to the fixed generation revenue requirement of $3,717,920, and it would be a continuation of the crediting process we conducted for ancillary services revenue in our Montana 2018 rate review. This credit was applied to rates in March 2021 following the finalization of our 2019 FERC Rate review. The calculation of the updated revenue credit in this rate review is discussed in more detail in the Pre-filed Direct Testimony of Andrew D. Durkin.

Electric System Loss Studies

Q. Is NorthWestern presenting loss studies in this filing?

A. Yes. NorthWestern conducted transmission and distribution loss studies in order to update loss values that were included in previous rate

proceedings. The studies' purpose and more detail about them are described in the Pre-filed Direct Testimony of Michael S. McGowan.

Proposed Electric Tariff Changes

Q. Do you sponsor any proposed tariff changes in this docket?

A. Yes. I sponsor the changes, other than rate changes, found in Exhibit MRC-2 and Exhibit MRC-3.

Q. Please explain these changes and the need for them.

A. The changes identified in the noted exhibits to Schedule Nos. GSEDS-1 and GSEDS-2 are necessary given a recent change resulting from NorthWestern's FERC 2019 Rate Review. As a result of that docket, NorthWestern's OATT now contains a Transmission Test to determine transmission assets placed into service on a prospective basis. As such, the bright-line of 50 kV and above for transmission facilities is no longer accurate.

Overview of the Natural Gas Transmission System

Q. Please provide an overview of NorthWestern's natural gas transmission and storage system.

A. NorthWestern's natural gas transmission system consists of more than 2,100 miles of pipeline and serves more than 133 city gate and meter stations where pressure is reduced to distribution level and measured.

Pipeline diameter ranges from 1 inch through 24 inches. NorthWestern provides retail service to approximately 205,000 customers located in 117 Montana communities as well as to several smaller natural gas distribution companies that provide service to an estimated 40,000 customers collectively. There are 81 individual compression units totaling almost 80,000 horsepower dedicated to our Montana transmission, storage, and gathering operations. In addition, NorthWestern owns and operates a pipeline, which crosses into Canada through our wholly owned subsidiary, Canadian-Montana Pipeline Company. NorthWestern owns and operates three working natural gas storage fields in Montana – Dry Creek in southeast Montana, Cobb Storage north of Cut Bank, and Box Elder Storage near Havre. In our three active storage reservoirs, we cycle about 10 billion cubic feet (Bcf) of natural gas in and out of storage annually. A system map is included as Exhibit MRC-4.

Q. What customers does NorthWestern's natural gas transmission and storage system serve?

A. NorthWestern serves its bundled retail customers with the natural gas transmission and storage system. We also provide transmission delivery service to other customers that, through natural gas deregulation in Montana in the 1990s, do not receive natural gas supply service from NorthWestern. The Commission regulates transmission services to each of these types of customers.

Q. When does peak deliverability occur on NorthWestern's natural gas transmission system?

A. Peak deliverability needs occur during the heating season – generally November through March. Typically, the colder the weather, the higher the daily deliverability need.

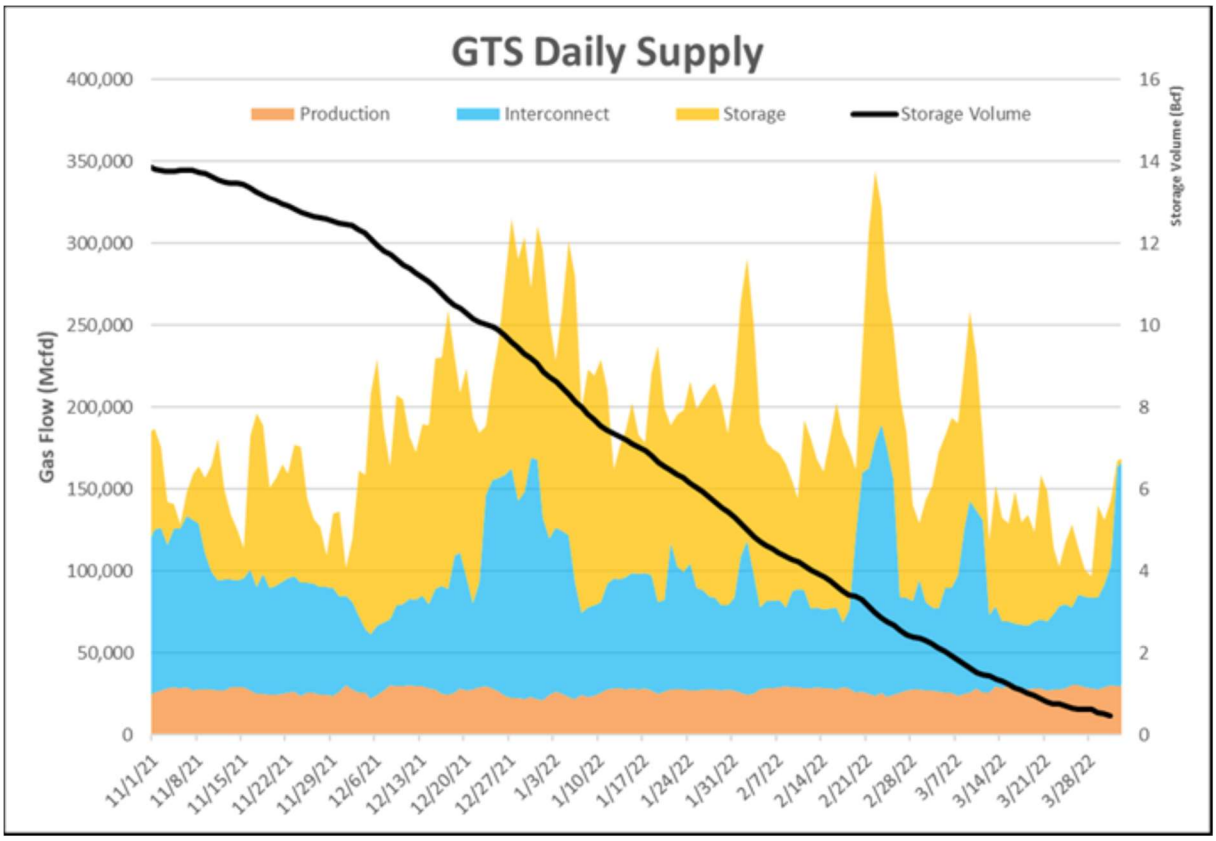
Q. What resources does the natural gas transmission system use to meet customer needs during the heating season?

A. The natural gas supply provided to our customers during the heating season comes from three main sources, and the transmission and storage system is key to delivering this gas:

1. Flowing gas (on-system production), which is produced in Montana and has no other place to flow except onto NorthWestern's system;
2. Interconnect gas, which is produced outside of Montana but is delivered under contracts with interconnected pipelines to supply gas to NorthWestern's system; and
3. Storage gas, which is brought onto the system typically in the "off season" and injected into NorthWestern's storage fields for use during the heating season.

The graphic below shows the sources of natural gas used to serve our transmission customers from November 2021 through March 2022.

Figure 5: Natural Gas Transmission System Operation



Q. Please summarize NorthWestern's natural gas transmission and storage system compliance responsibilities.

A. NorthWestern's natural gas transmission and storage system is regulated by the Pipeline and Hazardous Materials Safety Administration ("PHMSA"). PMHSA develops and enforces regulations for the safe, reliable, and environmentally sound operation of the nation's 2.6 million mile pipeline transportation system. The Commission is responsible for review, audit, and enforcement of PHMSA's rules and regulations applicable to NorthWestern's natural gas transmission system. PHMSA's

Pipeline Safety Regulations Parts 191 and 192 prescribe minimum federal safety standards for:

- materials,
- pipeline and component design,
- welding and construction requirements for pipelines,
- customer meters, service regulators, and service lines,
- corrosion control,
- testing requirements and pressure uprating,
- operations and maintenance,
- personnel qualifications,
- pipeline integrity management, and
- pipeline control room management.

NorthWestern also constructs, operates, and maintains all facilities and equipment in accordance with applicable federal and state air, water, and waste rules and regulations resulting from the Montana Environmental Policy Act and National Environmental Policy Act. NorthWestern works closely with the Montana Department of Environmental Quality regarding air quality compliance at each of our compressor stations.

NorthWestern provides a safe workplace for employees by complying with standards, rules, and regulations issued under the Occupational Safety

and Health Act and providing workplace conditions that conform to applicable Occupational Safety and Health Administration standards. The Pre-filed Direct Testimony of Keith W. Meagor provides more detail on our current and emerging compliance requirements.

Natural Gas Transmission and Storage System Investments

Q. Since NorthWestern's last natural gas rate review in 2016, has NorthWestern invested in natural gas transmission plant to ensure reliable service to its customers?

A. Yes. NorthWestern has added approximately $91 million additions less retirements to its natural gas transmission plant in order to maintain appropriate reliability and capacity levels, meet compliance requirements, and optimize the useful life of these assets.

NorthWestern has invested substantially more than the depreciation of the total plant investment on the natural gas transmission and storage system included in rate base over the same time frame (approximately $61 million more or 67% greater than depreciation) in order to keep up with infrastructure requirements on the transmission system.

Q. What were the key policy drivers behind that investment?

A. As with our electric transmission system, NorthWestern makes investments in our natural gas transmission system to:

- Meet capacity requirements;
- Address reliability needs;
- Replace aging infrastructure/asset life; and
- Satisfy compliance requirements.

All of the investments made on the natural gas transmission system and to the storage system are to provide safe and reliable service to our customers and to be able to meet customers' increasing needs. Pipeline safety is of particular importance on the natural gas transmission system and accounts for a large portion of our investment and maintenance activity. We are regulated by PHMSA, as noted previously in this testimony, to meet significant safety and reliability standards for our natural gas transmission and storage systems. Existing and emerging compliance requirements are extremely important to NorthWestern and our employees to ensure the safety of our system for employees, customers, and the public in general.

Q. What do all of these investments have in common?

A. As with our electric transmission system, NorthWestern makes each of these investments in order to provide reliable and safe service to our customers. The Pre-filed Direct Testimony of Jason M. McClafferty provides the details regarding these investments and Mr. Meagor discusses the PHMSA-related investments.

Q. Please describe NorthWestern's natural gas transmission and storage system planning methodology.

A. NorthWestern plans for modifications and upgrades to the natural gas transmission and storage system to meet growing customer peak day deliverability needs using hydraulic engineering modeling software. Mr. McClafferty provides more details on our planning process. As with our electric transmission system, the gas transmission planning process, compliance requirements, and our asset management efforts are drivers of our capital investment program.

Q. What are the most difficult capacity needs to serve on the natural gas transmission system?

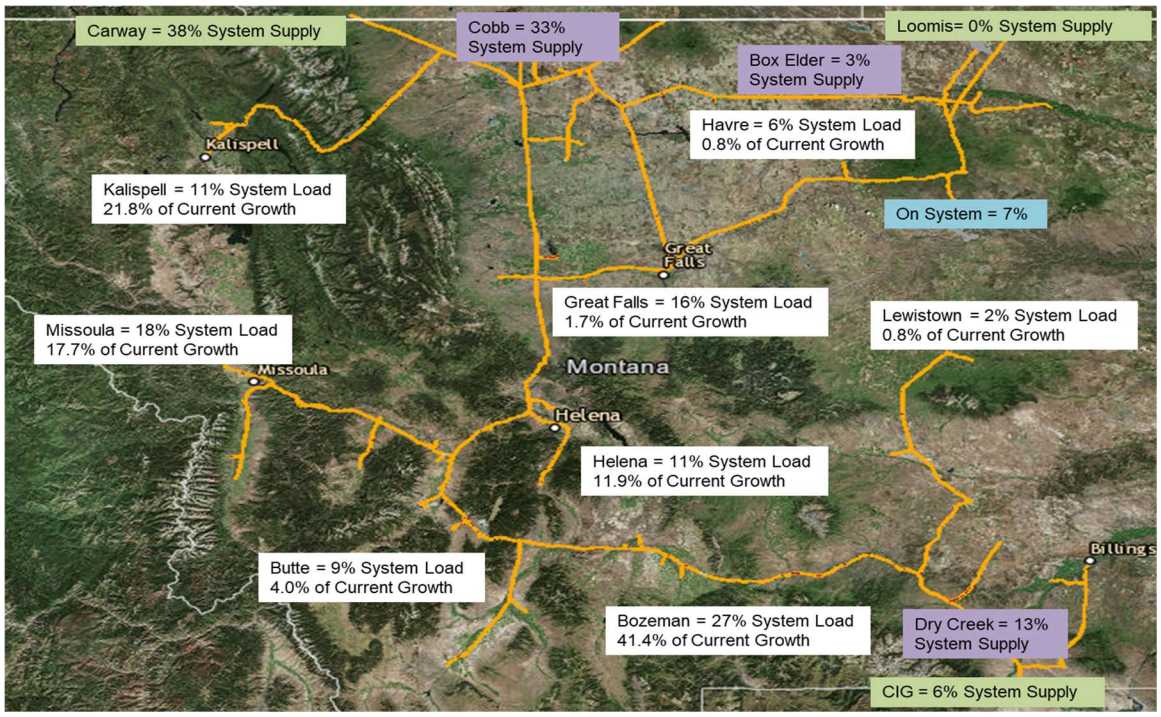
A. The most difficult capacity needs are related to serving very rapidly growing service areas, reduced on-system natural gas supply, constraints at interconnections with other systems, and growing needs for natural gas-fired generation.

We must consider our delivery system design as we continue to search for the best natural gas supply sources to meet our customers' needs. Accordingly, NorthWestern has analyzed and identified a number of options to increase natural gas transmission capacity including expansion of existing on-system storage, new on-system storage, and expanded interconnection capability. The top options for expansion have been:

1. Expansion of our interconnection with TransCanada at Carway (These Carway expansions have been pursued and are being executed and we will add about 30.5 million cubic feet ("MMCF") per day of capacity/deliverability in 2023 and 9.8 MMCF per day in 2024); we do not expect that any additional capacity will be available from TransCanada at Carway); and
2. Expansion of storage at our Dry Creek Storage facility in southeastern Montana coupled with a rebuild of the east transmission line that runs from our interconnection with Colorado Interstate Gas Pipeline to Bozeman. In the intermediate term, we also are exploring the possibility to connect our west and east line systems together through a pipeline construction addition from the Townsend area to the Three Forks area, which will enhance the reliability of the system.

The chart below indicates current load and load growth on a percentage basis.

Figure 6: Gas Transmission Loads and Growth



As noted above, both the largest area load and load growth is the Bozeman area, followed by Kalispell and Missoula. The Bozeman area is a great distance from sources of natural gas and is growing very rapidly making it more and more challenging to serve. Missoula and Kalispell are also more difficult to serve due to the radial nature of the system. As a result, NorthWestern is planning today for natural gas transmission upgrade requirements to meet the challenges ahead in the long-term planning horizon.

Q. Does this conclude your testimony?

A. Yes, it does.

VERIFICATION

This Pre-filed Direct Testimony of Michael R. Cashell is true and accurate to the best of my knowledge, information, and belief.

/s/ Michael R. Cashell
Michael R. Cashell