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

PRE-FILED DIRECT TESTIMONY

OF CURTIS T. POHL

ON BEHALF OF NORTHWESTERN ENERGY

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Exhibit

2021 PHMSA Gas Distribution System Annual Report	Exhibit CTP-1

Witness Information

Q. Please identify yourself, your employer, and your job title.

A. My name is Curtis T. Pohl. I am NorthWestern Energy's ("NorthWestern" or "Company") Vice President - Distribution.

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

A. I have held my current position since 2003 and have primary responsibility for electric and natural gas distribution operations across Montana, South Dakota, and Nebraska. I have over 35 years of experience with NorthWestern in engineering and construction for electric and natural gas operations.

I hold a Bachelor of Science in Mechanical Engineering and have attended several operation and leadership training sessions over the course of my career and have been active in industry associations as a member of various committees and as a board member.

Purpose and Summary of Testimony

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

A. The purpose of my testimony is to provide an overview of the role of NorthWestern's distribution system, electric and natural gas, in providing safe and reliable service for our customers and describe at a high level our major

distribution initiatives. I also recommend the Montana Public Service Commission ("Commission") approve NorthWestern's proposed Enhanced Wildfire Mitigation Plan ("Wildfire Plan") discussed further in the Pre-filed Direct Testimonies of Gregory F. Bailly and Nathaniel P. Linder and the associated cost recovery proposal discussed further in the Pre-filed Testimony of Crystal D. Lail and Cynthia S. Fang.

Q. Please summarize your testimony.

A. In my testimony, I first describe our electric distribution system. I then describe our major electric distribution initiatives, which include the proposed Wildfire Plan and projects to continue technological advancements. NorthWestern's projects to continue technological advancements include our Advanced Metering Infrastructure ("AMI") project discussed further in the Pre-filed Direct Testimony of Jonathan R. Shafer, Montana Meter Upgrade Project ("Meter Project"), Advanced Distribution Management System ("ADMS"), Rural Reliability Resource Project ("Triple R Project") expansion, and LED Lighting Project ("LED Project") discussed further in the Pre-filed Direct Testimony of Lloyd Blain Nicholls. Lastly, I provide an overview of our natural gas distribution system and operations and describe our major projects and investments related to natural gas. The Pre-filed Direct Testimony of John E. Carmody provides more detail regarding our distribution initiatives, both electric and gas, and the associated costs.

Q. Please describe how NorthWestern's Montana Distribution Operations are organized.

A. Distribution Operations is organized into six Division Operations ("Divisions") with five Districts reporting to their respective Divisions as follows:

1. Billings Division
    A. Lewistown District
2. Bozeman Division
    A. Livingston District
3. Butte Division
4. Helena Division
5. Great Falls Division
    A. Havre District
6. Missoula Division
    A. Kalispell District
    B. Hamilton District

Q. Please describe the centralized functions that support Distribution Operations.

A. There are several centralized departments that support our field operations as follows:

- **Asset Management** has primary responsibility for capacity planning in the distribution systems as well as developing the overall maintenance

and investment strategies that ensure the safety and reliability of our systems.

- **Organizational Performance** has responsibility to ensure maintenance and investment plans developed by Asset Management are executed within budget guidelines. They also assist the field operations in constant process improvement and workforce planning.
- **Major Project Management** is responsible for managing projects that generally exceed $1,000,000 and/or are multi-year projects.
- **Support Services** provides logistics support for warehousing and material procurement, facilities, and fleet.
- **Safety** supports all safety programs, procedures, and training; it investigates any safety-related incidents that occur.
- **Labor Relations** is responsible for managing all of the business and relationships with our represented employees by their respective unions.

Electric Distribution System

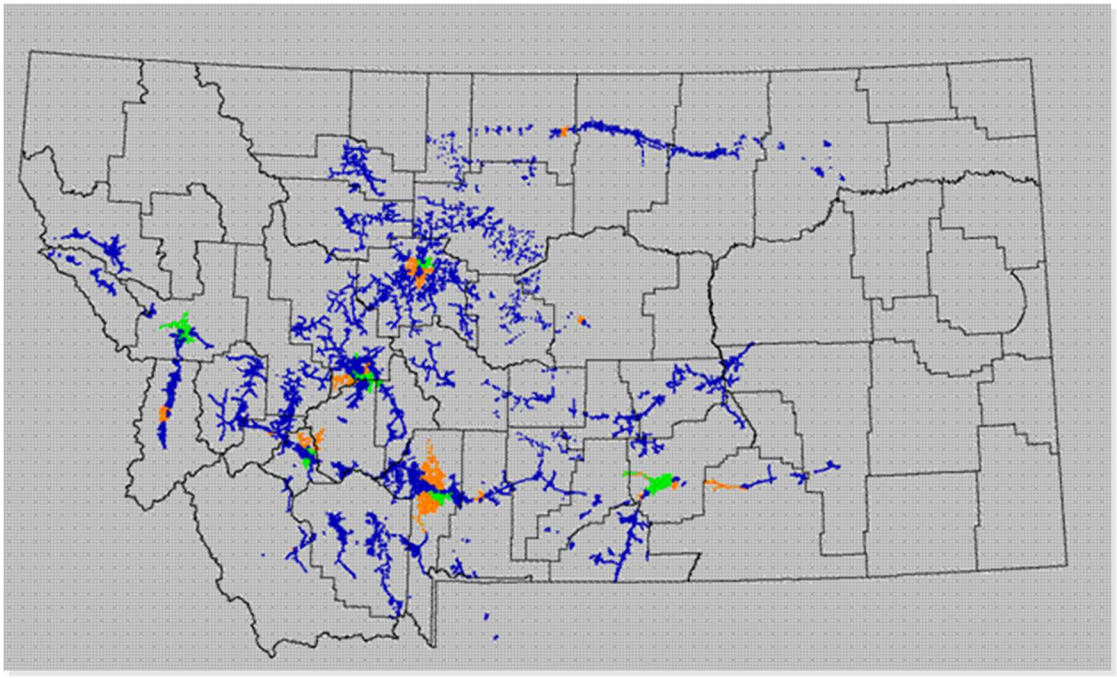
Q. Please provide a general description of NorthWestern's electric distribution operations in Montana.

A. NorthWestern operates an electric distribution system that at the end of 2021 included approximately 13,027 miles of overhead power lines and approximately 5,056 miles of underground power lines. This system serves approximately 389,519 electric customers in 187 Montana communities. One

extremely unique aspect of our electric system is its rural nature compared to other utilities. We actually have as many distribution poles on our system as we do meters.

The map below demonstrates just how rural our system is. Approximately 12,800 miles of the distribution system (72%) provides service in rural areas.

Map of Distribution System



KEY: RURAL URBAN COMBINATION

This system connects to NorthWestern's electric transmission system at transmission-to-distribution substations where voltages are transformed or reduced from higher transmission voltages to distribution voltages. The transmission system is described in the Pre-filed Direct Testimony of Michael R. Cashell.

Q. How does the rural nature of NorthWestern's system affect its operations?

A. A large part of our distribution system is in remote areas, where access is limited. It costs more on a per-customer basis to maintain this system than urban systems. In addition, approximately 2,300 miles of our distribution system is in forested areas where we face the effects of deteriorating forest conditions caused by the widespread infestation of the Mountain Pine Beetle and other insects now affecting other tree species. These conditions require that we remove a much higher number of trees and other vegetation from outside our normal rights-of-way. We also have a lot of miles that cover vast grass lands where potential fuels to ignite fires have increased.

Another example of how the rural nature of our system affects our operations is that we have to disperse our workforce in order to cover emergency response in a timely manner. A typical service order of any type takes longer due to the distances, remote access, and the sheer number of miles of line on individual circuits. This dispersal makes it more difficult to maximize the efficiency of our workforce. In addition, since our service territory is spread out over many miles, there is generally not enough work activity in any of our major skill categories to highly specialize our workforce's skillsets in any one category. Therefore, our workforce must be trained and qualified to perform a variety of tasks to maximize productivity.

Q. What obstacles does NorthWestern face with respect to the urban aspect of its operations?

A. The urban parts of our distribution systems provide their own set of challenges. Typically, vegetation management is more difficult to keep up with because of faster growing tree species and the proximity of trees and other vegetation in general to our lines. We think of wildfire threats primarily in forested areas, but the threat is still present in urban settings and is potentially even greater if vegetation management lags. Another major challenge with urban systems is simply staying ahead of customer growth and ensuring adequate capacity exists to serve customer loads. Also, as customer expectations increase to provide higher reliability and flexibility, more technology and automation will be required within our urban systems.

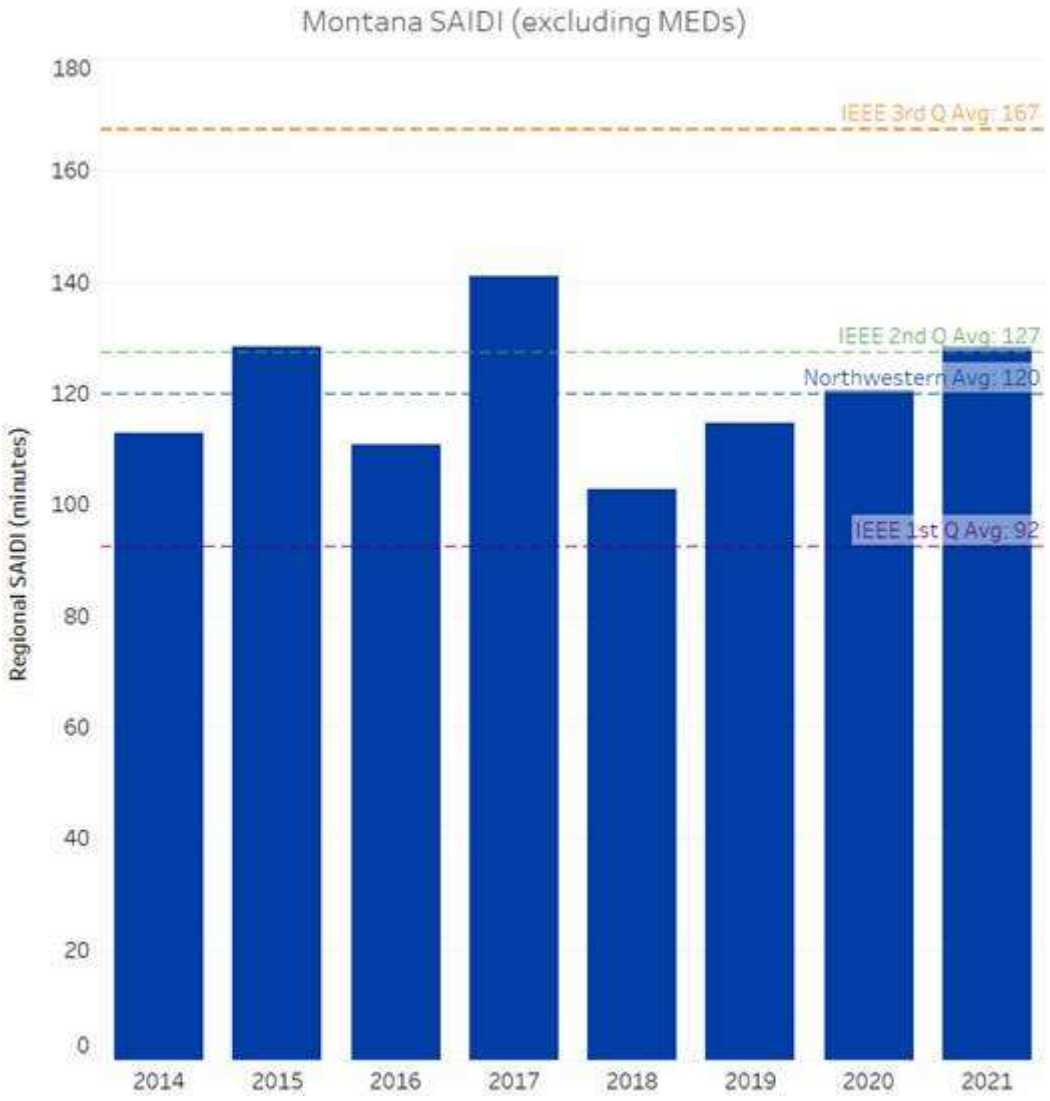
Q. What other factors have affected NorthWestern's distribution operations?

A. First, our system is aging. It is critical that we monitor the system, make essential investments, and perform maintenance necessary to sustain a safe, resilient, and reliable system. Second, the introduction of new technology adds to the complexity of our system. And third, our system's rural nature and miles of exposure drive higher maintenance costs and present greater reliability challenges.

Q. How do these factors affect NorthWestern's ability to provide reliable service?

A. They present significant challenges; nevertheless, NorthWestern continues to provide highly reliable service. NorthWestern measures electric system reliability using several common metrics in the electric utility industry. The most commonly used metric to describe overall reliability is SAIDI, which stands for System Average Interruption Duration Index. In simple terms, it is the average amount of time a customer is out of power over a one-year period. Over the past eight years, NorthWestern's SAIDI, excluding major storm days, which are categorized as Major Event Days ("MED"), has averaged 120 minutes. That means, on average, a customer on the Montana system would have been out of electricity approximately two hours per year. The result is more than 99.97% reliability. Given that NorthWestern has one of the most rural systems in the electric utility industry, this is a great accomplishment. As compared to all companies that participate in the Institute of Electrical and Electronics Engineers' reliability study, NorthWestern's Montana electric system on average falls into the 2nd quartile (see chart below).

Montana SAIDI



NorthWestern could not maintain these positive reliability results without continuing to make key investments in infrastructure.

Q. How do these factors affect NorthWestern's ability to provide safe service?

A. The safety of our customers and our employees is our number one priority. The factors described above pose significant challenges in making sure our system is always in a safe condition. The sheer exposure of the number of miles of line needed in our service territory to provide service to a low customer density service territory creates more risk from extreme weather and fire. To provide reasonable cost of service while managing this risk can create challenges.

Q. What technological advancements is NorthWestern pursuing to update its distribution system?

A. As noted above, NorthWestern is currently in the process of implementing two foundational technologies – AMI through our Meter Project and ADMS. These two technologies will be the platform for further advancements in automation and give us the ability to provide more flexibility in our distribution systems. We are also converting all of our street and yard/area lights to LEDs and we are pursuing storage deployment through our Triple R Project. All of these are technologies discussed in more detail below as well as by Messrs. Shafer, Carmody, and Nicholls.

Enhanced Wildfire Mitigation Plan

Q. Please describe the importance of NorthWestern's Enhanced Wildfire Mitigation Plan.

A. Operating an electric system in a wildfire prone area is a risk. NorthWestern has taken steps to reduce that risk at reasonable costs to customers through the development of the Enhanced Wildfire Plan and its predecessor programs. Over the past several years, NorthWestern has invested a significant effort in wildfire mitigation planning and execution. The execution of our Distribution System Infrastructure Plan ("DSIP") and our Hazard Tree Program are two specific examples along with our dedicated operation practices and planning that takes place specifically during fire season. However, changing conditions have created a much greater risk posed by fire ignition, spread, and damage. For example, we used to think of wildfire season as being basically from early July through mid-September with the threat primarily in forested areas. With changing weather conditions, which include more significant wind events, drought conditions, etc., we now have to think about fire season not specific to a time of year, but rather to conditions that could exist at any given time. The threat is not only in forested areas, but across the entire system including rural areas where grassland fires could be ignited along with urban areas where extreme weather conditions pose greater risks.

In order to mitigate the risks described above, it is extremely important that a more comprehensive approach to mitigate wildfire risk be developed and executed. NorthWestern has developed a comprehensive Wildfire Plan and strategy that builds on past practices that have proven effective, but also adds additional programs and operational practices based on experience, new data analytics, and technology. The Wildfire Plan is discussed in detail by Messrs. Bailly and Linder.

Q. How will the Wildfire Plan assist NorthWestern in providing safe and reliable service?

A. NorthWestern's Wildfire Plan comprises five specific areas as follows:

1. **Situational Awareness**: Provides the ability to understand changes to the environment or system, allowing for faster changes to operational practices.
2. **Operational Practices**: Define how NorthWestern will operate and maintain its system to lower the probability of an ignition.
3. **System Preparedness**: Describes the Forest Management Program that is focused on fire mitigation as well as the reliability focused programs, that while not directly focused on mitigating wildfire risk provide those benefits
4. **Vegetation Management**: Similar to system preparedness, this standard describes the Hazard Tree Program that is focused on mitigating vegetation related fire risk as well as the reliability-focused

programs, which while not directly focused on mitigating wildfire risk provide those benefits.

5. **Public Communications and Outreach**: Provides opportunities to advance our training in communicating to our stakeholder and customers as well as the beginning steps to set up resiliency zones for customers with services potentially impacted by wildfire.

Any individual area of this plan contributes to the overall safety and reliability of our system. The largest cost drivers in this plan are in the areas of System Preparedness and Vegetation Management. These areas are specifically designed to keep proper clearances with a thorough vegetation management approach, including removal of trees and other vegetation within and outside of our rights of way, a much greater surveillance approach which would catch potential system hazards and defects more quickly, accelerated system improvements to make the system more resilient to weather conditions, and added technology that will aid in real-time configuration of protection schemes. All of this will have benefits to customers in higher system reliability while mitigating wildfire risk providing customers a safer environment.

Q. Please describe the status of the Hazard Tree Program approved in NorthWestern's last electric rate review.

A. Since the last electric rate review in 2018, NorthWestern has executed a program specific to hazard tree removal outside of our rights of way. NorthWestern appreciates the support of the Commission for this important program. Although difficult to quantify, there is no doubt this program has prevented trees from falling into our lines and starting potential fires. The original scope of this program was to remove hazard trees outside of rights of way along approximately 1,030 miles of transmission and distribution lines. These areas were forested areas impacted by the Mountain Pine Beetle ("MPB") and identified as higher risk areas. The original program cost was estimated at $18.5 million and was started in May of 2018. As part of the last rate review, NorthWestern was allowed to put approximately $3.2M annually into the revenue requirement, which was the actual amount spent in 2018 on this program. At of the end of 2021, NorthWestern had removed hazard trees on approximately 1,207 miles, including 1,030 miles in the original scope of the program, at a total cost of $18.8 million or an average of $4.7 million per year over the past four years.

Q. Will hazard tree maintenance remain part of the Wildfire Plan?

A. Yes. While this program was a great first step in mitigating an immediate threat, we fully expect that we will continue to have hazard trees and other vegetation that will need to be removed due to the impacts of the MPB along

with other emerging insects that are affecting forest conditions. Using current data and risk models, this program will be merged into our Wildfire Plan as the Risk Tree Program. This program is discussed further by Mr. Linder.

Q. How will the Wildfire Plan expand on the objectives of the Hazard Tree Program and other programs already in place?

A. The Wildfire Plan is designed to effectively capture and coordinate all of the current activities being completed that are associated with wildfire risk mitigation. This was the best way to get everything into one plan and analyze the overall efficiency and effectiveness of these activities. Once this was completed, a gap analysis was completed. What is in the enhanced plan builds on these activities including the Hazard Tree Program, but then enhances these programs bringing in better data to produce risk models and adding more programs and activities to increase the overall effect of risk mitigation. This includes the evolution of the Hazard Tree Program into the Risk Tree Program and an overall Vegetation Management Program within the Wildfire Plan, establishment of Situational Awareness, Operational Practice, and Public Communication Programs and expansion of a System Preparedness Program. The Wildfire Plan is discussed in more detail by Messrs. Linder and Bailly.

Q. What difficulties will NorthWestern face in funding the Wildfire Plan?

A. The Wildfire Plan that has been developed includes significant additional costs that are not currently in NorthWestern's financial plan and are expected to start being incurred in 2023. These are costs necessary to mitigate risk and are largely driven by factors outside of NorthWestern's control, including deteriorating forest conditions, changing weather patterns, etc. To fund this plan at the levels estimated without having timely recovery of these costs would put an undue burden on the overall business and force the need to make extremely tough decisions between other competing important priorities to maintain financial stability.

Q. Will test-year costs plus a known and measurable adjustment for costs 12 months beyond the test year be sufficient to adequately fund the Wildfire Plan?

A. No. The additional costs estimated in the Wildfire Plan are significantly higher than the actual costs incurred in 2021 (the test year) and what is planned in 2022.

Q. How does NorthWestern propose to fund the ever-changing (and increasing) costs associated with the Wildfire Plan?

A. NorthWestern is proposing a cost recovery mechanism that is described by Ms. Fang and Ms. Lail.

Q. Why is it crucial for the Commission to ensure NorthWestern has sufficient funding for the Wildfire Plan?

A. It is extremely important to provide customers with the safest system possible. Wildfire risk continues to increase with continued deterioration of forest conditions resulting in more hazard trees, coupled with recent drought conditions and changing weather patterns producing more frequent storm and high wind events. The overall goal of NorthWestern's Wildfire Plan is to reduce this risk and provide a safer environment for customers. Without the proper funding mechanisms in place, it will be difficult to implement many of the risk mitigating initiatives. Therefore, I strongly encourage the Commission to approve NorthWestern's Enhanced Wildfire Plan.

Q. How will NorthWestern further develop the Wildfire Plan to ensure safe and reliable service to customers into the future?

A. NorthWestern's plan will continue to evolve as better data becomes available, technology advances, and we gain more experience. This is the same approach we use in Asset Management that we are never done improving. We use the best information available to us, analyze it, and transform it into executable plans.

Technological Advancements

Q. Please describe NorthWestern's efforts to benefit customers by incorporating technological advancements into its distribution system.

A. NorthWestern has implemented several major initiatives to incorporate technological advancements into its distribution system, specifically:

- **The Montana Meter Upgrade Project ("Meter Project")** which involves replacement and installation of 590,000 two-way communicating meters that will enable the modernization of our grid.
- **Advanced Distribution Management System ("ADMS")** a foundational technology that is the heart of our Distribution Operation Center ("DOC") that will enable greater situational awareness of the electric distribution system, improved outage restoration/management, operational benefits, engineering analysis, and operational control over the electric distribution system.
- **Rural Reliability Resource Project (i.e., Triple R Project)** to provide better reliability to rural areas while at the same time building more flexibility into the system.
- **Montana LED Project** to replace 43,000 NorthWestern-owned street lights and 30,000 yard lights with LEDs which use 50% less electricity than traditional high-pressure sodium ("HPS") lights.

Q. Please provide a status update on the Meter Project.

A. The Meter Project is going well; however, we have experienced some delays related to supply chain issues. The overall project is estimated to cost approximately $125 million. It started in 2019 with planning and kicked off in 2021 with meter installations and is expected to be completed in 2025. Mr. Shafer discusses the status of this project in more detail in his testimony.

Q. What benefits will the Meter Project provide customers?

A. It will have many benefits for customers. The two-way communication that is enabled by AMI/smart meters will allow NorthWestern to respond to customer needs faster – crews can restore service faster, system voltage information identifies problems before those problems can cause outages, and current energy use information is available for customer questions about bills, energy use, and opportunities for energy savings. This is just the beginning. AMI is a foundational technology that will be necessary as the grid evolves. It is a necessity to meet increasing customer expectations for providing more flexibility. Mr. Shafer discusses this in more detail in his testimony.

Q. Please describe the challenges NorthWestern faces with the Meter Project.

A. Like any large project, it comes with challenges. Because this is a multi-year project, it is critical to maintain continuity from year to year and exercise sound project management principles. Currently, we are experiencing supply

chain issues which are impacting our deployment schedule and could have cost implications. Because this project involves customer premises, it comes with its own set of challenges (i.e., customer communication, interaction, coordination, etc.). The other issue unique to this project is the opt-out provision which takes additional time to manage and time to make sure we are doing the best we can for customers in providing alternatives.

Q. Please describe the ADMS project.

A. The ADMS is a foundational technology that is the heart of our DOC. The ADMS will provide greater situational awareness of the electric distribution system, improved outage restoration/management, operational benefits, engineering analysis, and operational control over the electric distribution system – all of which will drive operational savings and increase customer satisfaction. Ultimately the ADMS will enable advanced applications such as Distribution Automation (a.k.a. Fault Location, Isolation and System Restoration ("FLISR")[1]) and energy efficiency with Conservation Voltage Reduction ("CVR") and Volt/VAR Optimization ("VVO")[2]. It will also allow for

[1] FLISR is a function that improves customer reliability by isolating distribution faults and restoring as many customers as possible using sensors, software, and smart switches strategically placed to sectionalize the feeder. After the fault is isolated, the software reconfigures the distribution system within minutes, potentially bringing power from another substation and repowering the existing substation to restore as many customers as possible. FLISR requires software such as an ADMS to isolate the fault, determine the most efficient plan to re-energize customers, verify safety and loading conditions, and reconfigure the circuit. FLISR results in reduced SAIDI, quicker restoration times, greater operational flexibility and efficiency, and increased customer satisfaction.

[2] CVR/VVO function calculates and maintains acceptable voltage (e.g. 120 V +/- 5%) at the customer's meter. CVR/VVO flattens voltage profiles and lowers overall system voltage while staying within the specified ANSI or IEC voltage limits. Overall, system demand can be reduced by a factor of 0.5-1.0% for every 1% reduction in voltage. From a customer's perspective, this reduces the energy they consume. From a utility perspective, it reduces the amount of power it needs to generate or purchase from a generator. CVR/VVO typically requires

better integration and control of distributed generation on the distribution system. Mr. Carmody discusses the status of this project in his testimony.

Q. What benefits has the ADMS project already provided for NorthWestern's electric distribution system?

A. Initial benefits include a much more advanced outage management system, real-time situational awareness to aid us in the overall operations of our distribution system, and better information for capacity planning. Over time, there will be multiple other benefits, including remote control of protection settings, which would be critical in our Enhanced Wildfire Mitigation Plan, potential demand response, and CVR/VVO , which would reduce overall losses and conserve energy, along with more system automation with FLISR which basically would take system reliability to a different level.

Q. Please provide the Commission a status update on the Triple R Project.

A. The overall goal of the Triple R Project is to provide better reliability to rural areas while at the same time building more flexibility into the system. As discussed above, our system is very rural and in some cases we have circuits that are single source feeds (radial) and have very low customer density with a lot of miles of exposure. This combination makes it extremely difficult to provide adequate reliability at a reasonable cost. As storage solutions become more affordable and technology becomes more advanced, it makes

AMI metering for end-of-the-line voltage sensing and ADMS to control voltages on the feeder based on current feeder conditions.

sense that we can use storage as a backup for these circuits. We have already proven this concept with the Beck Hill pilot project that was built in 2015. Since that time, we have gained more experience with other pilot storage projects like the micro-grid at West Thumb in Yellowstone National Park.

Q. Why is the Triple R Project important for NorthWestern and its customers?

A. As stated the primary purpose of the Triple R Project is to increase reliability for our rural customers in a more cost effective way than alternative approaches; however there will be other benefits. Over time, we will be able to use these resources in many ways such as demand response, frequency control, and voltage support. Another big benefit will be to gain experience for other potential uses of storage such as use in wildfire mitigation and load following for renewables. While costs incurred in the 2021 test year and projected known and measurable 2022 costs are not expected to be significant for this rate case, this continues to be an important initiative for NorthWestern to ensure safe and reliable service for our rural customers.

Q. Please provide a summary of and status update for the LED Project.

A. In 2019, we kicked off a multi-year plan to convert all of our street lights to LED lights. This project consisted of replacing approximately 43,000 street lights across Montana at an estimated cost of $24 million. In 2020, we

expanded this project to also convert approximately 40,000 yard/area lights to LED lights. By the end of 2022, we plan to complete both of these conversions. This is discussed further Mr. Nicholls.

Q. What benefits will the LED Project provide customers?

A. LED lights simply cost less to maintain and use significantly less energy than is consumed by the HPS lights they replaced. Mr. Nicholls explains the benefits in more detail.

Q. Why did NorthWestern wait until 2019 to start installing LED lighting?

A. NorthWestern waited until LED lights became more cost effective and the technology was advanced enough to offer us lighting options that were more desirable for customers before making the decision to convert all of the street lights. In reality, it also became apparent that other lighting alternatives were becoming obsolete and it would be cost prohibitive to maintain our existing lighting infrastructure.

Q. Please describe NorthWestern's proposal for cost recovery for the LED Project and street lighting in general.

A. NorthWestern proposes to simplify its current street lighting tariff offerings with the implementation of the LED project. The current tariff structure is outdated, confusing, and administratively burdensome. Ms. Fang provides

more detail on this in her testimony on allocated cost of service and rate design.

Q. How is that cost recovery proposal beneficial to customers?

A. LED lights use 50% less electricity than traditional HPS lights. The energy efficiency benefits of the LED Project are not limited to street lighting customers – all customers benefit. Therefore, NorthWestern is proposing that all electric customers share in those costs. Continuing to maintain complex and administratively burdensome tariff offerings is more costly for our customers. Ms. Fang covers this in more detail.

Q. How will NorthWestern further incorporate technological advancements into its electric distribution system to expand customer benefits and ensure safe and reliable service to its customers?

A. NorthWestern's electric distribution system is evolving. We need to keep pace with rising customer expectations for more flexibility while balancing costs and risk. Our philosophy has been to deploy technology at the speed of value. We are currently investing in two foundational technologies (AMI and ADMS) discussed in my testimony and in more detail by Messrs. Shafer and Carmody. These two technologies will give us the ability to incorporate many more advancements that will provide stronger reliability and safety through automation and an ability to integrate distributed energy resources like storage and renewables more seamlessly. We also see electric vehicles

evolving which will require us to look at our infrastructure in a whole different way to accommodate the necessary charging infrastructure for them. All of this requires a constant focus and resources on the overall asset management process.

Natural Gas Distribution System

Q. Please provide a general description of NorthWestern's natural gas distribution system in Montana.

A. NorthWestern operates a natural gas distribution system that includes 4,931 miles of main pipeline with 195,204 services at the end of 2021. This system serves approximately 206,838 customers in 117 communities. Our total distribution system breakdown with main and service pipeline material, sizes, and vintage is shown in our Pipeline and Hazardous Materials Safety Administration ("PHMSA") Annual Report Form 7100 for Calendar Year 2021 Gas Distribution System, attached as Exhibit CTP-1.

This system connects to NorthWestern's natural gas intrastate transmission system described by Mr. Cashell at city gate stations where the natural gas is measured and the transmission gas pressure is reduced to distribution pressures. The distribution system operates through various networked systems where maximum allowable operating pressures range from 15 pounds per square inch gauge ("psig") to 150 psig. Major equipment that is maintained includes the pipeline main and services, pressure regulating

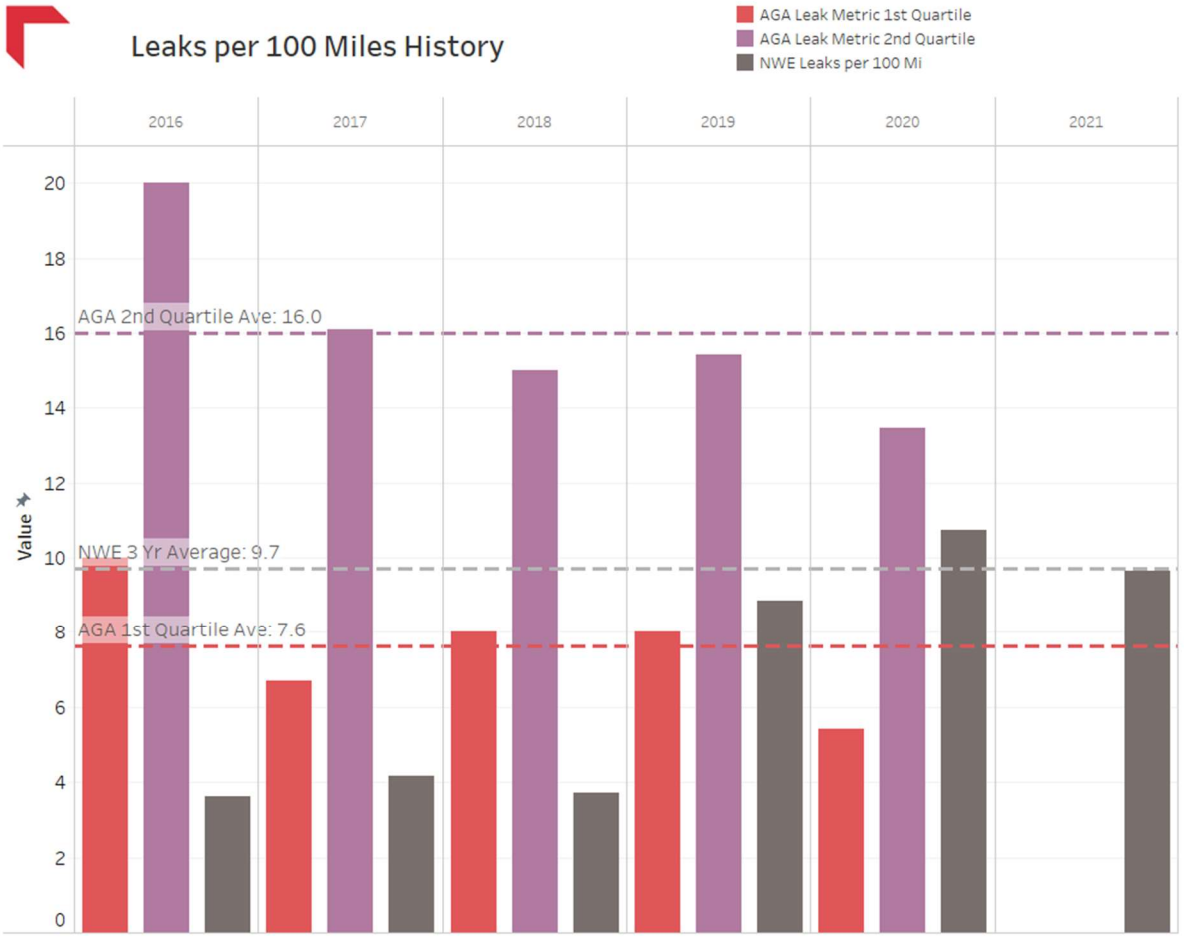
stations, sectionalizing valves, and customer meters and associated equipment.

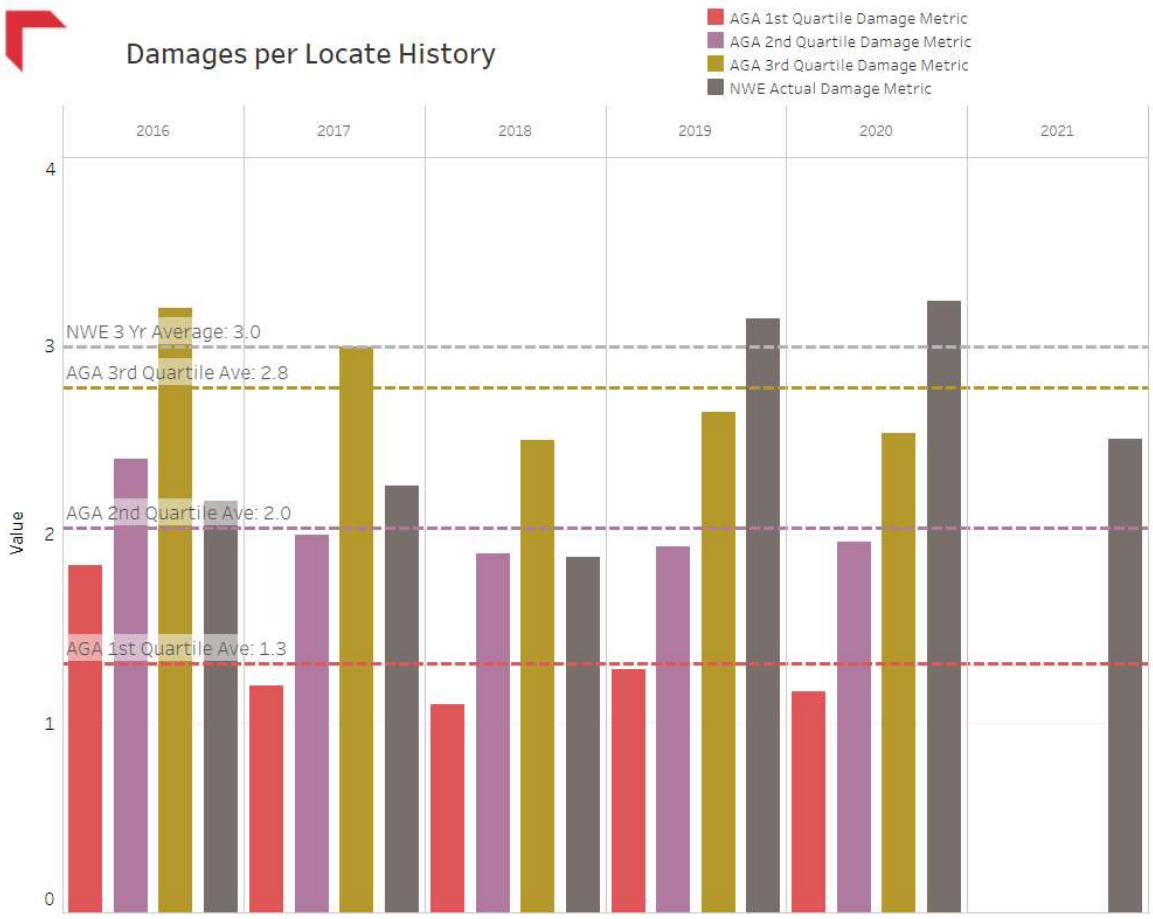
Q. Please describe NorthWestern's Natural Gas Distribution Operations' approach to the provision of safe and reliable natural gas service.

A. As with electric service, our number one goal for natural gas service is the safety of our workforce and the safety of the public. We attain this goal by maintaining our system to minimize gas leaks while providing quality and timely customer service. We pride ourselves on a highly qualified workforce and undertake continual planning to maintain this workforce into the future. We have developed a culture that embraces continual work process improvement. We perform the appropriate work in accordance with all pipeline safety requirements to maintain a safe and reliable system, but also focus on efficiency, resulting in high-quality service at reasonable rates. Our overall asset management approach is fundamental, but very effective. By utilizing this approach, we are able to analyze the data that is produced through inspections and system performance monitoring to plan and prioritize investments and implement maintenance plans that maximize the safety and overall performance of our system.

The graphs below show distribution natural gas system leak performance over the past five years benchmarked against peer company members of the American Gas Association. Our distribution natural gas system performs at a

high level in leaks per 100 miles of pipe. We have made great progress over the past five years in addressing third-party damage, but this is an area we need to continue to focus on through our damage prevention program.





Q. Please further describe Asset Management's role in Natural Gas Distribution Operations and the initiatives developed to ensure that NorthWestern's natural gas service is safe, reliable, and affordable.

A. Asset Management is the foundation of our distribution natural gas operations. This group of highly qualified people is dedicated solely to analyzing the data that our system produces and soliciting feedback from field operations to develop investment and maintenance plans that maintain our system performance for both the short and the long term. They are also responsible for capacity planning by modeling our distribution systems under

peak loading conditions and planning appropriate system upgrades to ensure the overall reliability of our system. This group has responsibility for overall pipeline safety compliance for natural gas distribution in coordination with Commission staff to ensure that we are in compliance with all current PHMSA and Department of Transportation regulations.

Asset Management also has the responsibility to maintain and update our current Distribution Integrity Management Plan ("DIMP"). Currently, we are on version 3 of this plan. This plan is based on analysis of field inspection reports where conditions of our facilities are evaluated, along with system leak reports, and any other experience we may have had that would indicate the overall integrity of our system. Based on this data and analysis, this plan identifies accelerated actions that are necessary to address areas that impose higher threats to our system in order to maintain system integrity. These actions take higher priority when planning replacement or maintenance activities.

Q. Please describe the role of the Operations and Construction groups and the initiatives developed to assure that NorthWestern's natural gas service is safe and reliable.

A. The Operations and Construction groups execute the plans Asset Management develops. The Operations group supervises our field workforce and develops and implements the overall work plans to carry out all

maintenance. This includes pipeline safety compliance, customer service, and construction activity completed by our internal crews. The Natural Gas Operations work plan is broken into 39 activities, which correlate to Federal Energy Regulatory Commission (FERC) accounts. The major categories that these activities fall into include:

1. **Gas Compliance** – These are maintenance activities necessary to comply with pipeline safety regulations such as annual regulator station maintenance and leak surveys.
2. **Customer Service** – These activities are related to work completed on customer premises such as connects/disconnects, odor calls, etc.
3. **Proactive Gas System Maintenance** – These activities are planned repairs to the system or inspections not associated with compliance.
4. **Reactive Gas System Maintenance** – These activities include inspection, investigation, or repairs to the system that must be done as soon as practical.
5. **Non-Productive Time** – These are the associated activities for our craft workforce that involve training, other meetings, and paid time off.
6. **Supervision and Engineering** – These are the associated activities involved with all aspects of managing natural gas operations in general and completing the necessary engineering.

Each activity is based on units of work so that over time we have developed a history of labor costs per unit and total costs per unit. We use this historical

information to monitor trends and prioritize and plan work. This helps us become more efficient with work planning and processing improvements. The other main advantage to this tracking method is the visibility and availability of our work plans to supervisors so they can actively manage work activity and make informed decisions and any necessary adjustments based on this readily accessible information.

A good example of effective use of this information is the notification process that NorthWestern developed for almost every activity. The notification process is an electronic process that creates work orders within our enterprise system, SAP. Orders are work tasks that need to be completed. These orders can then be prioritized, put into our work planning process, dispatched, and completed efficiently. Another key component of the notification process is the data collection that is critical to feed our asset management process described above. The notification process is also critical for compliance purposes; operating supervision personnel have ready access to the information necessary to ensure all compliance work activity is completed in accordance with pipeline safety codes.

Q. What challenges does NorthWestern face in operating its natural gas distribution system?

A. NorthWestern faces several challenges in operating its natural gas distribution system. Again, like with our electric distribution system, we have

a large service area with low customer density. While we provide natural gas to many larger cities, such as Bozeman and Missoula, we also serve many rural areas and small towns. Our workforce has to be dispersed in order to cover emergency response in a timely manner, making it more difficult to maximize the efficiency of this workforce. In our service territory, there is generally not enough work activity in any of our major categories to specialize the skillsets of our workforce. Therefore, our workforce must be trained and qualified to perform a variety of tasks so that productivity can be maximized. We have maintained our system to the highest standards of performance, but our system is aging. It is critical to monitor the system, make the essential investments, and perform the maintenance necessary to sustain a safe and reliable system. Current and future changes to pipeline safety regulations are also challenging. While we embrace new regulations where it makes sense to enhance overall safety, new regulations generally mean additional costs.

Natural Gas Projects and Investments

Q. Please describe the Distribution System Infrastructure Project.

A. DSIP was a comprehensive distribution infrastructure plan for both the natural gas and electric utilities that was implemented as a supplement to NorthWestern's existing base maintenance and capital investment plans. It was designed to accomplish a specific set of goals and to address some of the challenges of maintaining safe and reliable systems that could not be met by our existing base plans.

The overall goals for DSIP related to the natural gas distribution system were:

1. Embrace the industry's new safety model which was DIMP. It was intended to introduce a more analytical approach to identifying higher risk operating threats and implementing plans to address them. See above for more detail on DIMP;
2. Employ state-of-the-art analytical skills (as identified in 2012) to proactively manage safety; and
3. Improve or, at a minimum, maintain leak rate performance.

DSIP was a seven-year plan that began in 2011. The first two years were phase-in years with full production starting in 2013 and completed in 2017. Since the completion of the initial DSIP, NorthWestern has continued to make significant investments in our natural gas infrastructure through our Gas One Project to ensure our systems continue to stay current with industry standards and state-of-the-art in order to provide safe and reliable service for our customers. From 2017 thru 2021, our Gas One Project was our primary capital investment project for addressing the accelerated actions identified in DIMP.

Q. How was DSIP developed and why was it necessary?

A. As described earlier, we have adopted a strong asset management mentality utilizing operating performance data along with field input and expertise to

develop our maintenance and investment plans for our distribution systems. In 2009, we recognized that system performance would begin to slip over time if we did not proactively address and improve certain components of our distribution systems. In natural gas distribution specifically, we also recognized that better processes were needed to collect operating performance data to give us the ability to analyze information and make more informed decisions related to maintenance and capital investments necessary to ensure our system would be safe and reliable.

DSIP was developed by Asset Management, in a collaborative process that involved many internal departments, especially our Finance and Regulatory groups. In 2009 and 2010, we engaged in an infrastructure stakeholder process which included members from across Montana with representation from legislators, county commissioners, municipalities, retail customers, industrial customers, electric cooperatives, labor unions, the Montana Consumer Counsel, and Commission staff. The stakeholder process was instrumental in developing the overall guiding principles and the goals that ultimately were established for DSIP.

Q. Please describe the natural gas distribution components of DSIP.

A. There were eight components to the natural gas part of DSIP as follows:

1. Business District Inside Meter Set and Vintage Construction refurbishment.

2. Non-business District Inside Meter Set and Vintage Construction refurbishment.
3. Establish a DIMP and a process for ongoing analysis of data and evaluation for the effectiveness of our plan to address threats identified.
4. Damage Prevention.
5. Farm Tap Rebuilds.
6. Gas Line Stub Removal.
7. Gas Lines under structure removal or relocation.
8. Zone Valve Installation Plan.

In 2015, as we were in the process of developing our DIMP, it was clear that some of the components of the DSIP project should be consolidated so that the threats identified in our initial DIMP could be addressed in a much more efficient and more comprehensive manner. To do this, we developed the Gas One Project. Essentially, this project encompasses the following DSIP components: Business District Inside Meter Set and Vintage Construction refurbishment (Component 1), Non-business District Inside Meter Set and Vintage Construction refurbishment (Component 2), Gas Line Stub Removal (Component 6), and Gas Lines under structure removal or relocation (Component 7).

NorthWestern developed the Gas One Project by analyzing data as described above in our DIMP to prioritize gas infrastructure investment to refurbish

blocks that contain natural gas distribution components and construction practices identified as higher risk. Typically, this is primarily older systems. These blocks were then compiled into a data base and assigned appropriate risk factors. By developing this methodology, we were able to identify the highest risk blocks and develop an implementation plan to refurbish these blocks in a timeframe that met the goals of our DIMP. Using this methodology is much more efficient as we are refurbishing entire blocks addressing all issues as opposed to addressing individual components one at a time. As stated earlier, DSIP was completed in 2017. The details of each component are explained in detail in the DSIP plan, which is on file at the Commission.

The Gas One Project is a multi-year project, which continued through 2021. We are currently in the process with our latest evaluation of our DIMP to merge the Gas One Project into our overall Gas Distribution Integrity Program, which will then become the comprehensive program that addresses DIMP and our overall strategies in natural gas operations in general.

Q. Please provide an update on the investments NorthWestern has made related to DSIP.

A. NorthWestern's last general natural gas rate review, our 2016 Gas Rate Review, included DSIP costs through 2015. NorthWestern continued to incur

costs and make investments through 2016 and 2017 when the program was completed.

Q. Please describe the investments made under the Gas One Project since the last general natural gas rate review.

A. As stated above, following the completion of DSIP, NorthWestern continued to incur costs and make investments in the natural gas distribution system through the Gas One Project, which is primarily a system integrity project for our natural gas distribution system, through 2021. Since 2017, we have invested approximately $37 million in this project.

Q. How did NorthWestern's implementation and execution of DSIP and the Gas One Project benefit customers?

A. NorthWestern's overall goal is to provide safe and reliable service at reasonable cost. DSIP and programs that continued well beyond the DSIP years benefited customers by achieving these goals. DSIP addressed a number of emerging risks that were identified through our on-going Asset Management process. Generally, these risks were associated with older systems and older construction practices. Our Gas One Project, post DSIP and DIMP, continues to address these risks and other risks that emerge to constantly have a focus on the overall system integrity, safety, and reliability of the natural gas distribution system.

Q. Does this conclude your testimony?

A. Yes.

VERIFICATION

This Pre-filed Direct Testimony of Curtis T. Pohl is true and accurate to the best of my knowledge, information, and belief.

/s/ Curtis T. Pohl
Curtis T. Pohl