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

PRE-FILED DIRECT TESTIMONY

OF KEITH W. MEAGOR

ON BEHALF OF NORTHWESTERN ENERGY

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Witness Information

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

A. My name is Keith W. Meagor. I am NorthWestern Energy's ("NorthWestern") Manager of Gas Transmission Compliance and System Integrity.

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

A. I have worked for NorthWestern for 17 years and with Gas Transmission and Storage ("GTS") for the last 9 years. I am a registered Professional Engineer in the States of Montana, South Dakota, and Nebraska. I am a graduate of Montana Tech with a Bachelor of Science degree in General Engineering with Mechanical and Welding emphasis. I also completed two years of Master's Program courses at Montana Tech in Physical Metallurgy.

I have been working in the area of pipeline safety and specifically with the Pipeline Hazardous Materials Safety Administration ("PHMSA") Code of Federal Regulations ("CFR"), 49 CFR § 191 and 49 CFR § 192 since 2008. Prior to joining GTS, I was the Department of Transportation ("DOT") Coordinator for Distribution's Asset Management & Organizational Performance Groups at NorthWestern from 2008 to 2013. In that role, I oversaw all Montana Gas Distributions System (GDS) compliance and integrity, including being a lead in the development of the Distribution Integrity Management Plan and Distribution System Infrastructure Program (DSIP).

In October of 2013, I joined GTS as Gas Transmission Infrastructure Program Engineer. In that role, I continued to work under 49 CFR § 191 and 49 CFR § 192 while I was developing plans to evaluate and assess the integrity of the transmission system that fell outside the pipeline

integrity management criteria. At the end of 2017, because of retirements, I took over compliance oversight for GTS. This role was similar to the previous compliance role, but was focused on GTS requirements, such as, Pipeline Integrity Management, Control Room Management ("CRM"), Underground Natural Gas Storage Integrity Management, Operator Qualification ("OQ"), Maximum Allowable Operating Pressure Verification, Pipeline Safety Management System and more recently, the PHMSA Mega-Rule changes.

In 2020, I became the Manager of Gas Transmission Compliance and then, in 2021, I became the Manager of Gas Transmission Compliance and System Integrity.

Purpose and Summary of Testimony

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

A. My testimony provides details to support NorthWestern's GTS initiatives related to pipeline compliance and system integrity. My testimony also provides the investments and associated costs that NorthWestern has made in both of these areas and what is anticipated in the near future for these areas.

Q. Please summarize your testimony.

A. Pipeline safety investment is critical. Over the last ten-plus years, PHMSA has substantially increased the number of regulations impacting pipelines, and now natural gas storage facilities and gathering lines. This, in turn, has increased NorthWestern's compliance obligations and associated work with PHMSA obligations. While capital investment in this area has been relatively low, it is expected to substantially increase over the next several years as more regulations become effective.

Natural Gas Transmission Investments – PHMSA

Q. What is PHMSA?

A. PHMSA is a federal agency that resides within the DOT. PHMSA is tasked with ensuring that transportation of hazardous materials is done safely, and this includes transportation of natural gas. In 2018, Congress also assigned oversight of natural gas storage facilities to PHMSA. PHMSA is responsible for developing the regulations that operators are required to follow to ensure safe and reliable operation of pipelines. PHMSA also inspects and enforces the regulations, but in the case of intrastate pipelines (those that do not cross state lines), the state can enter an agreement with PHMSA and take over the inspection and enforcement of the regulations, which Montana has done.

Q. How does PHMSA impact NorthWestern?

A. PHMSA impacts NorthWestern through development of pipeline regulations, bulletins, and inspections that NorthWestern must review and, most importantly, comply with. Compliance with PHMSA regulations and bulletins requires NorthWestern to incur substantial costs as described later in my testimony.

Q. Why is pipeline safety important?

A. Pipeline safety, to me, is a culmination of several things. It encompasses how operators design, construct, inspect, maintain, and protect their pipelines. It seems simple, but each of those words have extremely big expectations and requirements. If not done properly, it impacts the safety of the environment and people who work, live, and play around the pipelines and storage facilities. Pipeline safety is important because it ensures safe, reliable, efficient, and environmentally conscious natural gas service for NorthWestern customers.

Q. What is Transmission Pipeline Integrity Management ("PIM")?

A. PIM is a prescriptive part of 49 CFR § 192 that is used to ensure the integrity of pipelines through several tasks completed periodically. These tasks ensure that the pipeline is not damaged, does not have defects, and that the integrity of the pipeline is suitable for the pipeline to continue to operate safely. PIM focuses mainly on the locations where the population

density meets a certain level within a defined area around the pipeline. When those two criteria (location and density) are met, it creates a High Consequence Area ("HCA"). PIM requires continual assessment of HCAs as well as continuing to monitor for new HCAs. A PIM plan also requires operators to take information learned from the system (in HCAs or not) and apply that information across the system to like areas, conditions, or materials.

Q. Please describe how PHMSA impacts NorthWestern's storage facilities.

A. The effect PHMSA has on storage facilities is relatively new. As noted earlier, in 2018, Congress granted PHMSA the ability to develop regulations that addressed storage fields. PHMSA issued an interim final rule for storage fields, which incorporated recommended practices from the American Petroleum Institute into 49 CFR § 192.[1] This, in turn, caused operators to react quickly and develop Underground Natural Gas Storage Integrity Management Programs or, as NorthWestern calls them, UGSIM. This interim rule applied the integrity management principles that I described above to storage fields, which included storage wells and reservoirs. In 2020, the interim rule was issued as a final rule and codified into 49 CFR § 192. PHMSA impacts storage fields and facilities in a very

[1] Specifically, Recommended Practices 1170 and 1171 were incorporated by reference in 49 CFR § 192.

similar manner as it does with pipelines – through the issuance of regulations, bulletins, and inspections.

Q. Does the Montana Public Service Commission ("Commission") play any role in PHMSA-related matters with Gas Transmission and Storage?

A. Yes. The Commission plays a large role in PHMSA-related matters. As I noted earlier, for intrastate facilities that are regulated under 49 CFR § 192, PHMSA has entered into agreements with states. The states can determine what groups within the state are responsible for this implementation – in some cases, it is Fire Marshals, and in most cases, it is implemented by state public service commissions or public utility commissions that develop a pipeline safety office. That office is then responsible for inspection and enforcement. States cannot implement standards that set forth lesser requirements than those found in the CFR, but they can make them more stringent. Additionally, the Commission gets directly involved if there are issues with non-compliance, poor performance, or conforming to the regulations. It decides whether penalties should be levied against operators for non-compliance. In 2021, the Commission's Pipeline Safety Office entered into an agreement with PHSMA to also take over inspection and enforcement of the intrastate storage fields. PHMSA and the Commission share joint enforcement of 49 CFR § 191, which contains the reporting requirements. This part of code

is what requires operators to submit annual reports, safety-related conditions, incident reports, and notifications for certain work.

Q. What process does NorthWestern Gas Transmission and Storage utilize to ensure it is compliant with PHMSA obligations?

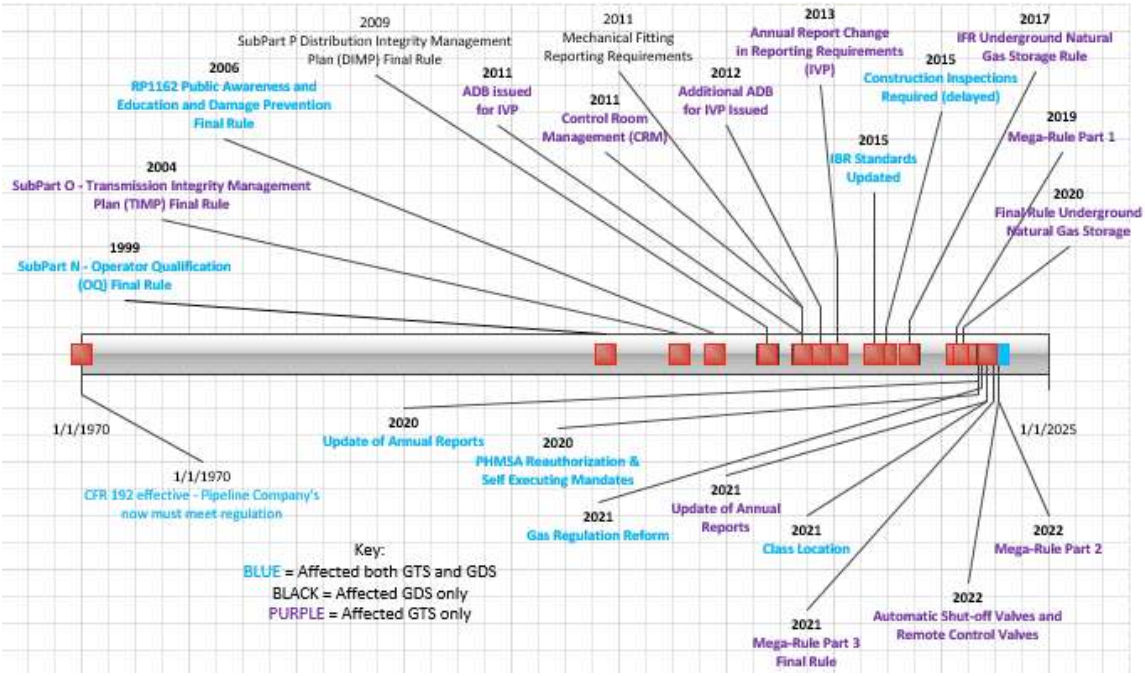
A. In 2020, NorthWestern GTS underwent a restructuring. This restructuring was aimed at compliance activities. While GTS was compliant in the past, due to the number of regulations that were expected, including some substantial new regulations, NorthWestern determined it was necessary to implement a change to ensure that GTS remained aware of and compliant with the rules and developed plans as required by the rules. This group is responsible for monitoring compliance activities and ensuring work related to regulatory compliance is completed.

Q. Please identify the substantial regulations you referred to in your prior answer.

A. The regulations I identified as substantial are found in Part 1 of the Mega-Rule. This rulemaking was called the Mega-Rule because it was the largest rulemaking since the promulgation of PHMSA-related code in 1970 and it was entirely directed at transmission operators. Adding to the need to restructure NorthWestern's GTS department was the impending release of Parts 2 and 3 of the Mega-Rule, the new storage integrity management requirements, the existing control room management, operator

qualification, transmission integrity management program, and other existing code requirements with an additional level of focus on compliance. In Chart 1 below, I set forth the history of the PHMSA regulations, which helps show the magnitude of them in the last ten or so years and NorthWestern's need to restructure with a key focus on compliance.

Chart 1: History of PHMSA Regulations



Q. What PHMSA-related compliance obligations currently affect NorthWestern's Gas Transmission and Storage Department?

A. A substantial number of compliance obligations affect NorthWestern's GTS Department, including ones dating back to the 1970s up to recently issued rules. In general, there is an operations and maintenance ("O&M") standard or plan/program document for all requirements that cause a

compliance obligation by GTS. In all, there are 143 O&M standards, a OQ Plan, a CRM Plan, a PIM plan, and a UGSIM plan that are all utilized to comply with the regulatory obligations that affect GTS.

The biggest immediate impacts to NorthWestern's GTS Department are from three main rule changes – Maximum Allowable Operating Pressure Verification ("MAOPV"), Maximum Allowable Operating Pressure Reconfirmation ("MAOPR"), and assessment of pipelines outside HCAs.

Q. Please explain the MAOPV rule.

A. MAOPV affects GTS because of the need to verify the Maximum Allowable Operating Pressure ("MAOP") of the pipeline. If the records that establish MAOP for the pipeline and associated facilities are not traceable, verifiable, and complete ("TVC"), then the MAOP of the pipeline and facilities has to be reconfirmed. This is an ongoing process, so pipelines and facilities installed today have to have TVC records that establish MAOP of the pipelines and facilities. This changed, and continues to change, how GTS orders, receives, stores, and tracks materials. This has also changed how pressure tests are designed, executed, and tracked. This has changed how materials are tracked at time of installation and how that information is passed to our Geographic Information System ("GIS"). Finally, it has changed how we track all the records by the project engineers as a culmination of these processes.

Between 2016 and 2020, GTS completed review of the pipelines and MAOPV project results. All of the system's records were reviewed; if there was a location where MAOP and operating pressure conflicted, these locations were addressed. A further detailed review of the records was completed for the locations as required by Code and as discussed in more detail later in this testimony. In all, 143.8 miles (6.8% of system total) were reviewed and of that, 118.2 miles (5.6% of system total) met the conditions required to be validated for TVC records. Within the 118.2 miles, 63.5 miles (53.7% of miles met) were found to have acceptable TVC records, and 54.7 miles (46.3% of miles met), 37 stations (27% of all stations), and 66 valve assemblies were found to have questionable records and are required to have MAOPR completed on them.

Q. Please describe the impacts of the MAOPR on NorthWestern's GTS.

A. MAOPR affects GTS because when the MAOPV process finds issues, the MAOP of the system in that area has to be reconfirmed. This can be done in several ways depending on the information or records that are not TVC. For example, if we are missing pipeline wall thickness, we can complete statistical sampling that proves the wall thickness of the pipe, which is fairly easy to accomplish by digging up the pipe in a number of locations. However, if the grade of the pipe is missing, which is harder to quantify, then the options are: (1) to complete in-situ testing that can be completed on a live pipeline, (2) removal of the segments in question for statistical

sampling, which involves taking the line out of service and removing sections of the line for sampling, or (3) completing a reroute of the line. As noted above, 63.5 miles were found to have acceptable TVC records and 54.7 miles, 37 stations, and 66 valve assemblies need to have MAOPR completed on them because they are lacking TVC records to establish MAOP of the pipelines.

Per the PHMSA rule, GTS has until 2028 to complete 50% of the reconfirmation work and until 2035 to complete 100% of the reconfirmation work. Over that 14 years, NorthWestern anticipates, using knowledge gained from PIM, that we will spend approximately $220 million total ($15 million in capital per year and $715,000 in expenses per year) to reconfirm MAOP on the GTS system.

Q. How do assessments outside HCAs impact GTS?

A. Assessments outside an HCA have a big impact because the rule requires that any pipeline that meets the requirements for assessment will have to be assessed, which means that PIM assessment methods will be utilized on these segments of pipeline. Currently, GTS has 8.2 miles of HCA pipeline on the system; this code change will bring in an additional 84 miles of pipelines that will have to be assessed with continual assessment going forward.

Q. Are you aware of any future PHMSA-related obligations that would impact NorthWestern's Gas Transmission and Storage Department? Please explain.

A. As can be seen in Chart 1, the regulatory world of PHMSA is ever evolving. Part 3 of the Mega-Rule was released in November 2021 with an effective date of May 2022. NorthWestern is in the process of evaluating the entire impact of that new rule.

In the near future, Part 2 of the Mega-Rule should be released, which is the last part of the Mega-Rule to be issued, and it focuses entirely on transmission operators. Until that part is released, the entirety of the changes and magnitude of the impact on GTS is unknown.

The automatic shut-off valve and rupture control mechanisms rule was released on April 8, 2022. This rule also focuses entirely on transmission operators. The rule will require operators to install automatic valves and/or rupture control mechanisms on new pipelines when certain requirements are met during construction and maintenance. NorthWestern is in process of reviewing the rule and evaluating the full impact.

Additionally, there was a self-executing mandate within the reauthorization of PHSMA in 2020 that was executed in 2021, but realization of the

impacts to NorthWestern are not fully known at this time. This mandate affected both transmission and distribution operators.

Q. What have been some of the major GTS PHMSA-related projects since NorthWestern's last natural gas general rate review?

A. Some of the larger projects that have been completed since 2016 to comply with PHMSA regulations are:

- Bozeman East and West HCA Reroutes;
- Anaconda CCCS HCA Reroute;
- Storage Integrity Management, and
- Maximum Allowable Operating Pressure Verification.

Q. Please explain each project noted in your last answer, including what work NorthWestern performed related to each and how much was spent.

A. The Bozeman East and West HCA Reroutes were completed in 2016. These projects replaced 1930s and 1950s vintage transmission pipeline that ran through Bozeman and replaced it with modern pipeline. The replacement of these line segments was considered the initial assessment for the PIM program. The Code considers this as an initial assessment because new pipe and components were installed and all are subject to a pressure test that established MAOP. Because of the vintage of the original line and legacy construction practices, future evaluation and

assessment of the pipeline through this area would not have been easy and sections of the pipeline would have had to be replaced no matter what. The requirement to be able to assess this pipeline in the future and the number of unknown variables with a vintage material and installation practices prompted the decision to replace the pipeline. The replacement work allows for the pipeline to be assessed while remaining in-service with in-line inspection tools. Bozeman West investment was approximately $2.8 million and Bozeman East investment was approximately $0.6 million.

Anaconda CCCS HCA Reroute was completed on a 1930s vintage pipeline. The reroute in this location was completed to move the pipeline outside the HCA requirements, thus eliminating the HCA. Elimination of the HCA at this location with a small reroute was selected because of the size of the HCA and the location of the pipeline. This line is located in a fairly remote area and the HCA is a very small section of the pipeline. Elimination of the HCA required installation of 900 feet of new pipeline, which made sense because most of the pipeline would have had to be updated to allow for future PIM assessments to occur for this HCA. Instead, this line will be maintained through normal operations and maintenance practices going forward. Anaconda CCCS investment was approximately $250,000.

Storage Integrity Management requires the assessment of all the wells and reservoirs for natural gas storage. NorthWestern currently has three storage facilities and approximately 80 wells connected to those storage facilities. The Code requires that all the reservoirs and 40% of all wells have their initial assessments completed by March 13, 2024 and that the remaining 60% of wells be assessed by no later than March 13, 2027. NorthWestern is expected to meet these required timelines. The assessment process is very similar to what was experienced with the PIM program where there are significant changes to the vintage installations and varying construction practices that make it difficult to assess the wells and reservoirs. Following the completion of the initial assessment, all of the facilities must be reassessed on 10-year intervals. The investment to date from 2019 to 2021 is approximately $1.7 million capital with $0.4 million of expense.

Finally, as also discussed briefly above, the MAOPV was a project that ran from 2016 to 2020. The MAOPV project was developed based on PHMSA bulletins and actions following the San Bruno, California incident. PHMSA pushed operators through PHMSA-issued bulletins to assess the MAOP of their systems and verify that they were established with traceable, verifiable, and complete (TVC) records. NorthWestern complied with these bulletins. However, PHSMA issued an additional bulletin that described to more depth what TVC records should look like,

and PHMSA stated that operators would have to submit information on the following year's annual report.

NorthWestern reached out to peer companies and organizations to determine what others were considering TVC records and how they were progressing through the process. It was determined through those conversations that a different approach was necessary. The change in approach was a full-scale review of the pipeline construction records from start to finish. The records needed to be searchable, and most of NorthWestern's records were flat file paper copies. All of the paper was scanned with meta-data added to assist with searching. Next, all of the scanned documents were reviewed from the earliest installation to the most current installation per pipeline. This was the most efficient method and it gave a whole review of the system. Additionally, the centerlines of the pipelines needed to be established precisely. Through the years of migration from flat maps to use of computer software, such as autocad to GIS systems, that data needed to be verified. NorthWestern completed a survey and GPS project for the entire pipeline system, which was then corrected in the GIS system.

Following the contractor project to scan, review pipeline records, and report results, NorthWestern personnel were assigned to review the results and work through any data issues or gaps in the records utilized to

establish MAOP of the system. This provided the background and work necessary to ensure the ability to meet Part 1 of the Mega-Rule when published, which started NorthWestern on the path toward developing the Maximum Allowable Operating Pressure Reconfirmation (MAOPR) Plan. Without the MAOPV project, NorthWestern could not have met the timeline required to have the MAOPR Plan published in 2021.

The MAOPV project investment, including development of the MAOPR Plan, was approximately $3.6 million.

Q. How does this level of costs compare to historical PHMSA-related investments?

A. Generally, it is lower than historical costs for PIM-related projects, but new PHMSA regulations have increased and will continue to increase NorthWestern's investment for pipeline compliance. From 1970 until the issuance of the PIM in 2004, PHMSA-related requirements remained relatively constant. The tasks required in the original code (leak survey, line patrol, valve inspection, etc.) are completed as required on the prescriptive timelines that are within Code. There might be a slight deviation from one year to another because of an issue found that has to be addressed, but those costs have continued to remain fairly consistent with standard increases due to labor costs.

Since the PIM regulations took effect in 2004, NorthWestern has incurred over $25 million in capital costs and $4.5 million in expense costs. From 2012 to 2015, NorthWestern spent approximately $7.6 million in capital and around $2.2 million in expense on PIM activities. The level of investment into PIM appears to be decreasing from the start of the program through today. Looking at 2012 through 2015, the capital and expense averaged about $1.57 million and about $0.73 million per year, respectively. Compared to 2016 through 2021 capital and expense, NorthWestern has invested around $1.1 million and around $0.41 million per year, respectively. Since the PIM program has been around for 17 years, unless PHMSA issues new obligations related to it, NorthWestern anticipates that capital investment will continue to decline and expense will begin to increase.

As discussed above, the costs for the storage integrity management program are new. The actual costs from 2019 to 2021 are noted above. The continuing program is estimated to require an additional $3.6 million capital and $0.9 million expense until completion of the initial assessments. This will make the total investment estimated to be $5.3 million capital and $1.3 million expense. Similar to PIM, it is anticipated that after the initial assessments, the capital costs will decrease and the expense costs will increase because of reassessments.

The MAOPV work is also relatively new. While that work has now been completed, it, as noted above, informs the MAOPR Plan. The MAOPR Plan is anticipated to require $15.75 million per year ($15 million capital/ $750 thousand expense) over the next 14 years starting in 2022.

Q. Does NorthWestern conduct any analysis for projects prior to making the necessary investment?

A. Yes. NorthWestern runs risk models to determine which PIM and integrity-based projects are needed. For example, casing evaluations are part of the UGSIM plan and are required by regulations. That plan undergoes regular review by a committee. The plan utilizes a risk model within the plan that is updated following assessments and re-evaluates where the program should focus.

Q. Does this conclude your testimony?

A. Yes, it does.

VERIFICATION

This Pre-filed Direct Testimony of Keith W. Meagor is true and accurate to the best of my knowledge, information, and belief.

/s/ Keith W. Meagor
Keith W. Meagor