BEFORE THE NEBRASKA PUBLIC SERVICE COMMISSION

IN THE MATTER OF THE APPLICATION OF BLACK HILLS NEBRASKA GAS, LLC, D/B/A BLACK HILLS ENERGY, RAPID CITY, SOUTH DAKOTA, SEEKING APPROVAL OF A GENERAL RATE INCREASE	**)**	**APPLICATION NO. NG-124**

DIRECT TESTIMONY OF JENNIFER C. BINGAMAN

Manager, Asset Risk

ON BEHALF OF BLACK HILLS NEBRASKA GAS, LLC

Date: May 1, 2025

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TABLE OF ABBREVIATIONS AND ACRONYMS

AGA	American Gas Association
ARMRP	At Risk Main Replacement Program
ASTM	American Society for Testing Material
BHC	Black Hills Corporation
BH Nebraska Gas or Company	Black Hills Nebraska Gas, LLC d/b/a Black Hills Energy
BHSC	Black Hills Service Company, LLC
BPI	Buried Pipe Inspection
C.F.R.	Code of Federal Regulations
CP	Cathodic Protection
DAB	Digital As Built
DIIP	Data Infrastructure Improvement Program
DIMP	Distribution Integrity Management Plan
DOT	Department of Transportation

GIS	Geographic Information System
GPS	Global Position System
HCA	High Consequence Areas
iOS	Information Operating System
LOF	Likelihood of Failure
MAOP	Maximum Allowable Operating Pressure
MCA	Moderate Consequence Area
NSFM	Nebraska State Fire Marshall
O&M	Operations & Maintenance
PHMSA	Pipeline and Hazardous Materials Safety Administration
PIPES Act	Pipeline Inspection, Protection, Enforcement and Safety Act
PVC	Poly Vinyl Chloride
RMU	Remote Monitoring Units
SME	Subject Matter Expert
SMYS	Specified Minimum Yield Strength
SSIR	System Safety & Integrity Rider
TIMP	Transmission Integrity Management Plan
TBS	Town Border Station
TOG	Top of Ground
TVC	Traceable, Verifiable and Complete

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Jennifer C. Bingaman, and my business address is 655 Millsap Road, Fayetteville, AR 72703.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by Black Hills Service Company, LLC ("BHSC"), a wholly owned subsidiary of Black Hills Corporation ("BHC"). I am the Manager of Asset Risk.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING?

A. I am testifying on behalf of Black Hills Nebraska Gas, LLC d/b/a Black Hills Energy ("BH Nebraska Gas" or the "Company"). BH Nebraska Gas is BHC's natural gas jurisdictional utility in Nebraska.

II. STATEMENT OF QUALIFICATIONS

Q. WHAT ARE THE DUTIES AND RESPONSIBILITIES IN YOUR CURRENT POSITION?

A. I am responsible for the execution of our Distribution Integrity Management Program ("DIMP"). In April 2025, I also transitioned into leading the group responsible for implementing a new asset capital investment technology. In my role, I also partner with and support our transmission integrity management team with risk model completion.

Q. PLEASE OUTLINE YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND.

A. My education, employment history and professional experience is provided in Direct Exhibit JCB-1 – Statement of Qualifications.

Q. HAVE YOU PREVIOUSLY FILED TESTIMONY BEFORE THE NEBRASKA PUBLIC SERVICE COMMISSION?

A. No.

Q. ARE YOU SPONSORING ANY EXHIBITS?

A. Yes. I am sponsoring the following exhibits:

- Direct Exhibit JCB-1 is the statement of my qualifications.
- Direct Exhibit JCB-2 is the American Gas Association's 2012 Commitment to Enhancing Safety.
- Direct Exhibit JCB-3 is the American Gas Association's 2014 and 2016 Commitments to Enhancing Safety.
- Direct Exhibit JCB-4 is the American Gas Association's 2021 Commitments to Enhancing Safety, Environmental Stewardship and Security.
- Confidential Direct Exhibit JCB-5 is the Program Ranking for DIMP and TIMP.
- Direct Exhibit JCB-6 is the DIIP definitions.

Q. HAVE THE TESTIMONY AND EXHIBITS THAT YOU ARE SPONSORING BEEN PREPARED BY YOU OR UNDER YOUR SUPERVISION?

A. Yes.

III. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to discuss BH Nebraska Gas' Integrity Management Programs and support the infrastructure projects that are needed to improve system safety through the System Safety and Integrity Rider ("SSIR").

Q. PLEASE DESCRIBE THE INTEGRITY REQUIREMENTS THAT ARE EXPLAINED IN DETAIL WITHIN YOUR TESTIMONY.

A. I will describe the following integrity requirements in detail below:

1. **Pipeline Safety Regulation**: Describe the federal and state regulations governing pipeline safety, including the recent additional requirements of the Mega Rule.
2. **BH Nebraska Gas Capital Infrastructure Project Identification Process**: Discuss the collaborative process used by the Company to identify Integrity projects included in the capital forecast for BH Nebraska Gas.[1]
3. **BH Nebraska Gas DIMP and TIMP:** Discuss the federally and state mandated programs developed by BH Nebraska Gas – the DIMP and the Transmission Integrity Management Plan ("TIMP").
4. **Risk Ranking and Safety Infrastructure Investment**: Explain and support the Company's shift from reactive investment in safety infrastructure projects to a proactive data-driven ranking of risks to the gas system facilities, and then applying a programmatic investment approach aligned with risk priorities.
5. **Data Infrastructure Improvement Program ("DIIP"):** Explain the Company's program to improve system knowledge and threat identification and the associated safety and integrity benefits.

[1] The Company has established "Growth," "Integrity," "Reliability," and "General Plant" as the four different classes of projects included in its five-year gas infrastructure capital investment budget. Integrity projects focus on pipeline safety infrastructure.

6. **SSIR**: Discuss BH Nebraska Gas' integrity projects, including those proposed to be included in BH Nebraska Gas' SSIR. My testimony demonstrates that the Company's investment in pipeline safety is in the public interest and provides an overview of the Company's pipeline safety and integrity initiatives to be included in the SSIR and base rates. The SSIR includes programs and initiatives that fall under BH Nebraska Gas' DIMP and TIMP programs.

The following programs and projects are currently included in the SSIR Application:

- Replacement of Bare Steel Distribution Mains;
- Replacement of High-Risk Transmission Pipelines;
- Replacement of Service Lines;
- Installation of Barricades to Protect At-Risk Meter, Regulator, and Valve settings;
- Cathodic Protection ("CP") and Corrosion Prevention;
- Town Border Station Upgrades or Replacements;
- Top of Ground ("TOG"), Shallow (less than three feet cover and posing risk) and Exposed Pipe;
- At-Risk Meter Relocations and Inside Meter Relocations with Replacement of Meter as part of a capital activity;
- Obsolete Infrastructure (e.g., poly vinyl chloride ("PVC") pipe posing risk or the removal of which provides ancillary benefits supported by risk model analysis and results);

- Required Facility Relocations; and
- DIIP.

IV. SAFETY OVERVIEW

A. Pipeline Safety Regulations

Q. ARE YOU FAMILIAR WITH FEDERAL AND STATE REGULATIONS REGARDING PIPELINE SAFETY AND INTEGRITY?

A. Yes.

Q. PLEASE SUMMARIZE THE REGULATIONS APPLICABLE TO BH NEBRASKA GAS.

A. The Pipeline and Hazardous Materials Safety Administration ("PHMSA") regulations applicable to BH Nebraska Gas are codified in the Code of Federal Regulations ("C.F.R.") Title 49 (Transportation), Part 192 (Transportation of Natural Gas and Other Gas by Pipeline Minimum Federal Safety Standards). These regulations prescribe safety requirements for pipeline facilities and the transportation of gas (Section 192.1); define "pipeline facilities" as "new and existing pipelines, rights-of-way, and any equipment, facility, or building used in the transportation of gas…" (Section 192.3); define the "transportation of gas" as "the gathering, transmission, or distribution of gas by pipeline or the storage of gas, in or affecting interstate or foreign commerce (Section 192.3); and define an "operator" as an entity that "engages in the transportation of gas" (Section 192.3).

B. Transmission Integrity Rule

Q. PLEASE DESCRIBE THE PHMSA RULES THAT APPLY TO GAS TRANSMISSION LINES.

A. In December 2003, PHMSA, under the U.S. Department of Transportation ("DOT"), PHMSA published the gas Transmission Integrity Management Rule, commonly referred to as the "TIMP Rule." The TIMP Rule specifies how pipeline operators must identify, prioritize, assess, evaluate, repair and validate the safety and integrity of gas transmission pipelines.[2]

C. Distribution Integrity Rule

Q. PLEASE DESCRIBE THE PHMSA RULES THAT APPLY TO GAS DISTRIBUTION LINES.

A. In December 2006, Congress passed the Pipeline Inspection, Protection, Enforcement and Safety Act ("PIPES Act"), which mandated that PHMSA prescribe minimum standards for pipeline system safety and integrity management programs for distribution pipelines to ensure fitness for service. The law provides for PHMSA to require operators of distribution pipelines to:

- Continually identify and assess risks on their distribution lines;
- Remediate conditions that present a potential threat to pipeline system safety and integrity; and
- Monitor program effectiveness.

In December 2009, as mandated by the PIPES Act, PHMSA published the Integrity Management Program for Gas Distribution Pipelines Rule, commonly

[2] 49 CFR, Part 192, Subpart O.

referred to as the "DIMP Rule." The DIMP Rule requires each operator to develop, write and implement a distribution pipeline system safety and integrity management program.[3] Federal regulations require that "operators identify risks to their pipelines where an incident could cause serious consequences and focus priority attention in those areas" and "implement a program to provide greater assurance of the integrity of their pipeline."[4]

Q. IS BH NEBRASKA GAS SUBJECT TO PHMSA'S RULES AND REGULATIONS REGARDING GAS PIPELINE SAFETY?

A. Yes. As part of its regulation of natural gas facilities owned and operated by Nebraska public utilities and its administration of its responsibilities under the Nebraska Natural Gas Pipeline Safety Act of 1969, the Nebraska State Fire Marshall ("NSFM") has promulgated Gas Pipeline Safety Rules at Title 155, Chapter 1, *et seq*. Pursuant to NSFM Rule, Title 155, Chapter 1, 001, the NSFM has adopted and has incorporated by reference Part 192 of the federal pipeline safety regulations (49 C.F.R. § 192) as they existed on April 1, 2019. BH Nebraska Gas is an "operator" under Part 192 of PHMSA's regulations and is subject to all rules and regulations pertaining to gas pipeline safety.

Q. WHAT ROLE DOES THE STATE OF NEBRASKA PLAY WITH REGARD TO PIPELINE SAFETY?

A. As stated above, the NSFM has adopted and incorporated by reference into its rules the federal pipeline safety regulations from 49 C.F.R.

[3] 49 C.F.R., Part 192, Subpart P.
[4] *Id.*

Additionally, the NSFM has oversight regarding the utility's pipeline safety measures. BH Nebraska Gas annually submits Operations and Maintenance Procedures, Emergency Plans, and Damage Prevention Plans, as required by PHMSA and NSFM's rules.[5] BH Nebraska Gas also submits operation maps for distribution and transmission systems every five years or as requested.[6]

Q. DO PIPELINE SAFETY REGULATIONS SPECIFY THE FULL EXTENT OF ACTIONS A PRUDENT OPERATOR IS REQUIRED TO TAKE?

A. No. In addition to prescriptive requirements, 49 C.F.R. Part 192 also requires gas utilities to develop and implement integrity management programs containing the following elements: (a) knowing their systems; (b) identifying threats; (c) measuring performance, monitoring results, and evaluating effectiveness; (d) periodic evaluation and improvement; and (e) reporting results.

Q. WHY IS THERE AN INCREASED FOCUS ON DISTRIBUTION SYSTEM SAFETY AND INTEGRITY?

A. The industry continues to see incidents involving natural gas pipelines across the country. Table JCB-1 below provides information for 2017-2024 reported through PHMSA's Pipeline Significant Incident 20-Year Trend for all system types.[7]

[5] Title 155, Chapter 1, Section 006.01.
[6] Title 155, Chapter 1, Section 006.02.
[7] See *https://www.phmsa.dot.gov/data-and-statistics/pipeline/pipeline-incident-20-year-trends*. The numbers shown in the table reflect all system types and all states.

Table JCB-1 – Total Industry Pipeline Significant Incidents 2017-2024

Year	# of Incidents	# of Fatalities	# of Injuries	Total Cost (Current Year Dollars)
2017	303	7	30	$372,189,918
2018	293	6	78	$2,201,288,618
2019	317	11	34	$386,584,922
2020	284	15	38	$421,664,729
2021	268	9	32	$217,330,601
2022	263	2	21	$1,225,889,175
2023	270	16	37	$334,051,867
2024	258	14	37	$137,089,373

Table JCB-2 below shows the number of fatalities and injuries that are specifically associated with incidents on gas distribution systems in the United States.[8]

Table JCB-2 – Total Industry Distribution Pipeline Significant Incidents 2017-2024

Calendar Year	# of Incidents	# of Fatalities	# of Injuries	Total Cost (Current Year Dollars)
2017	63	3	26	$86,277,063
2018	74	5	71	$1,880,956,658
2019	88	10	26	$92,064,654
2020	64	8	26	$30,577,019
2021	60	5	26	$43,675,576
2022	48	1	16	$13,980,756
2023	60	15	31	$45,876,738
2024	54	13	28	$24,036,782

[8] *See* https://www.phmsa.dot.gov/data-and-statistics/pipeline/pipeline-incident-20-year-trends. The numbers reflected on the table reflect gas distribution system types and all states.

Table JCB-3 below shows the number of fatalities and injuries that are specifically associated with incidents on gas transmission systems.

Table JCB-3 – Total Industry Transmission Pipeline Significant Incidents 2017-2024

Calendar Year	# of Incidents	# of Fatalities	# of Injuries	Total Cost (Current Year Dollars)
2017	65	3	3	$93,004,998
2018	61	1	5	$80,097,235
2019	70	1	7	$114,614,659
2020	76	2	1	$75,122,057
2021	55	4	5	$57,983,717
2022	67	1	4	$98,102,021
2023	58	0	0	$87,258,821
2024	58	0	4	$33,229,445

When comparing the data from the above tables, there is a higher percentage of fatalities and injuries associated with distribution pipeline incidents. As an example, in 2024 distribution pipelines only accounted for 21% of the total significant incidents (54/258 x 100), but distribution pipeline significant incidents were responsible for 93% of the total fatalities (13/14 x 100) and 75% of the total injuries from significant incidents (28/37 x 100). A complete comparison of distribution and transmission injuries and fatalities is shown in Table JCB-4.

PHMSA has noted that, compared to transmission pipelines, there are many more miles of distribution pipelines and most distribution lines are located

predominantly in higher density population areas near homes, commercial businesses and other human activities.[9]

Table JCB-4 – Comparison of Distribution and Transmission Significant Incidents 2017-2024 Year

Year	Distribution			Transmission		
	% of Total Incidents	% of Total Fatalities	% of Total Injuries	% of Total Incidents	% of Total Fatalities	% of Total Injuries
2017	21%	43%	87%	21%	43%	10%
2018	25%	83%	91%	21%	17%	6%
2019	28%	91%	76%	22%	9%	21%
2020	23%	53%	68%	27%	13%	3%
2021	22%	56%	81%	21%	44%	16%
2022	18%	50%	76%	25%	50%	19%
2023	22%	94%	84%	21%	0%	0%
2024	21%	93%	76%	22%	0%	11%

Q. WHAT HAS BEEN THE NATURAL GAS INDUSTRY'S REACTION TO THE CONTINUED INCIDENTS?

A. The American Gas Association ("AGA"), along with its members, proactively collaborate with federal and state regulators as well as other key stakeholders to improve the industry's safety record. AGA and its members initially issued a Commitment to Enhancing Safety in 2012, which includes voluntary actions by the organization as well as individual operators to ensure safe and reliable pipeline operation (*See* Direct Exhibit JCB-2)[10]. The AGA and its members provided an updated

[9] PHMSA noted this fact in its Notice of Proposed Rulemaking, 73 Fed. Reg. 36015 at 36018.
[10] *See* Direct Exhibit JCB-2 – American Gas Association's 2012 Enhancing Safety.

Commitment to Enhancing Safety in 2014 and 2016 (*See* Direct Exhibit JCB-3)[11] and again in 2021 *(See* Direct Exhibit JCB-4)[12] further solidifying the industry's acknowledgment of the need for continued and enhanced effort towards pipeline safety and its support for mechanisms that make that possible.

Partnerships with regulators to implement important cost-recovery mechanisms such as BH Nebraska Gas' SSIR facilitates efforts by utilities to proactively address system safety and integrity requirements on an accelerated basis.

D. The Mega Rule

Q. WHAT IS THE FEDERAL PIPELINE SAFETY REGULATION COMMONLY REFERRED TO AS THE MEGA RULE?

A. In October of 2019, PHMSA published Phase 1 of what is known as the "Mega Rule." The Mega Rule applies to more than 300,000 miles of transmission pipelines across the United States.[13] While this rule was effective July 1, 2020, enforcement was delayed until 2021 due to the COVID-19 pandemic.

The Mega Rule represents a significant expansion of the scope of PHMSA's pipeline regulations. One of the more impactful changes is the expansion of pipeline integrity management requirements. These requirements previously only focused on pipelines located in High Consequence Areas ("HCAs"), but the Mega Rule changes have expanded requirements to include Moderate Consequence Areas ("MCAs") and non-HCA assessments. These changes and others are meant to encourage a preventive

[11] *See* Direct Exhibit JCB-3 – American Gas Association's 2014 and 2016 Enhancing Safety.
[12] *See* Direct Exhibit JCB-4 – American Gas Association's 2021 Enhancing Safety, Environmental Stewardship, and Security.
[13] 84 Fed. Reg. 52180.

maintenance approach that focuses on proactive assessment and careful monitoring in order to ultimately improve public safety.

The Mega Rule also features new requirements for traceable, verifiable, and complete ("TVC") records that establish a pipeline's Maximum Allowable Operating Pressure ("MAOP"). PHMSA defines "traceable" records as records that can be clearly linked to original information about the pipeline segment or facility. "Verifiable" records are defined as those in which information is confirmed by other complementary, but separate documentation. "Complete" records are records finalized as evidenced by a signature, date, or other appropriate marking such as a corporate stamp or seal. All pipelines not having a TVC pressure test and located in an HCA, Class 3 or 4 location or "grandfathered" steel transmission pipelines with a MAOP creating a specified minimum yield strength ("SMYS") ≥ 30% SMYS and located in a piggable MCA will require MAOP Reconfirmation. These changes and others are meant to encourage operators to have documentation proving operational parameters in order to ultimately improve public safety.

Q. HOW DOES THE NEW MEGA RULE IMPACT BH NEBRASKA GAS?

A. Phase I of the Mega-Rule applies to BH Nebraska Gas' steel transmission pipelines. For these transmission lines, BH Nebraska Gas is required to confirm the MAOP per Section 192.624 and verify the material per Sections 192.607 and 192.712.

At this point, BH Nebraska Gas has identified approximately 18 miles of transmission lines requiring MAOP reconfirmation. Pipeline operators were required to develop and document procedures by July 1, 2021, and have until July 3, 2028, to

reconfirm 50% of subject pipeline mileage and until July 2, 2035, to reconfirm 100% of subject pipeline mileage.

BH Nebraska Gas has already completed documentation of its procedures and has targeted 50% reconfirmation by end of year 2027 and 100% reconfirmation by end of year 2034. BH Nebraska Gas has updated all operation manuals to comply with the Mega Rule requirements. Additionally, the integrity plans, procedures and risk-ranking already implemented by the Company are in line with the purpose and requirements of the Mega Rule.

The Company has established a MAOP Reconfirmation plan identifying segments requiring further investigation for applicability of MAOP Reconfirmation. This plan also identifies segments for which MAOP Reconfirmation is required. Segments have been assigned a year in which MAOP Reconfirmation will be completed to ensure compliance with the 50% by 2027 and 100% by 2034 requirement. There are six methods identified to reconfirm MAOP:

1. Pressure test in conjunction with Materials Verification;
2. Pressure reduction with Materials Verification in some instances;
3. Engineering Critical Assessments;
4. Pipe replacement;
5. Pressure reduction for pipeline segments with Small Potential Impact Radius; and
6. Alternative technology as approved by PHMSA.

Material Verification is required for steel transmission pipelines without TVC material records and meet the requirements for MAOP Reconfirmation or require

predicted failure pressure calculations. Numerous sections of Part 192 require an operator to ensure adequate TVC materials records exist or implement a Material Verification Program if necessary. Within an operator's Material Verification Program, specific pipeline attributes must be verified including outside diameter, wall thickness, seam type and yield/tensile strength. In some cases, this may require removing sections of pipe for testing.

Q. WHAT IS BH NEBRASKA GAS' ESTIMATED COST OF COMPLIANCE WITH PHASE 1 OF THE MEGA RULE?

A. Compliance with the Mega Rule Phase 1 requires an increase in BH Nebraska Gas' capital expenditures and operating and maintenance costs which began in 2022 and will continue for several years into the future. BH Nebraska Gas plans to complete all work required by Phase I in 2031 – ahead of the July 2, 2035, deadline. Actuals and current estimates for Mega Rule Phase 1 capital investments and expenses are set forth in Table JCB-5. The estimates in the table below do not include an adjustment for inflation.

Table JCB-5 – Mega Rule Phase I Capital Costs

	Year	Mega Rule Phase I Capital Cost
	2022	$171,911
Actuals	2023	$68,971
	2024	$3,608,345
Estimates	2025	$3,095,333
	2026	$850,000
	2027	$0
	2028	$405,000
	2029	$380,000
	2030	$160,000
	2031	$440,000
	Totals	**$9,007,649**

Q. HAS PHMSA PUBLISHED SUBSEQUENT PARTS OF THE MEGA RULE?

A. Yes. PHMSA published Phase II of the Mega Rule on August 24, 2022, which strengthens integrity management and corrosion control requirements. On November 15, 2021, PHMSA published Phase III that expands Federal pipeline safety oversight for more than 425,000 miles of onshore gas gathering pipelines. Phase III of the Mega Rule does not impact BH Nebraska Gas.

Q. HOW DOES PHASE II OF THE MEGA RULE IMPACT BH NEBRASKA GAS?

A. Phase II of the Mega Rule requires BH Nebraska Gas to implement programs that address many operational facets to include the following:

- Threat Identification, Data Collection, and Integration;
- Threat and Risk Assessment;
- Management of Change;
- Transmission Pipeline Corrosion Control;
- Inspection of Facilities Following Extreme Weather Events; and
- Pipeline Repair Criteria.

V. BH NEBRASKA GAS INTEGRITY MANAGEMENT PROGRAM

Q. PLEASE DESCRIBE THE BH NEBRASKA GAS INTEGRITY MANAGEMENT PROGRAM.

A. BH Nebraska Gas maintains both a TIMP and DIMP, as required by PHMSA. The integrity plans require the utility to identify, assess, prioritize, and evaluate risks to the integrity of transmission and distribution lines and associated facilities and the manner in which those risks will be mitigated or eliminated. The TIMP Rule encompasses both "covered segments" of transmission pipeline within HCAs and "non-covered

segments" that fall outside of HCAs. The integrity management approach under the DIMP is "designed to promote continuous improvement in pipeline safety by requiring operators to identify and invest in risk control measures beyond core regulatory requirements."[14]

Q. WHAT ARE THE KEY PRINCIPLES OF THE COMPANY'S INTEGRITY MANAGEMENT PLANS?

A. The key principles can be summarized as: 1) know your assets; 2) identify the risks and threats to these assets; and 3) mitigate those risks and threats in a proactive manner using a risk ranking system.

Q. PLEASE DESCRIBE THE COMPANY'S MITIGATION EFFORTS.

A. The Company's mitigation efforts help comply with the principles of the Company's TIMP and DIMP including knowing your assets; identifying the risk and threats to those assets; and mitigating those risks and threats in a proactive manner.

Q. HOW DOES BH NEBRASKA GAS ENSURE ITS PIPELINE SYSTEM IS SAFE?

A. Ensuring a safe and reliable system is an ongoing process. The Company monitors and inspects its system, continuously evaluates risks and implements remedies as appropriate. BH Nebraska Gas is driven to be more proactive in identifying and mitigating risks.

[14] Pipeline Safety: Integrity Management Program for Gas Distribution Pipelines, 74 Fed. Reg. 63906 at 63906 (Dec. 4, 2009).

Additionally, regulatory scrutiny and response to previous industry incidents such as Merrimack Valley[15] suggests that a system integrity approach based solely on after-failure review is inadequate. Where BH Nebraska Gas has identified higher risk assets on its system, it is important that the Company continues to address these risks through programmatic remediation efforts, including accelerating the replacement of assets where appropriate.

Q. WHAT ENGINEERING PROCESSES HAVE BEEN DEVELOPED AND WHAT ROLE DO THEY SERVE WITH RESPECT TO MITIGATING SYSTEM RISK?

A. The Company has an Asset Risk team dedicated to proactively evaluating risk across the Nebraska system and prioritizing those risks on a statewide basis. The team has developed a detailed risk model that assists BH Nebraska Gas in identifying the highest risks. Additionally, the team will continue to monitor the projects completed and will update its risk analysis.

Q. WHAT ROLE DOES ACCURATE AND COMPLETE SYSTEM DATA SERVE WITH RESPECT TO MITIGATING SYSTEM RISK?

A. Knowledge of the pipeline system, including location and composition, is vital for a utility to assess risks and is a necessary first step to improving pipeline integrity. Knowledge is key to the proactive approach of keeping everyone safe around pipeline facilities.

[15] Exhibit MIL-5, *Senators to Columbia Gas of Massachusetts Letter*, Docket No. NG-109 (available upon request).

Q. IS BH NEBRASKA GAS AWARE OF THE PRECISE LOCATION AND COMPOSITION OF ALL PIPES ON ITS SYSTEM?

A. No, while efforts continue to evaluate and improve the data records for the pipeline system, the majority of the pipeline system was installed prior to computers, scanners, geo-coding, and most forms of digital data. To the extent historical records were maintained, minimal and imprecise information was often recorded. In 2019 and 2020, BH Nebraska Gas focused on an effort to lay the foundation for future improvements to the Company's data. This included the completion of data migration – combining legacy Geographic Information System ("GIS") for distribution pipelines and transmission pipelines into one platform for DIMP and one for TIMP. As discussed below, the Company has implemented a DIIP to continue improving system records. The DIIP is essential to BH Nebraska Gas' ability to accurately locate its pipelines as required by the Nebraska One-Call Notification System Act.

Q. WHAT MEASURES IS BH NEBRASKA GAS IMPLEMENTING TO IMPROVE ITS INTEGRITY PROGRAMS?

A. BH Nebraska Gas continues to use a relative risk model to evaluate risk by threat and to aid in prioritizing action for mitigation of threats posing the highest risk to the system. The DIMP and TIMP risk models for BH Nebraska Gas were implemented in 2020, and as part of annual continuous improvement procedures conducted by BH Nebraska Gas, updates to both risk model inputs are being made to improve data quality and collect Subject Matter Expertise input. In 2025, the use of additional technology to further enhance our risk evaluation is being implemented. This technology, which will consume the risk model results, will further drive risk-based decision making by

evaluating the risk on different asset types in a consistent manner. The intent of these efforts is to improve risk identification and prioritization on the BH Nebraska Gas system.

A. The SSIR Supports the Company's Programmatic Approach

Q. WHAT PROJECTS ARE CURRENTLY INCLUDED IN THE SSIR?

A. In general, the SSIR includes capital investments for all the types of projects that were previously approved in BH Nebraska Gas' last rate review. Operations & Maintenance ("O&M") expenses associated with these projects are not currently recovered through the SSIR, except those O&M expenses associated with the Company's DIIP. The list of 2026 SSIR Projects can be found in Direct Exhibit TVB-2.

Q. PLEASE DESCRIBE HOW BH NEBRASKA GAS IDENTIFIES AND RANKS RISK ON ITS SYSTEM.

A. BH Nebraska Gas has continued a process that is the result of a collaboration between the Asset Risk team and the Nebraska operations team. Using historical records in conjunction with the prior year's data, a risk analysis is performed using an algorithm as described in the integrity management plans. These results are validated and reviewed through state-level subject matter expert meetings. Projects are then developed and ranked through a process to address the highest consequence project first.

This process is updated when relevant information becomes available through the implementation of the integrity management programs and incorporates subject matter experts ("SMEs"), including operations team members, to ensure integration of local system knowledge.

Q. PLEASE EXPLAIN THE PROCESS FOR ANALYZING PROJECTS FOR INCLUSION IN THE SSIR.

A. BH Nebraska Gas has focused on two initiatives through the SSIR Process: (a) threat identification, and (b) threat mitigation. Threat identification is a vital component of integrity management and allows BH Nebraska Gas to proactively identify infrastructure where the risk, based upon the likelihood of failure ("LOF") and consequence of failure, is unacceptably high. Threat mitigation is also a vital component of integrity management and allows BH Nebraska Gas to proactively implement a plan to mitigate known threats. Supported by the SSIR, BH Nebraska Gas has enhanced the pace of these integrity management initiatives and identified threats and implemented mitigative programs to improve the BH Nebraska Gas system.

Q. PLEASE DESCRIBE HOW BH NEBRASKA GAS PRIORITIZES PROJECTS WITHIN THE THREAT MITIGATION PROGRAMS.

A. BH Nebraska Gas coordinates with subject matter experts from the Asset Risk team and the operations teams to gather system information and conduct an analysis based on population density to locate and identify risk. The team also identifies and conducts an analysis of specific incidents, including leaks, which have occurred in the prior years. Projects are then identified and ranked by risk jointly between the Asset Risk team and the operations team.

Q. DOES PHMSA PROVIDE ANY GUIDANCE REGARDING SYSTEM THREATS?

A. Yes. 49 C.F.R. Part 192, Subpart P requires operators to consider the following eight primary distribution system threat categories:

- Corrosion Failure;
- Pipe, Weld, or Joint Failure;
- Natural Force Damage;
- Equipment Failure;
- Excavation Damage;
- Incorrect Operation;
- Other Outside Force Damage; and
- Other Cause.

In addition, 49 C.F.R. Part 192, Subpart O requires operators to consider the following three primary threat categories:

1. Time-Dependent Threats;
2. Stable or Resident Threats; and
3. Time-Independent Threats.

VI. BH NEBRASKA GAS INTEGRITY PROGRAMS

A. Transmission Integrity Program

Q. DOES BH NEBRASKA GAS OPERATE ANY TRANSMISSION PIPELINES IN NEBRASKA?

A. Yes. BH Nebraska Gas owns and operates approximately 1,313 miles of transmission pipeline in the State of Nebraska that are subject to the TIMP rules. The TIMP includes the following programs and activities:

- Replacement of Transmission Pipelines
- Town Border Station Replacement program
- TOG, Spans, Shallow, and Exposed Pipe program

- Piggability
- CP and Corrosion Prevention
- Damage Prevention program
- Aerial Patrols
- Mega Rule program including MAOP reconfirmation and material verification.

Q. BRIEFLY DESCRIBE TRANSMISSION INTEGRITY PROGRAM PROJECTS FOR BH NEBRASKA GAS.

A. BH Nebraska Gas has taken steps to reduce risk on its transmission pipelines, including adding transmission assets to the risk model, adding transmission assets to the gas HCA analysis, and ensuring employees in the field are evaluating assets on a continual basis.

Projects are designed to: (1) replace at-risk transmission pipe and aging infrastructure, (2) lower pipeline pressure where appropriate to improve safety and reliability, (3) evaluate and eliminate issues in HCA's where necessary, (4) mitigate areas of corrosion risk on the transmission pipeline or (5) comply with Mega Rule requirements. Confidential Direct Exhibit JCB-5[16] is a detailed risk ranking of the Transmission and Distribution Integrity Programs. SMEs from the Asset Risk team and Operations groups provided input to the project prioritization. Additionally, the SMEs provide input regarding the Company's ability to efficiently manage multiple programs while minimizing risks. The risk ranking and the project list are reviewed and reprioritized annually to ensure the highest threats are being addressed first.

[16] *See* Confidential Direct Exhibit JCB-5 –Program Ranking for DIMP and TIMP.

Q. PLEASE DESCRIBE THE PROGRESS BH NEBRASKA GAS HAS MADE THROUGH THE TIMP PROGRAM SINCE THE IMPLEMENTATION OF THE SSIR.

A. Since implementing the SSIR, BH Nebraska Gas has successfully completed the replacement of all known TOG transmission lines and removed all known locations of non-standard line heaters through the Town Border Station replacement program. The Company has also completed approximately 3,500 feet of pressure test and replacement projects that remediated the threats associated with MAOP reconfirmation as required by the Mega Rule.

B. <u>Distribution Integrity Program</u>

Q. BRIEFLY DESCRIBE BH NEBRASKA GAS' DISTRIBUTION INTEGRITY PROJECTS.

A. BH Nebraska Gas owns and operates approximately 8,711 miles of distribution pipelines in the State of Nebraska that are subject to the DIMP rules. The DIMP includes the following programs:

- At Risk Meters Relocation program;
- Bare Steel Replacement program;
- Top-of-Ground, Spans, Shallow, and Exposed Pipe program
- CP and Corrosion Prevention;
- Town Border Stations Upgrades or Replacement program;
- Obsolete infrastructure program;
- Damage prevention; and
- Obsolete pipe program.

C. Damage Prevention Program

Q. PLEASE DESCRIBE BH NEBRASKA GAS' DAMAGE PREVENTION PROGRAM.

A. Damage to BH Nebraska Gas' facilities by third party excavators represents the number one risk to BH Nebraska Gas' system. BH Nebraska Gas' damage prevention program is managed by a separate damage prevention team that reports to BHC's Director of Pipeline Safety and Compliance Support. BH Nebraska Gas witness Mr. Kevin M. Jarosz provides more information about this program.

D. At-Risk Meter Relocation Program

Q. PLEASE DESCRIBE THE AT-RISK METER RELOCATION PROGRAM ("ARMRP").

A. BH Nebraska Gas' At-Risk Meter Relocation Program is intended to mitigate the risks associated with meter location, ownership of the connecting pipe, and ultimately the responsibility to maintain the service line. Capital costs from assets like services, meters, and regulators associated with the ARMRP, to the extent not included in base rates, are currently recovered through BH Nebraska Gas' SSIR. At-risk meters are located at the customer's property line, some distance from the building structure found on the property, and are often placed along roadways, which increases the risk of vehicular damage to the meter. Additionally, the at-risk meter is connected to the customer structure by an underground gas line known as a yard line. All facilities downstream of the meter are generally the responsibility of the customer. As such, customers are responsible for the safety of that pipeline, including maintenance, material, leak tests, and line locates. These customer-owned facilities can be

susceptible to increased risk due to lack of maintenance and improper materials or installation practices.

Also included in the ARMRP are the relocation of meters that are inside residences ("Inside Meters"). Inside meters may present a safety issue because they are susceptible to damage from customers within their homes. The consequence of a meter leak is of much greater significance because the meter does not vent to the atmosphere but into a home with large amounts of ignition sources and customers. Also, as part of the routine process of testing and exchanging meters, these meters require entrance into the customer's home or business and often second visits to re-light gas appliance.

Under the ARMRP, BH Nebraska Gas relocates at-risk meters from the inside the home or from property line to the premise and replaces yard lines using appropriate materials.

E. <u>Bare Steel Replacement Program</u>

Q. PLEASE DESCRIBE THE BARE STEEL REPLACEMENT PROGRAM.

A. The Bare Steel Replacement Program is intended to mitigate risk associated with steel pipelines that have degraded over time due to lack of coating and CP and necessitate accelerated removal. Compared with coated steel pipelines, bare steel pipelines corrode at a higher rate because there is no coating to serve as a barrier between the steel and the soil. Also, some pipeline segments may not meet today's pipeline construction standards, and some have been exposed to additional threats, such as excavation damage. In addition, there are some early vintage steel pipelines in certain areas that may pose risks because of incomplete records or construction practices not up to today's standard.

F. Barricades Program

Q. PLEASE DESCRIBE THE BARRICADES PROGRAM.

A. Some components of the BH Nebraska Gas system are located above ground to comply with federal pipeline safety regulations for accessibility and ventilation.[17] The Barricades Program is intended to address the threat of outside force damage to the Company's above ground assets by installing barricades to protect meters, regulator, and valve settings.

G. CP and Corrosion Program

Q. PLEASE DESCRIBE THE CP AND CORROSION PROGRAM.

A. CP infrastructure is to be applied to all steel pipelines according to PHMSA regulations published in 49 C.F.R. § 192.451. The Company meets this requirement by utilizing galvanic anode applications as well as Impressed Current Cathodic Protection. The Company's steel pipeline system varies from bare TOG to buried lines with various types of coatings in a variety of conditions. The CP Program is intended to address the risk of corrosion on the pipeline system, which causes wall loss of steel pipelines and increases the likelihood of a pipeline failure, through the installation of CP systems, such as groundbeds rectifiers, and remote monitoring units ("RMU").

H. Town Border Station ("TBS") Replacement Program

Q. PLEASE DESCRIBE THE TBS REPLACEMENT PROGRAM.

A. The TBS Replacement Program is intended to address threats related to corrosion, equipment failure, and other risks associated with obsolete or inefficient equipment. Many TBS facilities in service today were built in the 1950s-1960s era, well before the

[17] 49 C.F.R. § 192.199; 49 C.F.R. § 192.353.

requirements of 49 C.F.R. §192 existed. Through the TBS Replacement Program, the Company continues to replace these aging stations with components built to today's standards.

I. TOG, Span, Shallow and Exposed Pipe Replacement Program

Q. PLEASE DESCRIBE THE TOG, SPAN AND EXPOSED PIPE REPLACEMENT PROGRAM.

A. The TOG, Span, Shallow, and Exposed Pipe Replacement Program is intended to replace high-risk segments of pipeline that cross a known obstacle, such as a river or drainage, or are exposed due to time dependent factors, such as erosion. TOG pipe is also considered exposed pipe. These segments are susceptible to damage from outside forces and threats of corrosion.

J. Obsolete Infrastructure Program

Q. PLEASE DESCRIBE THE OBSOLETE INFRASTRUCTURE PROGRAM.

A. The Obsolete Infrastructure Program is intended to replace equipment at the end of its life expectancy, allow for quicker response to damages and pressure-related equipment malfunctions, and ensure that gas is available, delivered and measures for BH Nebraska Gas customers in all situations. Examples of this equipment include paper chart pressure recorders and 40G ERTs. Completion of these projects will improve safety by decreasing the consequence of potential risk.

K. Obsolete Pipe Program

Q. PLEASE DESCRIBE THE OBSOLETE PIPE PROGRAM.

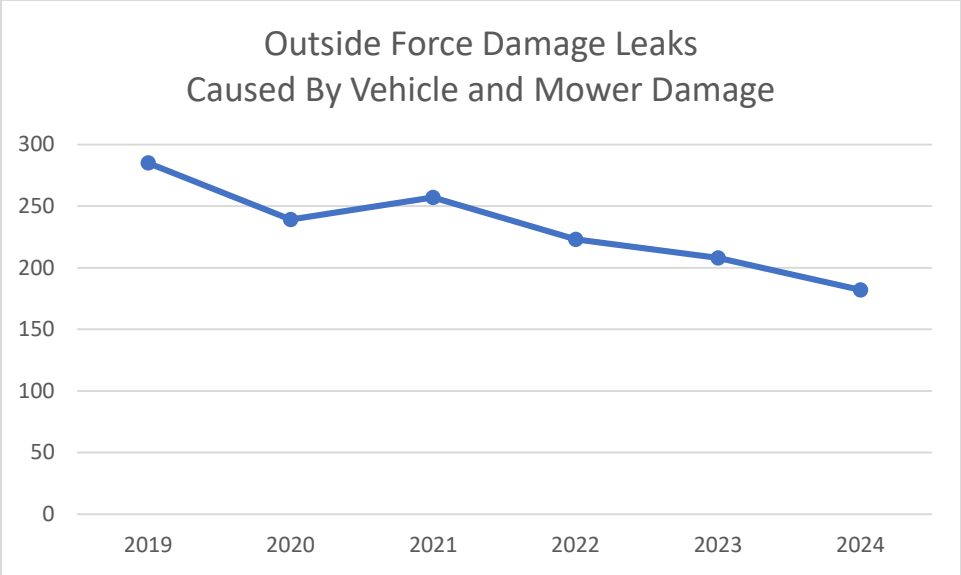
A. The Obsolete Pipe Program is intended to mitigate risk associated with vintage materials and at-risk piping that are known to no longer be suitable for natural gas

systems, including bare steel, pre-1973 Aldyl-A, PVC, disbonded coating, isolated steel, and other vintage pipe and equipment. In addition, this category includes at-risk piping such as unlocatable pipe. SMEs from the Asset Risk team and Operations groups provided input to finalize the project prioritization. Additionally, the SMEs provide input regarding the Company's ability to efficiently manage multiple programs while minimizing risks. The risk ranking and the project list are reviewed and reprioritized annually.

Q. PLEASE DESCRIBE THE PROGRESS BH NEBRASKA GAS HAS MADE THROUGH THE DIMP PROGRAM SINCE THE IMPLEMENTATION OF THE SSIR.

A. Since implementation, BH Nebraska Gas has completed the highest-risk TOG and PVC replacement projects. In 2024, BH Nebraska Gas successfully completed the replacement of 11.5 miles of bare steel in Auburn, NE. These main replacement projects proactively address corrosion, material failure, and other threats within the distribution system. Additionally, the ARMR program continues to reduce the threat of outside force damage with a steady decline in vehicle damages since 2019 as shown in Figure JCB-1.

Figure JCB-1 – Outside Force Damage



Through the SSIR Rider, the Company has also been able to install 80 RMUs on its cathodic protection system and plans to complete this program in 2026.

L. Government Mandated Facility Relocations

Q. PLEASE DESCRIBE GOVERNMENT MANDATED FACILITY RELOCATIONS.

A. BH Nebraska Gas each year encounters the need to conduct facility relocation projects in connection with government infrastructure projects. These facility relocation projects, when they occur, are directly related to pipeline safety and integrity activities. Such projects are an integral step in the overall safety and integrity process. These projects are required by government entities to enhance public welfare, including safety.

M. DIIP

Q. WHAT SPECIFIC PROGRAM HAS THE COMPANY IMPLEMENTED THAT FOCUSES ON THREAT IDENTIFICATION?

A. In order to continuously improve pipeline risk rankings for purposes of prioritizing accelerated threat mitigation efforts, it is vital for the Company to be able to identify risks, understand the consequences of those risks, close known data gaps, and continuously improve system knowledge. The DIIP is closing known data gaps and verifying current data for accuracy. Costs associated with DIIP are currently recovered through BH Nebraska Gas' SSIR.

Q. PLEASE DESCRIBE THE BH NEBRASKA GAS DIIP.

A. The DIIP is intended to improve the knowledge of the BH Nebraska Gas pipeline system to provide BH Nebraska Gas with the ability to positively confirm the integrity of the pipeline system. Knowledge gaps continue to exist with respect to the pipeline system. The DIIP is implementing specific initiatives to improve system data, including data gap reduction, GIS updates and programmatic improvements.

Q. IS THE DIIP REQUIRED TO COMPLY WITH THE TIMP AND DIMP RULES, THE DAMAGE PREVENTION RULE, AND THE MEGA RULE REQUIREMENTS?

A. Yes. DIIP is a foundational program that is essential to compliance with pipeline safety rules. The TIMP and DIMP rules and the Mega Rule require that pipeline operators know their assets in order to be able to identify and remediate threats to the system.[18] Knowing asset information is critical to the success of the Company's TIMP and

[18] See 49 C.F.R. §192.1007 and ASME B31.8S.

DIMP. The Mega Rule requires BH Nebraska Gas to maintain, or if necessary, create records for its transmission system that are TVC. The DIIP is necessary for compliance with these pipeline safety regulations. It is also required to comply with the Damage Prevention Rule in order to accurately locate pipelines as required by that rule. As PHMSA stated in its explanation of the Mega Rule: "PHMSA strongly believes that knowledge of pipeline physical properties and attributes are essential for a modern IM [integrity management] program."[19]

Q. WHAT DOES THE DIIP ENTAIL?

A. The DIIP focuses on the improvement of data in the various Company databases, primarily within the GIS, to evaluate, verify, and populate information that is missing with respect to main and service line locations, material, diameter, cathodic protection, air pressure test, MAOP and other critical information. As a part of the program multiple data improvement projects are being undertaken including efforts to survey our assets using high accuracy Global Position System ("GPS"), digitize and link legacy construction records to our assets, update and populate missing GIS data and features and model systems, including CP systems, pressure systems, and emergency response zones.

Q. PLEASE DESCRIBE HOW THE COMPANY IS ADDRESSING REMAINING DATA GAPS UNDER THE DIIP.

A. BH Nebraska Gas is missing certain information with respect to both transmission, main and service lines, including material, and diameter. While much of the future data will be obtained utilizing the Digital As-Built ("DAB") Technology, the following

[19] 84 Fed. Reg. 52194.

efforts will remedy historical data gaps, including GPS survey of assets, document research, and data evaluation, spatially correcting pipeline, pipeline features and meter service points. It also includes GIS data updates, updating missing and incomplete GIS data, and the Buried Pipe Inspection ("BPI") Report Analysis.

Q. WHAT IS DAB TECHNOLOGY?

A. BH Nebraska Gas has taken steps to ensure that detailed data is obtained for each project going forward. Until recently, field employees would draw final construction drawings, or "as builts," on paper and submit it to the Gas GIS team for digitization.

The DAB technology allows BH Nebraska Gas technicians to digitally capture data related to the installation or retirement of pipe. The technology provides a user friendly, intuitive mobile interface that is Information Operating System ("iOS") based and connected to the cloud, offering a modern scalable platform. The data captured utilizing DAB includes comprehensive traceability for materials, joints, pressure test, bar code scanning, and any other information required during the installation or retirement process. It allows a technician to create geospatially correct as-built drawings in the GIS representing the actual work performed. Additionally, this initiative complies with the tracking and traceability requirements of American Society for Testing Material ("ASTM") F2897,[20] standardizes the process for obtaining data while in the field and incorporates quality control procedures to identify appropriate checkpoints for data quality through the construction data collection process. DAB gathers more accurate data by eliminating paper records and utilizing a high accuracy

[19] ASTM F2897 is the standard specification for tracking and traceability encoding system for natural gas distribution components.

Global Positioning System device. Additionally, the near real time validation provided by DAB reduces backlog, user error, and data gaps.

Q. WHAT SPECIFIC INITIATIVES ARE INCLUDED IN THE DIIP?

A. The DIIP will include the following initiatives which are defined in Direct Exhibit JCB-6:

- Transmission/Gathering TVC Records;
- Gas Service Card Mapping;(Combined with Distribution Main & Service Centerline Survey & Distribution Data Attribute Improvement in 2023);
- Distribution Main & Service Centerline Survey;
- Distribution Data Attribute Improvement;
- GIS Pressure Systems;
- GIS Emergency Response Zones;
- GIS CP Zones;
- BPI and SME Pipeline Attribute Assessment; and
- Document Management Migration.

Q. HOW HAS THE DIIP BEEN BENEFICIAL TO BH NEBRASKA GAS AND ITS CUSTOMERS?

A. To date, the TVC records project has digitized, tagged, and uploaded 10,280 documents which will be used to analyze the TVC of existing pipeline records. The scanned documents and updated GIS attributes will be leveraged to verify and or calculate MAOP for 1,318 miles and 116 TBS's in the BH Nebraska Gas transmission system. Documents are being stored in an electronic database, which provides increased accessibility for BH Nebraska Gas employees. GIS updates for these assets

began in 2022 and is projected to complete in 2026. To date, 730 miles and 52 TBS's of the Nebraska Gas Transmission assets have been completed.

The Gas Service Card Mapping project and the Distribution Main & Service Centerline Survey & Distribution Data Attribute Improvement project were combined in 2023 to leverage cost savings. To date, 63,639 service cards have been completed and 99,627 service lines have been placed from the service cards and the survey information. Additionally, 40,056 spatial adjustments have been made, and 18,715 attributes have been updated in GIS. The survey portion of the Distribution Main & Service Centerline Survey & Distribution Data Attribute Improvement project is approximately 70% complete in the Lincoln area, 1,062 miles have been surveyed, and 64,319 services have been surveyed. This project began in 2022 and is projected to complete in 2034.

While more work is needed to complete the various aspects of the DIIP, BH Nebraska Gas is becoming more knowledgeable about the natural gas system, as required by 49 CFR Part 192.915 and 192.1007. Making records more readily available, improving the quality of the data, and putting data in the hands of people operating and maintaining the BH Nebraska Gas system increases system and community safety by increasing the awareness of threats and enhancing decision-making.

Q. PLEASE EXPLAIN BH NEBRASKA GAS' CONTINUING EFFORTS FOR THE DIIP.

A. As described above, BH Nebraska Gas has been making great progress on improving the integrity of the data of the natural gas system through digitizing and analyzing TVC

records. A large amount of work remains to be completed for the TVC records and Distribution Centerline Survey projects.

Q. WHAT ARE THE PROJECTED COSTS OF BH NEBRASKA GAS' DIIP?

A. The projected costs of BH Nebraska Gas' DIIP is discussed by BH Nebraska Gas witness Mr. Jarosz in his direct testimony.

VII. CONCLUSION

Q. DOES THIS CONCLUDE YOUR PRE-FILED DIRECT TESTIMONY?

A. Yes.

STATE OF Arkansas)

) SS

COUNTY OF Washington)

I, Jennifer C. Bingaman, being first duly sworn on oath, depose and state that I am the witness identified in the foregoing prepared testimony, and I am familiar with its contents, and that the facts set forth are true to the best of my knowledge, information and belief.

Jennifer C. Bingaman

Subscribed and sworn to before me this 14th day of April, 2025.

(SEAL)
CASANDRA GIBSON
Notary Public
Washington County, Arkansas
Commission Expires 08/06/2032
Commission #12719480

Notary Public

My Commission Expires: 08/06/2032