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NATURAL GAS DEPT.

August 2, 2021

Nebraska Public Service Commission
1200 N Street
Suite 300
Lincoln, NE 68508

Attn: Mr. Mike Hybl
Executive Director

RE: Black Hills Nebraska Gas, LLC d/b/a Black Hills Energy
Commission Application No. NG-112.1
In the Matter of the Application of Black Hills Nebraska Gas, LLC
d/b/a Black Hills Energy seeking approval of a 2022 System Safety & Integrity Rider

Dear Mr. Hybl:

By this Application, Black Hills Nebraska Gas, LLC d/b/a Black Hills Energy (“BH Nebraska Gas”) is proposing to adjust the System Safety and Integrity Rider (“SSIR”) Charge to be effective on January 1, 2022 for Rate Areas One, Two, Three, and Five. The adjusted 2022 SSIR Charges will apply to rate schedules applicable to all BH Nebraska Gas Jurisdictional Residential, Commercial, and Energy Options customers.

The rates submitted with this Application reflect the overall SSIR Charges applicable to the referenced rate schedules to cover the incremental annual revenue requirement impact of costs incurred by the Company with respect to SSIR Projects as defined on Tariff Sheets Nos. 127 through 131. These eligible projects were not included in the rate base calculation in the rate review for Nebraska assets in Commission Application No. NG-109. Each of the SSIR Projects will be in service and used and useful by December 31, 2022. If approved by the Commission, the monthly Safety and Integrity Charges effective on January 1, 2022 shall be as follows:

	Residential	Commercial	Commercial – Energy Options
Proposed SSIR Charge - \$/month	\$2.07	\$6.25	\$6.25

The proposed 2022 SSIR has been calculated in accordance with Tariff Sheet Nos. 127 through 131, as more fully discussed herein.

This filing includes the following exhibits:

Exhibit 1 – Narrative describing 2022 projects included in SSIR

Exhibit 2 - Calculation of the SSIR

Calculation of SSIR Charge

The calculation of the SSIR Charge is shown on the tables that comprise Exhibit 2 of this SSIR Application. A summary of the information shown on each 2022 SSIR Application schedule is as follows:

Table A – this table shows the derivation of the 2022 SSIR for the Residential and Commercial¹ customer classes. The rates are determined by dividing each customer class’s portion of (1) the jurisdictional revenue requirement attributable to 2022 capital projects and (2) the jurisdictional portion of 2022 Data Infrastructure Improvement Program (“DIIP”) costs, by the estimated number of bills.

Table B – this table shows the True Up amounts. There are no 2022 True Up amounts, but future filings will include true ups based on customer bills, capital revenue requirement costs and DIIP costs.

Table C – this table shows the calculation of the statewide revenue requirement resulting from the 2022 capital SSIR Projects. The statewide revenue requirement for each of the respective years is as follows:

	Capital Projects Jurisdictional Revenue Requirement	DIIP Jurisdictional Revenue Requirement ²	Total Jurisdictional Revenue Requirement
2022 Projects	\$4,050,068	\$3,431,238	\$7,481,306
Total	\$5,485,677	\$4,176,055	\$9,661,732

The determination of the revenue requirement requires calculation of the incremental revenue required to compensate the Company and includes: (i) a return, at a percentage equal to the Company’s proposed authorized weighted average cost of capital including an authorized return on equity of 9.5% grossed up for taxes, on the projected increase in the month ending net plant in-service balances associated with the Projects; (ii) the plant-related ownership costs associated with

¹ For calculation of rates, Commercial and Commercial – Energy Options customers are combined.

² Only the current year DIIP Jurisdictional Revenue Requirement amount is included in the SSIR rate for 2022.

such incremental plant investment, including depreciation less any retirements, accumulated deferred income taxes (ADIT), and all taxes including income taxes and property taxes, and (iii) the projected operation and maintenance (O&M) expenses related to the Projects for 2022.

Table D – this table lists jurisdictional portion of the 2022 capital SSIR Projects included in the 2022 SSIR calculation including projected in-service date, total project cost, estimated betterment credit, if any, and net project cost to be included in the revenue requirement calculation. The estimated total project cost for 2022 SSIR projects net of all betterment credits as follows:

	Total Estimated Net Project Costs
2022 Projects	\$44,548,711
Total	\$87,987,784

Table E – this table shows the calculation inputs and results for depreciation used for calculating the SSIR revenue requirement.

Table F – this table shows the calculation inputs and results for the Weighted Average Cost of Capital (WACC), interest, property tax and tax used for calculating the SSIR revenue requirement.

Table G – this table shows the summary of the calculations of Accumulated Deferred Income Taxes (ADIT) and Net Operating Loss (NOL) offset used for calculating the SSIR revenue requirement.

Table H – this table shows the detailed calculations of Accumulated Deferred Income Taxes (ADIT) used for calculating the SSIR revenue requirement.

Table I – this table shows the inputs and detailed calculations of tax depreciation used to calculate ADIT used for calculating the SSIR revenue requirement.

Table J – this table shows the inputs and calculations of the WACC used for calculating the SSIR revenue requirement.

Table K – this table assigns the 2022 capital SSIR Projects into FERC Accounts and further separates the costs into the jurisdictional component to the jurisdictional customer classes. The jurisdictional component of the revenue requirement, as shown on this table, was determined using the cost allocation principles approved in the most current general rate case, Docket No. NG-109.

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Table L – this table further separates the 2022 capital SSIR Projects into the jurisdictional customer classes. The jurisdictional customer class assignment, as shown on this table, was determined using the cost allocation principles approved in the most current general rate case, Docket No. NG-109.

Table M – this table shows (1) the summary of the sub-projects of the DIIP, including the proposed 2022 costs, (2) the portion recoverable in the SSIR revenue requirement, and (3) variances between proposed and actual costs.

Please contact me at (402) 858-3561 if you have questions or need additional information.

Respectfully,

BLACK HILLS NEBRASKA GAS, LLC
D/B/A BLACK HILLS ENERGY

/s/Tyler E. Frost
Tyler E. Frost
Manager of Regulatory & Finance
(402) 858-3561

and

/s/Douglas J. Law
Douglas J. Law, NE Bar #19436
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(402) 221-2635

Enclosures

**2022 PROJECTS
REFLECTED IN THE
SYSTEM SAFETY AND INTEGRITY RIDER
FOR BLACK HILLS NEBRASKA GAS, LLC
IN NEBRASKA**



August 2, 2021

**2022 PROJECTS REFLECTED IN THE
SYSTEM SAFETY AND INTEGRITY RIDER
FOR BLACK HILLS NEBRASKA GAS, LLC IN NEBRASKA**

Filed August 2, 2021

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2022 PROJECTS REFLECTED IN THE
SYSTEM SAFETY AND INTEGRITY RIDER
FOR BLACK HILLS NEBRASKA GAS, LLC IN NEBRASKA

I. INTRODUCTION

As set forth on Sheet Nos. 127-131 of the proposed Nebraska Gas Tariff No. 1 (the “Tariff”) of BH Nebraska Gas, LLC d/b/a Black Hills Energy (“BH Nebraska Gas” or the “Company”), all Jurisdictional Residential, Commercial, and Commercial – Energy Options customers shall be subject to a System Safety and Integrity Rider (“SSIR”) designed to collect Eligible System Safety and Integrity Costs. BH Nebraska Gas is proposing the SSIR Tariff with an effective date of January 1, 2022.

Under the proposed SSIR Tariff, the Company will be authorized to collect the revenue requirement of Eligible System Safety and Integrity Costs projected for the period January 1, 2022 through December 31, 2022, through the Safety and Integrity Charge (the “SSIR Charge”) over the same period. The SSIR Charge to be applied to each Rate Schedule is as set forth on the Rate Schedules and Other Charges Schedule of Rates, Sheet No. 78 of the Tariff.

The SSIR Tariff requires that this application include pertinent information and supporting data related to eligible SSIR costs, including, at a minimum, SSIR Project descriptions and scopes, SSIR Project costs, and in-service dates.

The SSIR Tariff defines Eligible System Safety and Integrity Costs to mean:

- 1) A return, at a percentage equal to the Company’s currently authorized weighted average cost of capital grossed up for taxes, on the projected increase in the jurisdictional component of the month ending net plant in-service balances associated with the Projects for the particular calendar year in which the SSIR Charge shall be in effect, exclusive of all plant in-service included in the determination of the revenue requirements approved in the Company’s last general rate case;
- 2) The plant-related ownership costs associated with such incremental plant investment, including depreciation, accumulated deferred income taxes, and all taxes including income taxes and property taxes; and
- 3) The projected jurisdictional component of the operation and maintenance expenses related to the Projects for the particular year in which the SSIR Charge shall be in effect.

The return and income taxes and plant related costs associated with improvements or upgrades to facilities, made at the discretion of the Company to extend service or for future growth that is not

specifically required by a statute or regulation, shall be excluded from Eligible System Safety and Integrity Costs.

As set forth in the SSIR Tariff, SSIR Projects (also referenced in this filing as “Projects”) mean:

- i. Projects to comply with Code of Federal Regulations (“CFR”) Title 49 (Transportation), Part 192 (Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards), Subpart O (Gas Transmission Pipeline Integrity Management), including Projects in accordance with the Company’s transmission integrity management program (“TIMP”) and Projects in accordance with State enforcement of Subpart O and the Company’s TIMP;
- ii. Projects to comply with CFR Title 49 (Transportation), Part 192 (Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards), Subpart P (Gas Distribution Pipeline Integrity Management), including Projects in accordance with the Company’s distribution integrity management program (“DIMP”) and Projects in accordance with State enforcement of Subpart P and the Company’s DIMP;
- iii. Projects to comply with final rules and regulations of the U.S. Department of Transportation’s Pipeline and Hazardous Materials Safety Administration (“PHMSA”) that become effective on or after the filing date of the application requesting approval of the SSIR;
- iv. Facility relocation projects with a per-Project total cost of \$20,000 or more, exclusive of all costs that have been, are being, or will be reimbursed otherwise, that are required due to construction or improvement of a highway, road, street, public way or other public work by or on behalf of the United States, the State of Nebraska, a political subdivision of the State of Nebraska or another entity having the power of eminent domain; and
- v. Projects to ensure gas is available, delivered and measured for our customers in all situations. In some cases, these projects will not replace any existing infrastructure, and are required to maintain minimum pressure requirements on our distribution system to prevent loss of customers on a winter peak day. These projects include “Obsolete Infrastructure Projects”, with examples such as Charts, Meter Install, Odorizer, and Valve projects.

As shown in Exhibit 2, Table K, to this application, the Company has identified 68 individually numbered Capital SSIR Projects and 1 Operations and Maintenance (“O&M”) Expense SSIR Projects for the instant filing. In total, the Company’s projected capital and O&M expenditures for 2022 SSIR Projects total \$54,951,322. All Projects will be in service in 2022.

Additionally, the Company each year encounters the need to conduct facility relocation projects in connection with municipal infrastructure projects. Municipalities typically do not finalize their plans for infrastructure projects for a particular calendar year, however, until late in the previous calendar year or early in the calendar year in which those projects will be conducted. Consequently, although the Company is aware of several potential municipal infrastructure projects in 2022 (*see* Section II.I below) that may require the Company to conduct facility relocation projects the costs of which are Eligible System Safety and Integrity Costs for recovery through the SSIR Tariff, those Projects are not sufficiently definitive at this time for the Company to request prospective recovery of Eligible System Safety and Integrity Costs through this filing. Therefore, as part of its annual surveillance report, the Company will provide an update of its facility relocation projects in connection with municipal infrastructure projects and, through subsequent annual filings, will seek to recover the Eligible System Safety and Integrity Costs associated with those projects.

The Company uses three distinct risk models corresponding to the TIMP, DIMP and the At-Risk Meter Relocation (“ARMR”) Program. All three models use objective and external factors and provide scores that correlate to proactive analysis of system risk, as described below.

- 1) The TIMP risk model is based on PHMSA mandates and laws enacted in 2004 which are very prescriptive. It is a relative risk ranking that utilizes a Risk of Failure = Likelihood of Failure * Consequence of Failure algorithm. It considers the nine primary threats categories recognized by PHMSA 192 Subpart O and ASME B31.8S: External Corrosion, Internal Corrosion, Stress Corrosion Cracking, Third Party Damage, Weather and Outside Force Damage, Manufacturing Defects, Construction Defects, Incorrect Operations, and Equipment Failure. The range of scores are a relative percentage of Risk of Failure (“ROF”).
- 2) The DIMP risk model¹ is based on PHMSA mandates from 2011 and is much less prescriptive. It uses spatial analysis and other external factors beyond leak and damage history to assess eight threat categories: Corrosion Failure; Natural Force Damage; Excavation Damage; Other Outside Force Damage; Pipe, Weld, or Joint Failure; Equipment Failure; Incorrect Operation; Other Causes. Each threat category has multiple sub-threats, creating 75 sub-threats² to be evaluated for each project. The likelihood of failure and consequence of failure and asset consequence of sub-threats are quantified and accumulated to determine the score for projects.

¹ The Black Hills Energy DIMP O&M Risk Assessment was originally filed *In the Matter of the Application of Black Hills Nebraska Gas, LLC, d/b/a Black Hills Energy, Rapid City, South Dakota, seeking approval or a general rate increase*, Application No. NG-109 (“NG-109”).

² The Threat Matrix of the 75 sub-threats was originally filed in NG-109.

- 3) The ARMOR risk model³ is unique because most of the pipe involved is customer owned pipe, so the risk ranking is based on nearby damages. Meter location data is used to identify meters most likely at risk based on location assignment. Leak data is then applied to determine a subset of those meters that are most likely in harms way based on historic damage. The DIMP risk score and consequence threats are used to further prioritize the results. Finally, interpolation zones are created based on the DIMP risk data to assign remaining meters a ranking.

In addition to the risk models, the Company also considers other criteria, such as the availability of internal and external crews; project management constraints; local economic development plans; customer inconvenience and impact; other specific regulatory requirements; threat assessment; corrosion control analysis; pipeline vintage; pipeline material; pipeline design and class location; pipeline configuration and segmentation; pipeline system constraints; pipeline replacement history; population density; pipeline maintenance and internal inspection history; pipeline piggability; existence and reliability of pipeline asset and testing records; pipeline leakage and other incident history; subject matter expert knowledge; Project timeframe; weather and climate constraints on the construction season; permitting constraints; probability of pipeline testing failures and dewatering constraints; service outage management; and pipeline source of supply and availability of alternate gas supply.

As part of the analysis, the proposed SSIR Tariff requires the Company to identify and describe the proposed SSIR Projects that are for high-risk gas infrastructure by providing its risk assessment for each such SSIR Project including, if applicable, the probability of failure, the consequences of failure for the SSIR Project and how the Company prioritized the SSIR Project for which it seeks recovery. There are no SSIR Projects included within this filing that fall into this category.

³ The workflow of the ARMOR Program Identification & Prioritization Process was originally filed in NG-109.

II. 2022 SSIR PROJECTS

A. Replacement of Bare Steel Distribution Main

1. Background

The Company operates approximately 8,443 miles of distribution system⁴ in Nebraska, of which approximately six-percent (6%), approximately 504 miles, are bare steel distribution main with various dates of installation ranging from the 1930s to approximately 1960. Although age alone does not determine the integrity of a pipeline system, some older pipeline facilities that are constructed of certain materials, including bare steel, may have degraded over time. It becomes increasingly difficult to maintain effective corrosion protection because of the age of the system, and bare steel pipeline, in coordination with the State Fire Marshall's office, is no longer cathodically protected which has necessitated an 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, many 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. Based upon known data, including installation records and construction methods, leakage history, cathodic protection data, damage history and population density, the Company's DIMP identifies bare steel segments that are higher risk.

2. SSIR Project Classification

a) Classification Under SSIR Tariff

The Company identified two bare steel distribution main pipeline segments requiring remediation under CFR Title 49, Part 192, Subpart P, DIMP. Section 192.1007 requires a pipeline operator to identify threats, evaluate and risk rank, and identify and implement measures to address risks.

b) Objective Criteria Analyzed

The Company used the objective criteria included in the DIMP risk model, as well as the availability of internal and external crews, project

⁴ The miles of distribution operated by the Company has been updated, consistent with Department of Transportation (DOT) reporting, from what was originally filed in NG-109.

management constraints, local economic development plans and customer impact.

3. **Program Description**

The Company has identified two specific bare steel distribution main replacement projects scheduled to be completed in 2022. Typically for distribution line replacement projects, polyethylene pipe is used for both the distribution mains and associated service lines unless the system is required to operate above 100 pounds per square inch gauge (“psig”). If the system is required to operate above 100 psig, then steel pipe with fusion bonded epoxy coating is utilized. Bare Steel pipe is associated with accelerated corrosion and a construction date that usually predates the creation of formal construction standards in the natural gas utility industry. The total capital expenditure for these SSIR Projects in 2022 is estimated to be \$2,500,000.

4. **Specific Projects**

a) **Wayne, Nebraska – Bare Main Replacement**

This SSIR project is a continuation of the 2021 replacement project and will consist of replacing an approximate 28,636 feet of unprotected bare steel main that was installed in the 1970’s in Wayne, NE. It will also involve the replacement of an approximate 345 service lines, each averaging 50 to 100 feet in length with one-inch PE pipe. The max score for this project is 1951.6 based on the risk model.

The estimated total capital cost of this SSIR Project is \$2,190,000. The anticipated in-service date is November 1, 2022.

b) **Lincoln, Nebraska – Bare Main Replacement**

This SSIR project will consist of replacing 3,300 feet of unprotected bare steel main that was installed in the 1930’s in Lincoln, NE. This project has not yet been scored but was prioritized based on low cathodic readings and the pipeline’s close proximity to Memorial Stadium.

The estimated total capital cost of this SSIR Project is \$310,000. The anticipated in-service date is November 1, 2022.

B. Replacement of Transmission Pipeline

1. Background

BH Nebraska Gas operates more than 1,200 miles of transmission system in Nebraska. Although age alone does not determine the integrity of a pipeline system, some older pipeline facilities installed prior to 1960 are constructed of certain materials and with certain coatings that have degraded over time. Even though these transmission lines are cathodically protected, it becomes increasingly difficult to maintain effective corrosion protection because of the age of the system. Based upon known data, including installation records and construction methods, leakage history, cathodic protection data, damage history and population density, the Company's TIMP identifies transmission pipeline segments that are higher risk.

2. SSIR Project Classification

a) Classification Under SSIR Tariff

The Company identified no transmission pipeline segments displaying safety threats requiring remediation in 2022 under CFR Title 49, Part 192, Subpart O, TIMP. Section 192.917 requires a pipeline operator to evaluate and remediate pipeline segments where corrosion has been identified that could adversely affect the integrity of the line.

b) Objective Criteria Analyzed

The Company used the objective criteria included in the TIMP risk model, as well as the availability of internal and external crews, project management constraints, local economic development plans and customer impact.

3. Program Description

The Company has identified no transmission replacement projects to be included within this filing.

C. **Barricades**

1. **Background**

These SSIR Projects involve the installation of barricades to protect meter, regulator and valve settings from outside force damage. This threat is largely caused by meter loops being at the customer's property line, in an alley or adjacent to the street. In addition, the widening of streets and highways, increased utilization of agricultural land, and increased traffic from both mechanized farm equipment and motor vehicles have rendered many meters more vulnerable to outside force damage. Often times, these meters are bumped by vehicles backing out of garages or hit alongside a street that result in a bent meter or leak to the meter loop. Alongside meter loops, regulator and valve sets also are susceptible to outside force damage both in city limits and rural areas. The occurrence of such damage has increased over the years, and Company records show that the greatest risk to its distribution system is outside force damage, much of which is a result of meters being hit by vehicles and farm equipment.

2. **SSIR Project Classification**

a) **Classification Under SSIR Tariff**

The Company identified no facilities requiring remediation in 2022 under CFR Title 49, Part 192, Subpart P, DIMP. Section 192.1007 requires a pipeline operator to identify threats, evaluate and risk rank, and identify and implement measures to address risks.

b) **Objective Criteria Analyzed**

The Company used the objective criteria included in the DIMP risk model, as well as the availability of internal and external crews, project management constraints, local economic development plans and customer impact.

3. **Program Description**

Barricades are structures typically fabricated from pipe material and resemble a fence or cage-like structure around the meter. For most meter applications, the Company installs prefabricated meter barricades manufactured with two-inch pipe. Larger meters, regulator stations or valve settings may require custom fabrication to properly fit and protect the asset. The locations requiring the installation of a barricade are determined by field personnel working in conjunction with the Company's integrity management members to determine which facilities are at

high risk. Factors in this determination include, but are not limited to, previous damage history, proximity to roadways, field observations and system operating pressures.

The Company has identified no barricade installation projects to be included within this filing.

D. Cathodic Protection and Corrosion Prevention

1. Background

Cathodic protection infrastructure is to be applied to all steel pipelines according to PHMSA regulations published in 49 CFR Section 192.451. The Company meets this requirement by utilizing galvanic anode applications as well as Impressed Current Cathodic Protection. Cathodic protection is an electrochemical process used to protect steel structures in contact with soil. The soil is the electrolyte portion of the corrosion cell with the pipeline as the cathode of the electrical circuit. The intent in the application of cathodic protection is to convert the oxygen in the soil to a hydroxyl ion thus causing the environment surrounding the pipeline to become more alkaline. Steel tends to passivate in alkaline environments which result in very low corrosion rates. Magnesium anodes are installed in situations where a small amount of electrical current is needed to achieve adequate cathodic protection levels. Cathodic protection rectifiers with graphite anodes, as an Impressed Current Cathodic Protection system, are installed when a larger amount of electrical current is needed to achieve adequate cathodic protection levels.

The Company's steel pipeline system varies from bare Top of Ground ("TOG") to buried lines with various types of coatings in a variety of conditions. The electrical current requirement for each type of installation, whether bare or coated, covers a wide range. The cathodic protection levels are measured periodically as required along the pipeline. The periodic surveys will readily indicate deficiencies in the cathodic protection system. These deficiencies can be indicative of active corrosion, dis-bonded coating, anode degradation or shorted pipeline casings.

2. SSIR Project Classification

a) Classification Under SSIR Tariff

The Company identified no projects requiring cathodic protection remediation in 2022 under CFR Title 49, Part 192 that be subject to either Subpart O (TIMP) or Subpart P (DIMP) depending on whether the pipe segment is classified as transmission or distribution pipe. For transmission segments, Section 192.917 requires a pipeline operator to evaluate and remediate pipeline segments where corrosion has been identified that could adversely affect the integrity of the line. Remediation of distribution segments is specified in Section 192.1007, which requires a pipeline operator to identify threats, evaluate and risk rank, and identify and implement measures to address risks.

b) **Objective Criteria Analyzed**

The Company used the objective criteria included in the DIMP and TIMP risk models, as well as the availability of internal and external crews, project management constraints, local economic development plans and customer impact.

3. **Program Description**

The Company has identified no cathodic protection projects to be included within this filing.

E. Town Border Stations (“TBS”)

1. Background

Many TBS facilities in service today were built in the 1950s-1960s era, well before the requirements of 49 CFR 192 existed. Although many of these stations have provided service for well over 50 years, they may not have been built in accordance with today’s standards. Many TBS facilities have outdated equipment including shop fabricated heaters that are inefficient, weighted lever reliefs, and excessive pressure drop regulators. Because of their age and certain construction methods at the time of installation, many station components are displaying corrosion concerns on the piping and other components. In some cases, the TBS equipment and piping are still adequate, but the existing line heater is inefficient, undersized and/or corroding and needs to be replaced. Through a multi-year program, the Company plans to replace these aging stations and/or line heaters with components built to today’s standards.

2. SSIR Project Classification

a) Classification Under SSIR Tariff

The Company identified pipeline system components displaying safety threats requiring remediation in 2022 under CFR Title 49, Part 192 that be subject to either Subpart O (TIMP) or Subpart P (DIMP). For transmission components, Section 192.917 requires a pipeline operator to evaluate and remediate pipeline segments where corrosion has been identified that could adversely affect the integrity of the system. Remediation of distribution components is specified in Section 192.1007, which requires a pipeline operator to identify threats, evaluate and risk rank, and identify and implement measures to address risks.

b) Objective Criteria Analyzed

The Company used the objective criteria included in the DIMP and TIMP risk models, as well as the availability of internal and external crews, project management constraints, local economic development plans and customer impact.

3. Program Description

Through a multi-year program, the Company plans to replace these aging stations and/or line heaters with components built to today’s standards. The new stations will be built with new components including regulators, pressure relief and isolation valves, line heaters and coated or painted new

pipings. For 2022, the Company has identified and scheduled the replacement of six TBS at a total estimated capital cost of \$960,000. The anticipated in-service date for all projects is November 30, 2022.

The Company has also identified 27 Line Heaters that need replacement at a total estimated capital cost of \$581,630. The anticipated in-service date for all projects is November 1, 2022.

4. **Specific Projects**

a) **Burwell, Nebraska – TBS Relocation & Replacement**

This SSIR Project includes the replacement of a TBS in Burwell, NE, in an effort to bring the TBS up to current code requirements and to improve the safety and reliability of the facility. The existing TBS has gas carrier pipe that is used as piping support resting on concrete which is a corrosion concern, valves that are in poor condition, and obsolete pressure regulating and pressure relief equipment that needs updating. The max score for this project is 10.966 based on the risk model. The new TBS will include proper pipe supports, standby alternate path to avoid system outage, new valves, and new pressure regulating and pressure relief equipment.

The total capital cost of this SSIR Project is estimated at \$165,000. The anticipated in-service date is November 30, 2022.

b) **Chadron, Nebraska – TBS Relocation & Replacement**

This SSIR Project includes the replacement of a TBS in Chadron, NE, in an effort to bring the TBS up to current code requirements and to improve the safety and reliability of the facility. The existing TBS has gas carrier pipe that is used as piping support resting on concrete which is a corrosion concern, valves that are in poor condition, and obsolete pressure regulating and pressure relief equipment that needs updating. The max score for this project is 12.176 based on the risk model. The new TBS will include proper pipe supports, standby alternate path to avoid system outage, new valves, and new pressure regulating and pressure relief equipment.

The total capital cost of this SSIR Project is estimated at \$215,000. The anticipated in-service date is November 30, 2022.

c) **Kimball, Nebraska – TBS Relocation & Replacement**

This SSIR Project includes the replacement of a TBS in Kimball, NE, in an effort to bring the TBS up to current code requirements and to improve the

safety and reliability of the facility. The existing TBS has gas carrier pipe that is used as piping support resting on concrete which is a corrosion concern, valves that are in poor condition, and obsolete pressure regulating and pressure relief equipment that needs updating. The max score for this project is 11.306 based on the risk model. The new TBS will include proper pipe supports, standby alternate path to avoid system outage, new valves, and new pressure regulating and pressure relief equipment.

The total capital cost of this SSIR Project is estimated at \$125,000. The anticipated in-service date is November 30, 2022.

d) **Loop City, Nebraska – TBS Relocation & Replacement**

This SSIR Project includes the replacement of a TBS in Loop City, NE, in an effort to bring the TBS up to current code requirements and to improve the safety and reliability of the facility. The existing TBS has gas carrier pipe that is used as piping support resting on concrete which is a corrosion concern, valves that are in poor condition, and obsolete pressure regulating and pressure relief equipment that needs updating. The max score for this project is 11.95 based on the risk model. The new TBS will include proper pipe supports, standby alternate path to avoid system outage, new valves, and new pressure regulating and pressure relief equipment.

The total capital cost of this SSIR Project is estimated at \$165,000. The anticipated in-service date is November 30, 2022.

e) **Mason City, Nebraska – TBS Relocation & Replacement**

This SSIR Project includes the replacement of a TBS in Mason City, NE, in an effort to bring the TBS up to current code requirements and to improve the safety and reliability of the facility. The existing TBS has an open flame line heater without proper safety controls, gas carrier pipe that is used as piping support resting on concrete which is a corrosion concern, valves that are in poor condition, and obsolete pressure regulating equipment that needs updating. The max score for this project is 11.12 based on the risk model. The new TBS will include a much safer and more efficient catalytic panel heater, proper pipe supports, standby alternate path to avoid system outage, new valves, and new pressure regulating and pressure relief equipment.

The total capital cost of this SSIR Project is estimated at \$165,000. The anticipated in-service date is November 30, 2022.

f) **Potter, Nebraska – TBS Relocation & Replacement**

This SSIR Project includes the replacement of a TBS in Potter, NE, in an effort to bring the TBS up to current code requirements and to improve the safety and reliability of the facility. The existing TBS has gas carrier pipe that is used as piping support resting on concrete which is a corrosion concern, valves that are in poor condition, and obsolete pressure regulating and pressure relief equipment that needs updating. The max score for this project is 11.244 based on the risk model. The new TBS will include proper pipe supports, standby alternate path to avoid system outage, new valves, and new pressure regulating and pressure relief equipment.

The total capital cost of this SSIR Project is estimated at \$125,000. The anticipated in-service date is November 30, 2022.

Multiple Locations, Nebraska – Line Heater Replacement

The company has identified 19 line heaters that are to be replaced with safe and efficient catalytic panel heaters. They are located throughout the state, specifically in Bartley, Belden, Belgrade, Campbell, Cedar Rapids, Dannebrog, Edgar, Edison, Farnam, Guide Rock, Holbrook, Holstein, Mason City, Oakdale, Pleasanton, Riverton, Roseland, Scotia, and Stamford. The total capital cost of these projects is estimated at \$173,610, (\$9,137 each). All projects are anticipated to be in-service November 1, 2022.

The company has identified seven line heaters to be replaced by safe and efficient manufactured water bath style line heaters. They are located throughout the state, specifically in Creighton, Fullerton, Osmond, Palmer, Shelton, Wausa, and Wood River. The total capital cost of these projects is estimated at \$402,848 (\$57,550 each). All projects are anticipated to be in-service November 1, 2022.

The company has identified one line heater to be removed, located in Winside, NE. The total capital cost of this project is estimated at \$5,172 with an in-service date of November 1, 2022.

F. Top of Ground (“TOG”), Span, Shallow and Exposed Pipe Replacement

1. Background

Natural gas pipelines installed today generally are below grade with a minimum cover of three feet. Burying pipelines reduces the overall risk of the pipeline from outside force among other threats. Many pipeline segments operated by the Company in Nebraska, however, were installed by the Company’s predecessor during the 1950s and 1960s on top of the ground. These lines today are referred to as “Top of Ground” (“TOG”) within the system. During the time these lines were installed, the Company’s predecessor made a push to serve agricultural customers and small communities and installing TOG lines expedited service to these areas and reduced installation costs. When originally installed, most line segments were laid along fence lines, section lines or other rights-of-way that did not pose a high level of risk because they were visible and known to farmers. Through time, however, property owners and lease tenants have changed, many fences have been removed, agricultural land has been developed and, in places, the TOG segments have become partially buried. These TOG segments are susceptible to outside force damage as well as corrosion threats.

Spans are segments of pipe that were intentionally installed above grade and that cross a known obstacle, which can include creeks, rivers, ditches, or highways. These pipes can be supported or unsupported. Supported spans can be attached to a bridge or similar structure. Unsupported spans are generally shorter segments of pipe that are not supported by any structures and are also known as freestanding. Spans are susceptible to outside force damage as well as corrosion threats.

The risk of damage from outside forces and threats of corrosion are significant to TOG but are even greater for pipe that is shallow or has become exposed. While TOG may have been originally laid along fence lines, section lines or other rights-of-way that did not pose a high level of risk because they were visible and known to farmers, shallow and exposed pipe are not visible and known to customers until there is imminent danger of causing damage.

While the Company will be compliant with regulatory and operational standards, such as a minimum cover of 36 inches for transmission lines, only projects that meet these definitions **and** pose a significant risk will be recommended for replacement. That risk will be based on the depth of the pipe, the location and use of the land, and the ROF.

Exposed pipe would include pipe that was originally laid above the ground (like TOG) and pipe that has not been buried deep enough as it is now visible and exposed.

2. SSIR Project Classification

a) Classification Under SSIR Tariff

TOG, Span, Shallow and Exposed Pipe Projects identified are covered under CFR Title 49, Part 192, and may be subject to either Subpart O (TIMP) or Subpart P (DIMP) depending on whether the pipe segment is classified as transmission or distribution pipe. For transmission segments, Section 192.917 requires a pipeline operator to evaluate and remediate threats to pipeline segments including where corrosion has been identified or potential outside force damage could occur that could adversely affect the integrity of the line. Remediation of distribution segments is specified in Section 192.1007, which requires a pipeline operator to identify threats, evaluate and risk rank, and identify and implement measures to address risks.

b) Objective Criteria Analyzed

The Company used the objective criteria included in the DIMP and TIMP risk models, as well as the availability of internal and external crews, project management constraints, local economic development plans and customer impact.

3. Program Description

The Company has identified seven SSIR Projects to replace TOG, Span, Shallow and Exposed pipeline segments. Pipeline segments typically are replaced with polyethylene pipe, but segments that are required to operate at a higher pressure, in excess of 100 psig, typically are replaced with steel pipe coated with fusion bonded epoxy. The total capital expenditure for these seven SSIR Projects in 2022 is estimated to be \$15,275,095. All seven TOG, Span, Shallow and Exposed Pipe SSIR Projects are expected to be completed by November 30, 2022.

4. Specific Projects

a) Eustis, Nebraska – TOG Replacement Eustis Area – 10

This SSIR project will consist of replacing 126,720 feet (24 miles) of pipe, all of which is TOG and installed between 1947 and 1963 in Eustis, NE. The max score for this project is 2,650.9 based on the risk model. The

estimated total capital cost of this SSIR Project is \$5,254,440. The anticipated in-service date is November 30, 2022.

b) **Holdrege, Nebraska – TOG Replacement 2700050-12**

This SSIR project will consist of replacing 21,120 feet (4 miles) of pipe, all of which is TOG and installed between 1957 and 1958 in Holdrege, NE. The max score for this project is 140.42 based on the risk model. The estimated total capital cost of this SSIR Project is \$875,740. The anticipated in-service date is November 30, 2022.

c) **Kearney, Nebraska – TOG Replacement 3701551-13**

This SSIR project will consist of replacing 58,766 feet (11.13 miles) of pipe, all of which is TOG and installed between 1955 and 1966 in the Kearney, NE, area. The max score for this project is 1,865.7 based on the risk model. The estimated total capital cost of this SSIR Project is \$2,436,747. The anticipated in-service date is November 30, 2022.

d) **Kearney, Nebraska – TOG Replacement 2201597-6**

This SSIR project will consist of replacing 42,979 feet (8.14 miles) of pipe, all of which is TOG and installed between 1955 and 1966 in the Kearney, NE, area. The max score for this project is 2,221.9 based on the risk model. The estimated total capital cost of this SSIR Project is \$1,782,131. The anticipated in-service date is November 30, 2022.

e) **Kearney, Nebraska – TOG Replacement 5001608-15**

This SSIR project will consist of replacing 60,720 feet (11.5 miles) of pipe, all of which is TOG and installed between 1955 and 1966 in the Kearney, NE, area. The max score for this project is 92.98 based on the risk model. The estimated total capital cost of this SSIR Project is \$2,517,753. The anticipated in-service date is November 30, 2022.

f) **Kearney, Nebraska – TOG Replacement 2402209-2 (Phase 1)**

This SSIR project will consist of replacing 55,400 feet (10.5 miles) of pipe, all of which is TOG and installed between 1955 and 1966 in the Kearney, NE, area. The max score for this project is 2,236.1 based on the risk model. The estimated total capital cost of this SSIR Project is \$2,298,818. The anticipated in-service date is November 30, 2022.

g) McCook, Nebraska – TOG Replacement 1900030-3

This SSIR project will consist of replacing 2,640 feet (0.5 miles) of pipe, all of which is TOG and installed between 1955 and 1966 in the McCook, NE, area. The max score for this project is 37.62 based on the risk model. The estimated total capital cost of this SSIR Project is \$109,468. The anticipated in-service date is November 30, 2022.

G. Meter Relocations

1. Background

These SSIR Projects involve the relocation of meter loops from their current location near a highway, street or alley to the structure to better protect them from outside force damage, while replacing the customer owned and installed “yard line” to the newly placed meter. This threat is equally caused by meter loops being at the customer’s property line, in an alley or adjacent to the street and customer owned lines not having proper materials, repairs, maintenance, installation procedures, or records. Often times, these meters are bumped by vehicles backing out of garages or hit alongside a street that result in a bent meter or leak to the meter loop. The occurrence of such damage has increased over the years, and Company records show that the 2nd greatest risk to its distribution system is outside force, much of which is a result of meters being hit by vehicles.

Also included 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 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 appliances.

Currently, BH Nebraska Gas must schedule an appointment to operate and maintain a meter located inside a customer’s premise. This meter location can result in inconvenience and disruption for customers. In addition, if the customer does not permit access to the premise, fails to honor the service appointment, or is tardy to a scheduled appointment, then the cost of waiting or rearranging the BH Nebraska Gas appointment can end up costing the Company more time and expense than if the meter is relocated outside of the premise.

The relocation of meters, whether from near a highway, street, alley or inside the residences, typically involves the installation of a new service line, the retirement of the existing meter and the installation of a new meter assembly (risers, regulator, bypass meter assembly, and meter). Only capital activity is considered eligible in the SSIR mechanism.

2. **SSIR Project Classification**

a) **Classification Under SSIR Tariff**

The Company identified these facilities requiring remediation under CFR Title 49, Part 192, Subpart P, DIMP. Section 192.1007 requires a pipeline operator to identify threats, evaluate and risk rank, and identify and implement measures to address risks.

b) **Objective Criteria Analyzed**

The Company used the objective criteria included in the ARMR risk model, as well as the availability of internal and external crews, project management constraints, local economic development plans and customer impact.

3. **Program Description**

Meter loops are typically relocated from the vulnerable location to the structure to better protect them from outside force damage. In most cases, the service lines are replaced due to age, pipe material or condition of the pipe. The decision to relocate meters is dependent upon adequate material, adequate installation information, and accurate records of a customer owned fuel lines, which is not likely. The Company plans to relocate approximately 4,331 meters in 2022. The total capital expenditure for meter relocations in 2022 is estimated to be \$21,918,624. All meter relocation SSIR Projects listed are expected to be completed by November 30, 2022.

4. **Specific Projects**

Below are the towns and cities where the 2022 Meter Relocation Projects will occur and may not correspond to the project names.

a) **Alliance, Nebraska – Meter Relocation**

The Company will relocate approximately 130 meters from vulnerable locations and place them next to structures in Alliance, NE. The meters are currently located in alleys or easements and have an average max score of 84,893.51382 based on the risk model. The total capital cost is estimated at \$647,338, and all replacements are scheduled to be in service by November 30, 2022.

b) Columbus, Nebraska – Meter Relocation

The Company will relocate approximately 312 meters from vulnerable locations and place them next to structures in Columbus, NE. The meters are currently located inside a structure and have an average max score of 17,529.77161 based on the risk model. The total capital cost is estimated at \$1,820,333, and all replacements are scheduled to be in service by November 30, 2022.

c) Gothenburg, Nebraska – Meter Relocation

The Company will relocate approximately 482 meters from vulnerable locations and place them next to structures in Gothenburg, NE. The meters are currently located in alleys or easements and have an average max score of 15,896.47418 based on the risk model. The total capital cost is estimated at \$2,411,968, and all replacements are scheduled to be in service by November 30, 2022.

d) Holdrege, Nebraska – Meter Relocation

The Company will relocate approximately 416 meters from vulnerable locations and place them next to structures in Holdrege, NE. The meters are currently located in alleys or easements and have an average max score of 59,795.22012 based on the risk model. The total capital cost is estimated at \$2,082,080, and all replacements are scheduled to be in service by November 30, 2022.

e) Lincoln, Nebraska – Meter Relocation

The Company will relocate approximately 2,120 meters from vulnerable locations and place them next to structures in Lincoln, NE. The meters are currently located inside a structure and have an average max score of 86,200.37797 based on the risk model. The total capital cost is estimated at \$10,600,762, and all replacements are scheduled to be in service by November 30, 2022.

f) Ogallala, Nebraska – Meter Relocation

The Company will relocate approximately 298 meters from vulnerable locations and place them next to structures in Ogallala, NE. The meters are currently located in alleys or easements and have an average max score of 23,806.09764 based on the risk model. The total capital cost is estimated at

\$1,492,067, and all replacements are scheduled to be in service by November 30, 2022.

g) O’Neill, Nebraska – Meter Relocation

The Company will relocate approximately 61 meters from vulnerable locations and place them next to structures in O’Neill, NE. The meters are currently located in alleys or easements and have an average max score of 47,031.23411 based on the risk model. The total capital cost is estimated at \$302,848, and all replacements are scheduled to be in service by November 30, 2022.

h) Scottsbluff, Nebraska – Meter Relocation

The Company will relocate approximately 512 meters from vulnerable locations and place them next to structures in Scottsbluff, NE. The meters are currently located in alleys or easements and have an average max score of 62,409.20967 based on the risk model. The total capital cost is estimated at \$2,561,229, and all replacements are scheduled to be in service by November 30, 2022.

H. **Obsolete Pipe Replacement**

1. **Background**

The Company currently operates approximately less than 900 miles of polyvinylchloride (“PVC”) distribution pipelines in Nebraska which were installed between the mid-1960s through 1980. By the mid-1980’s PVC was no longer a recommended piping material due to the evolution of superior piping materials, such as PE pipe, and new construction methods. There are several safety issues with PVC pipe that the Company, and the industry as a whole, face. For example, PVC pipe has a high instance of leaks at joints due to adhesive failure. Additionally, in many instances the integrity of older PVC pipe is compromised because the material becomes brittle over time, which makes PVC pipe more prone to failure due to stress intensification that occurs when soil around a pressurized pipe is removed. Also, PVC pipe was installed with tracer wire to assist in locating the pipe, and over time that tracer wire has corroded and no longer carries a current. This makes it difficult for the Company to provide accurate pipe location points, which significantly increases the risk of third party damage.

There are also pipelines made of material other than PVC that are not recommended currently, due to the evolution of superior piping materials and new construction methods, causing these types of piping to pose safety issues to BH Nebraska Gas and the public. Examples include copper, Aldyl-A, and Orangeburg.

The Company recognizes that all pipe that is no longer the industry standard may not necessarily be considered a significant high risk in the context of failure and consequence. Only such pipe that also poses a significant risk will be recommended for replacement. That risk will be based on the risk model with factors including, but not limited to, age, material, the location, and the ability to locate the pipe.

2. **SSIR Project Classification**

a) **Classification Under SSIR Tariff**

Obsolete Pipe Replacement Projects identified are covered under CFR Title 49, Part 192, and may be subject to either Subpart O (TIMP) or Subpart P (DIMP) depending on whether the pipe segment is classified as transmission or distribution pipe. For transmission segments, Section 192.917 requires a pipeline operator to evaluate and remediate threats to pipeline segments including where corrosion has been identified or potential outside force damage could occur that could adversely affect the integrity of the line. Remediation of distribution segments is specified in

Section 192.1007, which requires a pipeline operator to identify threats, evaluate and risk rank, and identify and implement measures to address risks.

b) **Objective Criteria Analyzed**

The Company used the objective criteria included in the DIMP and TIMP risk models, as well as the availability of internal and external crews, project management constraints, local economic development plans and customer impact.

3. **Program Description**

The Company has identified four specific PVC distribution main pipelines that will be replaced with PE pipe in 2022. The total capital expenditure for these four SSIR Projects in 2022 is estimated to be \$3,931,710. All four PVC SSIR Projects are expected to be completed by November 30, 2022.

4. **Specific Projects**

a) **Scottsbluff 4, Nebraska PVC 110-2653 – PVC Main Replacement**

This SSIR project will consist of replacing 15,840 feet (3 miles) of PVC main that was installed in 1969 in Chappell, NE. The max score for this project is 1,763 based on the risk model. The estimated total capital cost of this SSIR Project is \$326,916. The anticipated in-service date is November 30, 2022.

b) **Sutton 10, Nebraska PVC 380-2582 – PVC Main Replacement**

This SSIR project will consist of replacing 71,280 feet (13.5 miles) of PVC main that was installed between 1968 and 1972 in Hansen, NE. The max score for this project is 1,753.9 based on the risk model. The estimated total capital cost of this SSIR Project is \$1,471,122. The anticipated in-service date is November 30, 2022.

c) **Sutton 9, Nebraska PVC 390-2555 – PVC Main Replacement**

This SSIR project will consist of replacing 53,222 feet (10 miles) of PVC main that was installed between 1967 and 1971 in Henderson, NE. The max score for this project is 1,713.1 based on the risk model. The estimated total capital cost of this SSIR Project is \$1,098,438. The anticipated in-service date is November 30, 2022.

d) Sutton 7, Nebraska PVC 390-2891 – PVC Main Replacement

This SSIR project will consist of replacing 50,160 feet (9.5 miles) of PVC main that was installed between 1967 and 1972 in Aurora, NE. The max score for this project is 1,713.09 based on the risk model. The estimated total capital cost of this SSIR Project is \$1,035,234. The anticipated in-service date is November 30, 2022.

I. Facility Relocation Projects

The SSIR Tariff authorizes the Company to recover the costs of facility relocation projects in the SSIR Charge. The Company each year encounters the need to conduct facility relocation projects in connection with municipal 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 the public welfare, including safety.

Although the Company is currently aware of some state or municipal infrastructure projects in 2022 that may require the Company to conduct facility relocation projects, the costs of which are Eligible System Safety and Integrity Costs for recovery through the SSIR Tariff, the possibility of changes or cancellations to those or identification of additional qualified projects could arise. Therefore, as part of its surveillance reports, the Company will provide updates of its facility relocation projects in connection with state or municipal infrastructure projects and, through a subsequent filing, will seek to recover the Eligible System Safety and Integrity Costs associated with those projects that occurred.

J. MEGA Rule Projects

1. Background

In October 2019, PHMSA published what is known as the Mega-Rule I which applies to approximately 32.73 miles of steel transmission pipelines within the BH Nebraska Gas service territory. The Mega-Rule incorporates prescriptive actions required for gas transmission pipeline operators to improve pipeline safety including maximum allowable operating pressure (“MAOP”) reconfirmation per Section 192.624 and material verification per Sections 192.607 and 192.712.

MAOP Reconfirmation is required for steel transmission pipelines without traceable, verifiable, and complete (“TVC”) pressure test records located in a high consequence area (“HCA”), Class 3, or 4 locations or “grandfathered” steel transmission pipelines with a MAOP creating a specified minimum yield strength (“SMYS”) $\geq 30\%$ SMYS. Pipeline operators must 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.

The Company has targeted 50% reconfirmation by end of year 2027 and 100% reconfirmation by end of year 2034. 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
- 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 operators Material Verification Program, specific pipeline attributes must be verified including outside diameter, wall thickness, seam type and yield/tensile strength.

2. **SSIR Project Classification**

a) **Classification Under SSIR Tariff**

The Company identified the Mega Rule Projects under the PHMSA Mega-Rule I. The Mega-Rule I requires a pipeline operator to update incomplete records and ensure those new records are traceable, verifiable, and complete. The Mega-Rule incorporates prescriptive actions required for gas transmission pipeline operators to improve pipeline safety including MAOP reconfirmation per Section 192.624 and material verification per Sections 192.607 and 192.712.

b) **Objective Criteria Analyzed**

The Company used the objective criteria specified by regulations to develop the 15-year MAOP Reconfirmation plan and Material Verification plan which is based off data with the gas GIS system as well as the TIMP risk model, availability of internal and external crews, project management constraints, local economic development plans and customer impact when applicable.

3. **Program Description**

The Company has established an 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 50% by 2027 and 100% by 2034 requirement.

The Company has identified four specific projects for 2022 to commence efforts towards the 50% requirement deadline. They are located throughout the state, specifically in Bartley, Fullerton, Lexington, and Ord. The total capital cost of these projects is estimated at \$520,800; Bartley at \$25,800, Fullerton at \$250,000, Lexington at \$185,000, and Ord at \$60,000. All projects are anticipated to be in-service November 30, 2022.

4. **Specific Projects**

a) **Bartley, Nebraska**

This MAOP Reconfirmation project will consist of installing a new pressure regulating station approximately 2,200 feet to the north, upstream of the TBS where it will be positioned near the Bartley Lateral connection to the 4-inch mainline. The new pressure regulating station will provide 90psig

based off a reduced MAOP from 400psig to 90psig for the 2-inch Bartley Lateral, transitioning it from transmission classification to distribution classification. This will result in a MAOP reduction for approximately 2,200 feet of 2-inch steel pipeline and eliminate one HCA.

The estimated total capital cost for this SSIR Project is \$25,800. The anticipated in-service date is November 30, 2022.

b) Fullerton, Nebraska

This MAOP Reconfirmation project will consist of relocating the TBS a minimum of 260 feet upstream to the west, where it will be positioned near the existing 2-inch Fullerton Lateral. The regulation at the TBS will supply 34psig, reducing the downstream MAOP from 925psig to 36psig. The section of 2-inch steel main downstream of the new TBS between the new location and the existing location will be replaced with 4-inch PE main and will transition from transmission classification to distribution classification with the previously mentioned MAOP reduction.

The estimated total capital cost for this SSIR Project is \$250,000. The anticipated in-service date is November 30, 2022.

c) Lexington, Nebraska

This MAOP Reconfirmation project will require pressure testing approximately 2,950 feet of 4-inch transmission main to 1200psig with nitrogen. Upon completion of the pressure test, the line will be purged, and service will be restored to approximately 7 meters. The pressure test will establish TVC pressure test records as required by Section 192.624. Material verification will be completed as required by Sections 192.624 and 192.607.

The estimated total capital cost for this SSIR Project is \$185,000. The anticipated in-service date is November 30, 2022.

d) Ord, Nebraska

This MAOP Reconfirmation project will consist of pressure testing approximately 300 feet of 3-inch transmission main on the Ord Lateral to 900psig with nitrogen. The pressure test will start 300 feet south of the Ord TBS and end at the Ord TBS. The pressure test will establish TVC pressure test records as required by Section 192.624. Material verification will be completed as required by Sections 192.624 and 192.607.

The estimated total capital cost for this SSIR Project is \$60,000. The anticipated completion date is November 30, 2022.

K. Date Infrastructure Improvement Program (“DIIP”)

1. Background

In order to appropriately rank higher risk pipeline projects 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 Company has implemented a Data Infrastructure Improvement Program (“DIIP”) to close known data gaps and verify current data for accuracy. This data will help develop more predictive and analytical risk models, improve system mapping and ultimately help protect against our top threat of third-party damage.

As data gaps are closed and data is verified as a result of the DIIP, the results will be incorporated annually into the DIMP and TIMP risk models. The effect will be a continuous improvement of the asset risk outputs, which will enhance the models. Verification of location-based data will directly improve safety of the system as well.

As the DIIP progresses, future SSIR applications will include the impact to the DIMP and TIMP programs and risk models, the Company’s knowledge and population of high-risk-defined assets, the selection of annual portfolio of projects, and overall program(s) life cycles.

The Company has initiated a similar DIIP for transmission lines and has seen significant improvement of data by increased spatial accuracy of transmission assets, in some cases by hundreds of feet. Having accurate asset centerlines and mapping previously unmapped service lines will have a direct impact on the DIMP and TIMP, and by extension the safety of the public, environment, customers and employees. It will ensure proper one-call coverage and have practical safety impacts for 3rd party damage reduction, safe operations and emergency response.

2. SSIR Project Classification

a) Classification Under SSIR Tariff

The Company identified the DIIP under CFR Title 49, Part 192, Subpart P (DIMP) and under CFR Title 49, Part 192, Subpart O, TIMP. Section 192.1007 requires a pipeline operator to identify threats, evaluate and risk rank, and identify and implement measures to address risks. ASME B31.8S which is a referenced standard under the CFR Title 49, Part 192, Subpart O, identifies the necessary data elements needed to model risk accurately and reliably and recommends surveying all potential locations where records could exist and to remedy data deficiencies

known to the transmission pipeline. Also, PHMSA Advisory Bulletins ADB 11-01, ADB 12-06, and the Pipeline Safety, Regulatory Certainty, and Job Creation Act of 2011 direct owners to verify that data and records accurately reflect the MAOP of their pipelines within Class 3, Class 4 and in High consequence areas.

b) Objective Criteria Analyzed

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. There continues to be knowledge gaps with respect to the pipeline system. The Program will implement specific initiatives to improve system data, including data gap elimination, GIS updates, and programmatic improvements.

3. Program Description

The Company has identified the Transmission/Gathering Traceable, Verifiable and Complete (TVC) Records, Gas Service Card Mapping, Distribution Main & Service Centerline Survey, Distribution Data Attribute Improvement and the Document Management Migration projects within the DIIP as described below. The total expenditure for 2022 is estimated to be \$4,405,158, of which \$423,158 are internal costs and are not included in the SSIR Application. The remaining \$3,982,000 are external costs and are included in the SSIR Application.

4. Specific Projects

a) Transmission/Gathering Traceable, Verifiable and Complete (“TVC”) Records

This project includes gathering, scanning, and storing original construction records in a document management system and linking to the Geospatial Information System (“GIS”) asset. The documents will be used to verify Maximum Allowable Operating Pressure and MAOP attributes and update any missing pipeline attributes and features in GIS. For each transmission pipeline and station, a detailed GIS build will be performed using all available information collected from the digitized records. Relevant data will be extracted and used to perform MAOP calculations and verification. Data generated from the calculations will then be repopulated into the GIS system creating a more robust database.

The total expenditure for 2022 is estimated to be \$1,260,039 of which \$121,039 are internal costs and are not included in the SSIR Application.

The remaining \$1,139,000 are external costs and are included in the SSIR Application

b) Gas Service Card Mapping

The Gas Service Card Mapping Projects includes mapping, verifying, or adjusting the centerlines of service line as-builts (service cards) in the Company’s GIS system. These service cards are currently maintained as digital records in our document management system and linked to the service points in the GIS system, but the majority remain un-mapped in the GIS system. This project would include updating the pipeline spatial location, physical pipeline attributes and pressure test attributes in the GIS system.

The total expenditure for 2022 is estimated to be \$1,063,123, of which \$102,123 are internal costs and are not included in the SSIR Application. The remaining \$961,000 are external costs and are included in the SSIR Application.

c) Distribution Main & Service Centerline Survey

This is a high accuracy Global Position System (“GPS”) survey of mains, service lines and meter locations. This project includes adding unmapped service lines to GIS, updating the spatial location of service lines in GIS and correcting the location of service points and meters in GIS. Data examples that will also be gathered in the field include meter structure location, meter number, above grade facility data, and unlocatable pipeline information. Prioritization for pipeline assets will be aligned with the DIMP risk scores which considers unknown data in the analysis.

The total expenditure for 2022 is estimated to be \$1,257,826, of which \$120,826 are internal costs and are not included in the SSIR Application. The remaining \$1,137,000 are external costs and are included in the SSIR Application.

d) Distribution Data Attribute Improvement

This project focuses on updating high priority pipeline attributes and features in GIS that are gathered from historic data, records and GPS surveys. This project will include the review of legacy data sets including original construction records. The process to review construction records will include the record digitization, linking to GIS the original construction documents and records. GIS updates and spatial corrections to pipelines

and pipeline features will also be included in this project. Prioritization will follow the same method as the centerline survey project.

The total expenditure for 2022 is estimated to be \$795,406 of which \$76,406 are internal costs and are not included in the SSIR Application. The remaining \$719,000 are external costs and are included in the SSIR Application.

e) **GIS Pressure Systems**

This project will create unique pressure systems in GIS that will align with our Gas Valve program that is used to manage pressure regulating stations. These pressure systems will be updated with data attributes needed to manage these systems, examples of which include system MAOP and Operating Pressure. The correction of any connectivity issues with the GIS data will also be included in the scope of this project.

There are no costs for this project in 2022.

f) **GIS Emergency Response Zones**

This project focuses on the creation and standardization of Emergency Response Zones per BH Nebraska Gas's Operations and Maintenance Manual to support Emergency Valves in GIS. Emergency Response Zones allow the Company to isolate gas systems during an emergency event. This project allows BH Nebraska Gas to manage Emergency Response Zones in GIS instead of the paper systems managed by each office. This project also includes the digitization of the emergency response plans for each system and linking to these zones, it will create consistency across the Company by providing personnel with virtual access to the plans and ensuring emergency valves align with our valve maintenance database.

There are no costs for this project in 2022.

g) **GIS Cathodic Protection (“CP”) Zones**

This project includes the creation and standardization of Cathodic Protection (CP) zones and features in GIS and ensuring consistency between GIS and the CP Databases. CP test stations as well as other CP assets will be included in scope for this project.

There are no costs for this project in 2022.

h) Bare Pipe Inspection (“BPI”) and Subject Matter Expert (“SME”) Pipeline Attribute Assessment

This project uses electronically available Buried Pipe Inspection information and Subject Matter Expert knowledge to analyze and identify data issues. The data collected from these efforts are used to make attribute corrections and fill data gaps in the GIS system. The project includes a process to verify the quality of this data before any updates are made in the GIS system.

There are no costs for this project in 2022.

i) Document Management Migration

This project involves the migration of digital asset records from multiple locations to a single location within the company’s document management system. The document management system will allow easier access to the documents by enabling searches via the Metadata tags associated with each record. It will make the record lifecycle and version control more manageable.

The total expenditure for 2022 is estimated to be \$28,763, of which \$2,763 are internal costs and are not included in the SSIR Application. The remaining \$26,000 are external costs and are included in the SSIR Application.

L. Obsolete Infrastructure

1. Background

The focus of obsolete infrastructure projects is to replace obsolete 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 measured for BH Nebraska Gas customers in all situations. In some cases, these projects are required to maintain minimum pressure requirements on our distribution system to prevent loss of customers on a winter peak day. Projects to be included will be based on measurable criteria that improve safety and mitigate risk.

2. SSIR Project Classification

a) Classification Under SSIR Tariff

The Company identified the Obsolete Infrastructure Projects under CFR Title 49, Part 192, Subpart P (DIMP) and under CFR Title 49, Part 192, Subpart O, TIMP. Section 192.1007 requires a pipeline operator to identify threats, evaluate and risk rank, and identify and implement measures to address risks. Section 192.917 requires a pipeline operator to evaluate and remediate pipeline segments where corrosion has been identified that could adversely affect the integrity of the line.

b) Objective Criteria Analyzed

The objective criteria that the Company analyzed for these Projects are: pipeline design, configuration and segmentation; pipeline leakage and other incident history; population density; city plans for future growth; Project timeframe; weather and climate constraints on the construction season; permitting constraints; service outage management; pipeline source of supply and availability of alternate gas supply; and subject matter expert knowledge.

3. Program Description

The Company has identified ten specific projects in 2022. The total capital expenditures for these ten SSIR Projects in 2022 is estimated to be \$4,858,305. All ten of these SSIR Projects are expected to be completed by November 30, 2022.

4. **Specific Projects**

a) **Electronic Reading Transmitters (“ERT”) Upgrades**

The company has identified four ERT replacement projects for 2022. They are located throughout the state, specifically in Albion, McCook, Scottsbluff, and Lincoln. The total capital cost of these projects is estimated at \$4,426,352; Albion at \$1,031,385, McCook at \$1,086,165, Scottsbluff at \$919,898, and Lincoln at \$1,388,903. All projects are anticipated to be in-service November 30, 2022.

The projects will replace obsolete 40G ERTs that are reaching their life expectancy in Albion, McCook, Scottsbluff, and Lincoln, NE, with 100G ERTs. The typical life span of ERTs are 16-20 years. A fully functioning ERT provides the ability to detect active leaks, unusual consumption that the Company investigates that allows leaks to be detected. If these ERTs are not replaced, the ability to detect active leaks and unusual consumption and the accuracy of the monthly usage reads will begin to degrade rapidly and will eventually cease.

If the 40G ERT to be replaced is attached to a meter that is 25 years or older, both the meter and the ERT will be replaced. If the 40G ERT to be replaced is attached to a meter that is less than 25 years old, only the ERT will be replaced.

Replacing 40G ERTs with 100G ERTs is necessary for future implementation of an Automated Metering Infrastructure (“AMI”) program.

Ultimately, this safety-based project allows for quicker leak response.

b) **Chart Replacements**

The company has identified six chart replacement projects. They are located throughout the state, specifically in Albion, Holdrege, Lincoln, McCook, Omaha Metro, and Scottsbluff. The total capital cost of these projects is estimated at \$431,953; Albion at \$30,022, Holdrege at \$17,844, Lincoln at \$164,050, McCook at \$10,565, Omaha Metro at \$190,966, and Scottsbluff at \$18,506. All projects are anticipated to be in-service November 30, 2022.

These projects consist of replacing outdated chart recording equipment which monitors distribution system operating pressures as required by code. The existing chart recorders require a

technician to visit the site weekly or monthly, depending on the chart type, to change the paper chart. The chart recorders offer no real time pressure monitoring and they will be replaced by electronic pressure monitoring equipment that will be remotely monitored by SCADA/Gas Control and will not require regular visits.

Remotely monitored equipment that provide real-time data will give the Company the ability to detect damages resulting in large leaks and changes in pressure immediately. As SCADA and asset consequence are parts of the DIMP risk model, advanced measurement equipment allows quick response to damages. Areas without the ability to timely detect leaks or changes in pressure will be ranked higher.

Ultimately, this safety-based project will allow for quicker response to damages that result in large leaks as well as pressure regulating equipment malfunctions.

BLACK HILLS NEBRASKA GAS
SSIR RATE CALCULATION
For the Twelve Months Ended December 31, 2022

Exhibit 2
Table A
Page 1 of 1

Line No.	Item	Reference	(a)	(b)	(c)
			Residential	Commercial	Total
1	Consolidated Revenue Requirement	Table C, Line 20, column f			\$ 5,485,677
2	Allocation of Revenue Requirements to Customer Class	Table L, Line 22	72.82%	27.18%	-100%
3	Revenue Requirement by Customer Class	Line 1 * Line 2	\$ 3,994,881	\$ 1,490,796	\$ (5,485,677)
4	Data Integrity Improvement Project Estimate	Company Estimate			3,982,000
5	Allocation Factor of Account 880 from Rate Review		61.60%	24.57%	86.17%
6	Revenue Requirement by Customer Class	Line 4(c) * Line 5	2,452,998	978,240	\$ 3,431,238
7	Prior Year Over/(Under) From Total Customer Bills	Table B, Line 5	-	-	\$ -
8	Prior Year Over/(Under) From Revenue Requirement	Table B, Line 11	-	-	\$ -
9	Data Integrity Improvement Project True Up	Table B, Line 18	-	-	\$ -
10	Amount to collect in 2022	Sum of lines 3, 6, 7, 8, and 9	\$ 6,447,879	\$ 2,469,036	\$ 8,916,915
11	Forecasted Total Customer Bills (Jurisdictional Only)		3,120,071	395,362	
12	SSIR rate for 2022	Line 6 / Line 7	\$ 2.0700	\$ 6.2500	

BLACK HILLS NEBRASKA GAS
True up Calculations
For the Twelve Months Ended December 31, 2021

Exhibit 2
Table B
Page 1 of 1

2022 SSIR Application; Filed 08/02/2022; Not Applicable

Line No.	Item	Reference	(a) Year	(b) Residential	(c) Commercial	(d) Total
Customer Bill True Up						
1	Forecasted Total Customer Bills (Mar to Dec)	2020 Forecasted Filing	2021			
2	Actual Customer Bills (Mar to Dec)	Company Records	2021			
3	Difference between Actual and Forecast	Line 2 - Line 1		-	-	-
4	Forecasted Rate	2020 Forecasted Filing		\$ 0.6200	\$ 1.2300	
5	Under/(Over) Collection due to Customer Bills	Line 3 * line 4		-	-	-
6	Revenue Requirement True up					
7	Revenue Requirement (Actual)	Table C, Line 10	2021			1,435,609
8	Allocation of Revenue Requirements to Customer Class	Table M, Line 22	2021	73%	27%	
9	Revenue Requirement (Actual Allocated to Class)	Line 7 *Line 8	2021			
10	Revenue Requirement (Forecasted)	Prior Year Filing	2021			1,435,609
11	(Over) / Under Estimated Revenue Requirement	line 9 - line 10		-	-	
12	Data Improvement project true up					
13	Total Company Data Improvement Expenses (actual)					
14	Total Company Forecasted Data Improvement Expenses					
15	Allocation of Expenses to Class (From Rate Design - Jurisdictional Only)			61.60%	24.57%	86.17%
16	Data Improvement Expenses (actual)		2021	\$ -	\$ -	
17	Forecasted Data Improvement Expenses		2021			
18	(Over) / Under Estimated Expenses	Line 16 - Line 17		-	-	

Line No.	Description	Reference	(a)	(b)	(c)	(d)	(e)	(f)
			TIMP 12/31/2021	DIMP 12/31/2021	PHMSA 12/31/2021	Facility Relocate 12/31/2021	Obsolete Infrastructure 12/31/2021	Consolidated 12/31/2021
1	Gross Plant - 13 Month Average December 31, 2021	Table D, Columns (h, i, j, k)	1,314,088	10,283,338	-	-	1,271,948	12,869,373
2	Accumulated Depreciation - 13 Month Average December 31, 2021	Table E, Columns (h, i, j, k)	(3,797)	(48,705)	-	-	(6,503)	(59,004)
3	ADIT Pro Rated (net of 190 and 282)	Table H, Line 15 + Line 90	(10,611)	(82,882)	-	-	(10,248)	(103,741)
4	Total Rate Base	Line 1 + Line 2 + Line 3	1,299,680	10,151,751	-	-	1,255,197	12,706,628
5	Weighted Average Cost of Capital	Table J	6.71%	6.71%	6.71%	6.71%	6.71%	6.71%
6	Return on Transmission Plant and Transmission CWIP	Line 4 * Line 5	87,144	680,675	-	-	84,161	851,979
7	Income Tax Expense	Table F, Line 18	23,031	179,893	-	-	22,243	225,166
8	Depreciation Expense	Table E, Columns (c, d, e, f)	29,112	227,817	-	-	28,179	285,108
9	Property Tax Expense	Line 1 * 0.0057	7,490	58,615	-	-	7,250	73,355
10	Revenue Requirement	Sum of Lines 6 through 9	146,777	1,147,000	-	-	141,832	1,435,609

Line No.	Description	Reference	(a)	(b)	(c)	(d)	(e)	(f)
			TIMP 12/31/2022	DIMP 12/31/2022	PHMSA 12/31/2022	Facility Relocate 12/31/2022	Obsolete Infrastructure 12/31/2022	Consolidated 12/31/2022
11	Gross Plant - 13 Month Average December 31, 2022	Table D, Columns (h, i, j, k)	8,432,459	37,904,182	-	-	3,956,080	50,292,721
12	Accumulated Depreciation - 13 Month Average December 31, 2022	Table E, Columns (h, i, j, k)	(111,049)	(572,088)	-	-	(63,652)	(746,789)
13	ADIT Pro Rated (net of 190 and 282)	Table H, Line 30 + Line 105	(41,349)	(394,582)	-	-	(49,819)	(485,750)
14	Total Rate Base	Line 11 + Line 12 + Line 13	8,280,061	36,937,513	-	-	3,842,609	49,060,182
15	Weighted Average Cost of Capital	Table J	6.71%	6.71%	6.71%	6.71%	6.71%	6.71%
16	Return on Transmission Plant and Transmission CWIP	Line 14 X Line 15	555,178	2,476,660	-	-	257,647	3,289,485
17	Income Tax Expense	Table F, Line 36	146,726	654,547	-	-	68,092	869,365
18	Depreciation Expense	Table E, Columns (c, d, e, f)	173,395	784,756	-	-	82,007	1,040,158
19	Property Tax Expense	Line 11 * 0.0057	48,065	216,054	-	-	22,550	286,669
20	Revenue Requirement	Sum of Lines 16 through 19	923,364	4,132,017	-	-	430,296	5,485,677

BLACK HILLS NEBRASKA GAS
Gross Plant Additions

Exhibit 2
Table D
Page 1 of 1

(a) Line No.	(b) Month in Service	(c) Actual / Forecast	(e) Gross Plant Additions (Jurisdictional Only)					(h) Accumulated Balances						
			(d) TIMP	(d) DIMP	(e) PHMSA	(f) Facility Relocate	(f) Obsolete Infrastructure	(g) Consolidated	(h) TIMP	(i) DIMP	(j) PHMSA	(k) Facility Relocate	(k) Obsolete Infrastructure	(l) Consolidated
1	Jan-21	Forecast	-	-	-	-	-	-	-	-	-	-	-	-
2	Feb-21	Forecast	-	-	-	-	-	-	-	-	-	-	-	-
3	Mar-21	Forecast	-	-	-	-	-	-	-	-	-	-	-	-
4	Apr-21	Forecast	-	-	-	-	-	-	-	-	-	-	-	-
5	May-21	Forecast	-	-	-	-	-	-	-	-	-	-	-	-
6	Jun-21	Forecast	-	-	-	-	-	-	-	-	-	-	-	-
7	Jul-21	Forecast	-	-	-	-	-	-	-	-	-	-	-	-
8	Aug-21	Forecast	445,219	22,421,704	-	-	3,307,064	26,173,987	445,219	22,421,704	-	-	3,307,064	26,173,987
9	Sep-21	Forecast	-	-	-	-	-	-	445,219	22,421,704	-	-	3,307,064	26,173,987
10	Oct-21	Forecast	-	1,901,747	-	-	-	1,901,747	445,219	24,323,451	-	-	3,307,064	28,075,734
11	Nov-21	Forecast	7,428,522	7,934,817	-	-	-	15,363,339	7,873,741	32,258,268	-	-	3,307,064	43,439,073
12	Dec-21	Forecast	-	-	-	-	-	-	7,873,741	32,258,268	-	-	3,307,064	43,439,073
13	13 Month Average								1,314,088	10,283,338	-	-	1,271,948	12,869,373
14	Jan-22	Forecast	-	-	-	-	-	-	7,873,741	32,258,268	-	-	3,307,064	43,439,073
15	Feb-22	Forecast	-	-	-	-	-	-	7,873,741	32,258,268	-	-	3,307,064	43,439,073
16	Mar-22	Forecast	-	-	-	-	-	-	7,873,741	32,258,268	-	-	3,307,064	43,439,073
17	Apr-22	Forecast	-	-	-	-	-	-	7,873,741	32,258,268	-	-	3,307,064	43,439,073
18	May-22	Forecast	-	-	-	-	-	-	7,873,741	32,258,268	-	-	3,307,064	43,439,073
19	Jun-22	Forecast	-	-	-	-	-	-	7,873,741	32,258,268	-	-	3,307,064	43,439,073
20	Jul-22	Forecast	-	-	-	-	-	-	7,873,741	32,258,268	-	-	3,307,064	43,439,073
21	Aug-22	Forecast	-	-	-	-	-	-	7,873,741	32,258,268	-	-	3,307,064	43,439,073
22	Sep-22	Forecast	-	-	-	-	-	-	7,873,741	32,258,268	-	-	3,307,064	43,439,073
23	Oct-22	Forecast	-	-	-	-	-	-	7,873,741	32,258,268	-	-	3,307,064	43,439,073
24	Nov-22	Forecast	3,631,666	36,698,443	-	-	4,218,602	44,548,711	11,505,407	68,956,711	-	-	7,525,666	87,987,784
25	Dec-22	Forecast	-	-	-	-	-	-	11,505,407	68,956,711	-	-	7,525,666	87,987,784
26	13 Month Average		279,359						8,432,459	37,904,182	-	-	3,956,080	50,292,721

BLACK HILLS NEBRASKA GAS
 Depreciation Expense

(a) Line No.	(b) Month in Service Actual / Forecast	(c)-(f) Depreciation Expense					(h)-(k) Accumulated Depreciation Balances						
		(c) TIMP	(d) DIMP	(e) PHMSA	(f) Facility Relocate	(g) Obsolete Infrastructure	(g) Consolidated	(h) TIMP	(i) DIMP	(j) PHMSA	(k) Facility Relocate	(k) Obsolete Infrastructure	(l) Consolidated
1	Annual Depreciation Rate	2.04%	2.04%	2.04%	2.04%	2.04%							
2													
3	Jan-21 Forecast	-	-	-	-	-	-	-	-	-	-	-	
4	Feb-21 Forecast	-	-	-	-	-	-	-	-	-	-	-	
5	Mar-21 Forecast	-	-	-	-	-	-	-	-	-	-	-	
6	Apr-21 Forecast	-	-	-	-	-	-	-	-	-	-	-	
7	May-21 Forecast	-	-	-	-	-	-	-	-	-	-	-	
8	Jun-21 Forecast	-	-	-	-	-	-	-	-	-	-	-	
9	Jul-21 Forecast	-	-	-	-	-	-	-	-	-	-	-	
10	Aug-21 Forecast	759	38,210	-	-	5,636	38,969	(759)	(38,210)	-	-	(5,636)	(38,969)
11	Sep-21 Forecast	759	38,210	-	-	5,636	38,969	(1,517)	(76,420)	-	-	(11,272)	(77,938)
12	Oct-21 Forecast	759	41,451	-	-	5,636	42,210	(2,276)	(117,871)	-	-	(16,907)	(120,147)
13	Nov-21 Forecast	13,418	54,973	-	-	5,636	68,391	(15,694)	(172,844)	-	-	(22,543)	(188,538)
14	Dec-21 Forecast	13,418	54,973	-	-	5,636	68,391	(29,112)	(227,817)	-	-	(28,179)	(256,929)
15	13 Month Average							(3,796.83)	(48,705)	-	-	(6,503)	(52,502)
16	Jan-22 Forecast	13,418	54,973	-	-	5,636	68,391	(42,530)	(282,790)	-	-	(33,815)	(325,321)
17	Feb-22 Forecast	13,418	54,973	-	-	5,636	68,391	(55,948)	(337,763)	-	-	(39,450)	(393,712)
18	Mar-22 Forecast	13,418	54,973	-	-	5,636	68,391	(69,367)	(392,736)	-	-	(45,086)	(462,103)
19	Apr-22 Forecast	13,418	54,973	-	-	5,636	68,391	(82,785)	(447,709)	-	-	(50,722)	(530,494)
20	May-22 Forecast	13,418	54,973	-	-	5,636	68,391	(96,203)	(502,683)	-	-	(56,358)	(598,885)
21	Jun-22 Forecast	13,418	54,973	-	-	5,636	68,391	(109,621)	(557,656)	-	-	(61,993)	(667,276)
22	Jul-22 Forecast	13,418	54,973	-	-	5,636	68,391	(123,039)	(612,629)	-	-	(67,629)	(735,667)
23	Aug-22 Forecast	13,418	54,973	-	-	5,636	68,391	(136,457)	(667,602)	-	-	(73,265)	(804,059)
24	Sep-22 Forecast	13,418	54,973	-	-	5,636	68,391	(149,875)	(722,575)	-	-	(78,901)	(872,450)
25	Oct-22 Forecast	13,418	54,973	-	-	5,636	68,391	(163,293)	(777,548)	-	-	(84,536)	(940,841)
26	Nov-22 Forecast	19,607	117,513	-	-	12,825	137,120	(182,900)	(895,061)	-	-	(97,361)	(1,077,961)
27	Dec-22 Forecast	19,607	117,513	-	-	12,825	137,120	(202,507)	(1,012,574)	-	-	(110,186)	(1,215,081)
28	13 Month Average							(111,049)	(572,088)	-	-	(63,652)	(683,137)

BLACK HILLS NEBRASKA GAS

Tax Expense Calculation

Exhibit 2

Table F

Page 1 of 1

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	
Line No.	Description	Reference	TIMP	DIMP	PHMSA	Facility Relocate	Obsolete Infrastructure	Consolidated
19	2022 Tax Calculation							
20	Rate Base	Table C, Line 14	8,280,061	36,937,513	-	-	3,842,609	49,060,182
21	Weighted average Cost of Capital	Table J, Line 3	6.71%	6.71%	6.71%	6.71%	6.71%	6.71%
22	Weighted average Cost of Debt	Table J, Line 1	1.96%	1.96%	1.96%	1.96%	1.96%	1.96%
23								
24	Revenues	Table C, Line 20	923,364	4,132,017	-	-	430,296	5,485,677
25	Interest Expense	Line 20 * Line 22	161,875	722,128	-	-	75,123	959,127
26	Property Tax Expense	Table C, Line 19	48,065	216,054	-	-	22,550	286,669
27	Tax Depreciation	Table I, Line 42	704,593	3,704,916	-	-	396,935	4,806,443
28	Taxable Income	Line 24 less Lines 25 through 27	8,831	(511,081)	-	-	(64,311)	(566,561)
29	Federal Income Tax Rate		27.17%	27.17%	27.17%	27.17%	27.17%	27.17%
30	Current Tax Expense (Before NOL)	Line 28 * Line 29	2,399	(138,861)	-	-	(17,473)	(153,935)
31	NOL Offset (Account 190)	Company Calculations	(2,399)	138,861	-	-	17,473	153,935
32								
33	Book Depreciation	Table C, Line 18	173,395	784,756	-	-	82,007	1,040,158
34	Temp Difference	Line 33 - Line 27	(531,198)	(2,920,160)	-	-	(314,927)	(3,766,285)
35	Total Deferred Tax Expense	Line 34 * -(Line 29)	146,726	654,547	-	-	68,092	869,365
36	Total Tax Expense		146,726	654,547	-	-	68,092	869,365

Combined Tax Rate 27.17%
 FIT rate = current year applicable rate 21.00%
 SIT rate = current year applicable rate 7.81%
 1.373060552

BLACK HILLS NEBRASKA GAS
ADIT Ending Balances

Exhibit 2
Table G
Page 1 of 1

(a)	(b)	(c)	(d)	(e)	(f)	(g)		
Line No.	Description	Reference	TIMP	DIMP	PHMSA	Facility Relocate	Obsolete Infrastructure	Consolidated
1	ADIT Balance (Account 282)							
2	2020	Beginning Balance	-	-	-	-	-	-
3	2021	Line 2 + Table F, Line 17	(23,031)	(179,893)	-	-	(22,243)	(225,166)
4	2022	Line 3 + Table F, Line 35	(169,757)	(834,439)	-	-	(90,335)	(1,094,531)
5	2023	Line 4 + Table F, Line 53	(366,670)	(2,207,959)	-	-	(253,645)	(2,828,275)
6	2024	Line 5 + Table F, Line 71	(522,091)	(3,901,120)	-	-	(432,044)	(4,855,255)
7	2025	Line 6 + Table F, Line 89	(687,375)	(6,098,832)	-	-	(632,270)	(7,418,477)
8								
9	NOL Offset (Account 190)							
10	2020	Beginning Balance	-	-	-	-	-	-
11	2021	Line 10 + Table F, Line 13	49,283	86,881	-	-	3,796	139,960
12	2022	Line 11 + Table F, Line 31	46,884	225,741	-	-	21,269	293,894
13	2023	Line 12 + Table F, Line 49	7,755	67,440	-	-	(4,409)	70,786
14	2024	Line 13 + Table F, Line 67	(682)	12,619	-	-	(11,937)	-
15	2025	Line 14 + Table F, Line 85	(682)	12,619	-	-	(11,937)	-
16								
17	Total ADIT							
18	2020	Line 2 + Line 10 + Line 18	-	-	-	-	-	-
19	2021	Line 3 + Line 11 + Line 19	26,252	(93,012)	-	-	(18,446)	(85,207)
20	2022	Line 4 + Line 12 + Line 20	(122,873)	(608,698)	-	-	(69,066)	(800,637)
21	2023	Line 5 + Line 13 + Line 21	(358,915)	(2,140,519)	-	-	(258,054)	(2,757,488)
22	2024	Line 6 + Line 14 + Line 22	(522,774)	(3,888,502)	-	-	(443,980)	(4,855,255)
23	2025	Line 7 + Line 15 + Line 23	(688,057)	(6,086,213)	-	-	(644,207)	(7,418,477)

Account 282																					
Line No.	Description	Days in the Month	Number of Days Prorated	Total Days in Test Year	Proration Amount (C / D)	TIMP			DIMP			PHMSA			Facility Relocate			Facility Relocate			Consolidated Accumulated Balance
						Projected Activity	Prorated Activity	Accumulated Balance	Projected Activity	Prorated Activity	Accumulated Balance	Projected Activity	Prorated Activity	Accumulated Balance	Projected Activity	Prorated Activity	Accumulated Balance	Projected Activity	Prorated Activity	Accumulated Balance	
31	2022 projected Balance Account 282							(169,757)			(834,439)			-			-			(90,335)	(1,094,531)
32	January	31	334	365	0.915068	(13,149)	(12,032)	(181,789)	(101,268)	(92,667)	(927,107)	-	-	-	-	-	-	-	(11,469)	(10,495)	(100,830)
33	February	28	306	365	0.838356	(13,149)	(11,023)	(192,812)	(101,268)	(84,899)	(1,012,006)	-	-	-	-	-	-	-	(11,469)	(9,615)	(110,446)
34	March	31	275	365	0.753425	(13,149)	(9,907)	(202,719)	(101,268)	(76,298)	(1,088,303)	-	-	-	-	-	-	-	(11,469)	(8,641)	(119,087)
35	April	30	245	365	0.671233	(13,149)	(8,826)	(211,544)	(101,268)	(67,975)	(1,156,278)	-	-	-	-	-	-	-	(11,469)	(7,699)	(126,786)
36	May	31	214	365	0.586301	(13,149)	(7,709)	(219,254)	(101,268)	(59,374)	(1,215,652)	-	-	-	-	-	-	-	(11,469)	(6,725)	(133,510)
37	June	30	184	365	0.504110	(13,149)	(6,628)	(225,882)	(101,268)	(51,050)	(1,266,702)	-	-	-	-	-	-	-	(11,469)	(5,782)	(139,292)
38	July	31	153	365	0.419178	(13,149)	(5,512)	(231,394)	(101,268)	(42,449)	(1,309,151)	-	-	-	-	-	-	-	(11,469)	(4,808)	(144,100)
39	August	31	122	365	0.334247	(13,149)	(4,395)	(235,789)	(101,268)	(33,849)	(1,343,000)	-	-	-	-	-	-	-	(11,469)	(3,834)	(147,933)
40	September	30	92	365	0.252055	(13,149)	(3,314)	(239,103)	(101,268)	(25,525)	(1,368,525)	-	-	-	-	-	-	-	(11,469)	(2,891)	(150,824)
41	October	31	61	365	0.167123	(13,149)	(2,197)	(241,300)	(101,268)	(16,924)	(1,385,449)	-	-	-	-	-	-	-	(11,469)	(1,917)	(152,741)
42	November	30	31	365	0.084932	(13,149)	(1,117)	(242,417)	(101,268)	(8,601)	(1,394,050)	-	-	-	-	-	-	-	(11,469)	(974)	(153,715)
43	December	31	1	365	0.002740	(13,149)	(36)	(242,453)	(101,268)	(277)	(1,394,328)	-	-	-	-	-	-	-	(11,469)	(31)	(153,746)
44	Activity							(157,785)			(1,215,218)			-			-			(137,632)	
45	2023 Projected Average Balance Account 282							(242,453)			(1,394,328)			-			-			(153,746)	(1,790,527)
Account 190																					
106	2022 projected Balance Account 190							46,884			225,741			-			-			21,269	293,894
107	January	31	334	365	0.915068	(3,261)	(2,984)	43,900	(13,192)	(12,071)	213,670	-	-	-	-	-	-	-	(2,140)	(1,958)	19,311
108	February	28	306	365	0.838356	(3,261)	(2,734)	41,166	(13,192)	(11,059)	202,611	-	-	-	-	-	-	-	(2,140)	(1,794)	17,517
109	March	31	275	365	0.753425	(3,261)	(2,457)	38,710	(13,192)	(9,939)	192,672	-	-	-	-	-	-	-	(2,140)	(1,612)	15,905
110	April	30	245	365	0.671233	(3,261)	(2,189)	36,521	(13,192)	(8,855)	183,817	-	-	-	-	-	-	-	(2,140)	(1,436)	14,469
111	May	31	214	365	0.586301	(3,261)	(1,912)	34,609	(13,192)	(7,734)	176,082	-	-	-	-	-	-	-	(2,140)	(1,255)	13,214
112	June	30	184	365	0.504110	(3,261)	(1,644)	32,965	(13,192)	(6,650)	169,432	-	-	-	-	-	-	-	(2,140)	(1,079)	12,135
113	July	31	153	365	0.419178	(3,261)	(1,367)	31,599	(13,192)	(5,530)	163,903	-	-	-	-	-	-	-	(2,140)	(897)	11,239
114	August	31	122	365	0.334247	(3,261)	(1,090)	30,509	(13,192)	(4,409)	159,493	-	-	-	-	-	-	-	(2,140)	(715)	10,523
115	September	30	92	365	0.252055	(3,261)	(822)	29,687	(13,192)	(3,325)	156,168	-	-	-	-	-	-	-	(2,140)	(539)	9,984
116	October	31	61	365	0.167123	(3,261)	(545)	29,142	(13,192)	(2,205)	153,964	-	-	-	-	-	-	-	(2,140)	(358)	9,626
117	November	30	31	365	0.084932	(3,261)	(277)	28,865	(13,192)	(1,120)	152,843	-	-	-	-	-	-	-	(2,140)	(182)	9,445
118	December	31	1	365	0.002740	(3,261)	(9)	28,856	(13,192)	(36)	152,807	-	-	-	-	-	-	-	(2,140)	(6)	9,439
119	Activity							(39,129)			(158,301)			-			-			(25,678)	
120	2023 Projected Average Balance Account 190							28,856			152,807			-			-			9,439	191,102

BLACK HILLS NEBRASKA GAS
Calculation of Tax Depreciation

(a)	(b)	(c)	(d)	(e)	(f)	(g)	
Line No.	Description	Reference	TIMP	DIMP	PHMSA	Facility Relocate	Obsolete Infrastructure
1	MACRS Depreciation Rates		20 Year HYC	20 Year HYC	20 Year HYC	20 Year HYC	20 Year HYC
2	Year 1		3.750%	3.750%	3.75%	3.75%	3.750%
3	Year 2		7.219%	7.219%	7.22%	7.22%	7.219%
4	Year 3		6.677%	6.677%	6.68%	6.68%	6.677%
5	Year 4		6.177%	6.177%	6.18%	6.18%	6.177%
6	Year 5		5.713%	5.713%	5.71%	5.71%	5.713%
7							
8	Plant Additions						
9		2021 Table D, Sum of Lines 1 through 12	7,873,741	32,258,268	-	-	3,307,064
10		2022 Table D, Sum of Lines 13 through 24	3,631,666	36,698,443	-	-	4,218,602
11		2023 Table D, Sum of Lines 25 through 36	916,381	39,185,255	-	-	5,283,547
12		2024 Table D, Sum of Lines 37 through 48	-	39,833,893	-	-	1,058,889
13		2025 Table D, Sum of Lines 49 through 60	-	-	-	-	-
14							
22	2022 Plant Depreciation Tax Expense						
23		2022 Line 2 * Line 10	136,187	1,376,192	-	-	158,198
24		2023 Line 3 * Line 10	262,170	2,649,261	-	-	304,541
25		2024 Line 4 * Line 10	242,486	2,450,355	-	-	281,676
26		2025 Line 5 * Line 10	224,328	2,266,863	-	-	260,583
27							

BLACK HILLS NEBRASKA GAS
Weighted Average Cost of Capital Calculation
For Rate Year 2022

Exhibit 2
Table J
Page 1 of 1

	(a)	(b)	(c)	(d)
Line No.	Description	Percent of Total	Cost of Capital	Weighted Cost of Capital
1	Long-Term Debt	50.00%	3.91%	1.96%
2	Common Equity	50.00%	9.50%	4.75%
3		<u>100.00%</u>		<u>6.71%</u>

Property tax Rate 0.57%

BLACK HILLS NEBRASKA GAS
Customer Class Allocation
For Rate Year 2022

Exhibit 2
Table L
Page 1 of 1

Line No.	(a) Account #	(b) Note 1 Jurisdictional Amounts	(c) Note 2		(e)	(f)
			Residential %	Commercial %	b * c Residential \$	b * d Commercial \$
1	36700	258,959	59.15%	40.85%	153,171	105,788
2	36903	31,992	59.15%	40.85%	18,923	13,069
3	374.01	-	59.13%	40.87%	-	-
4	374.02	474,872	59.13%	40.87%	280,800	194,072
5	374.03	-	59.13%	40.87%	-	-
6	375.01	303,891	59.13%	40.87%	179,696	124,195
7	375.2	-	59.13%	40.87%	-	-
8	376	16,592,985	69.68%	30.32%	11,562,368	5,030,617
9	378	323,557	59.13%	40.87%	191,325	132,232
10	379	878,554	59.13%	40.87%	519,505	359,049
11	380	16,534,622	79.78%	20.22%	13,191,931	3,342,691
12	381	3,635,830	69.28%	30.72%	2,518,881	1,116,949
13	382.01	3,828,151	69.28%	30.72%	2,652,120	1,176,031
14	383.01	950,566	69.28%	30.72%	658,546	292,020
15	383.71	-	69.28%	30.72%	-	-
16	384.01	-	69.28%	30.72%	-	-
17	385	362,804	69.28%	30.72%	251,348	111,456
18	386	-	79.78%	20.22%	-	-
19	387	371,928	70.84%	29.16%	263,471	108,457
20					-	-
21	Totals	44,548,711			32,442,086	12,106,625
22	Allocation %				72.82%	27.18%

Note 1: Totals from Worksheet L - Project Listing & Jurisdictional Allocation

Note 2: Inputs from Rate Design established in Docket NG-109

BLACK HILLS NEBRASKA GAS
Data Integrity Improvement Plan (DIIP)
For Rate Year 2022

Exhibit 2
Table M
Page 1 of 1

Line No. FP #	Sub Projects	Forecast	2022 Actual	Variance	Forecast	2021 Actual	Variance
1	External Costs - Recoverable in SSIR						
2	Transmission/Gathering TVC Records NE	1,139,000					
3							
4	Gas Service Card Mapping NE	961,000			865,048		
5							
6	Distribution Main & Service Centerline Survey NE	1,137,000					
7							
8	Distribution Data Attribute Improvement NE	719,000					
9							
10	GIS Pressure Systems NE	-					
11							
12	GIS Emergency Response Zones NE	-					
13							
14	GIS CP Zones NE	-					
15							
16	BPI and SME Pipeline Attribute Assessment NE	-					
17							
18	Document Management Migration NE	26,000					
19							
20	Total External Costs - Recoverable in SSIR	3,982,000	-	-	865,048	-	-
21							
22	Internal Costs - Not Recoverable in SSIR						
23	Transmission/Gathering TVC Records NE	121,039					
24	Gas Service Card Mapping NE	102,123			96,116		
25	Distribution Main & Service Centerline Survey NE	120,826					
26	Distribution Data Attribute Improvement NE	76,406					
27	GIS Pressure Systems NE	-					
28	GIS Emergency Response Zones NE	-					
29	GIS CP Zones NE	-					
30	BPI and SME Pipeline Attribute Assessment NE	-					
31	Document Management Migration NE	2,763					
32	Total Internal Costs - Not Recoverable in SSIR	423,158	-	-	96,116	-	-
33							
34	Total Program Costs	4,405,158	-	-	961,164	-	-