Exhibit No. JLB-1

Statement of Qualification of Jason L. Bennett

I graduated from the University of South Florida in 2000 receiving a Bachelor of Science degree with a major in Accounting and a minor in Management Information Systems. I became a Certified Public Accountant, licensed in Florida, and a member of the Florida Institute of Certified Public Accountants (FICPA) in 2001.

I began my career with the Company at the corporate offices in Rapid City, SD in 2009 as a Utility Accounting Supervisor. In 2011, I was promoted to the Utility Accounting Manager where I led a team that processed journal entries, performed reconciliations and other accounting related activities, and led numerous process improvement projects. In 2013, I was promoted to the Financial Manager for Nebraska. I led a team that prepared monthly, quarterly and annual financial reviews and developed annual and 5-year budgets. Working with Operations and Regulatory, my team calculated, evaluated and reported internally numerous financial metrics. In 2018, Regulatory was merged with Financial Management, and my team's responsibilities expanded to also include the preparation and review of compliance filings, responses to customer complaints, tariff updates and rate reviews.

Black Hills Corporation	**TECHNICAL STANDARD**		
Gas Operating Standard No. **G-PN1002**	Revision No. **Original**		Page **1 of 12**
Affected Business Units(s) **Gas Supervisors/Managers Gas Ops Techs Construction Coordinators**	Document Storage/Location **FileNet: ECM /Gas Operations**	Operating Department **Gas Engineering, Standards & DOT Compliance**	
		Final Approval **/s/ Mike Kisicki**	Effective Date **04/08/2014**
Subject **Project Capital Allocation Prioritization Model - Gas**			

1.0 PURPOSE

Provide a tool to assist in prioritizing capital projects for allocation of appropriate funding across the Company's Field Operations.

2.0 SCOPE & BACKGROUND

Projects required to meet regulatory codes must be properly prioritized when compared to other projects, taking safety and potential non-compliance citations and fines into consideration. System growth projects must comply with regulatory approved tariffs as well as the Company's financial return criteria

3.0 RESPONSIBILITIES

Operations Tech
Operations Supervisors/Managers
Construction Coordinator

4.0 MATERIALS AND EQUIPMENT

Microsoft Excel

Copy of Worksheet located on: Gas Engineering Services Web Page:
MyBHC > Utilities >Gas Engineering Services >Scroll to bottom of page—
Click on G-PN1002 Integrity Project Priority-Pipe Replace Plan Worksheet

5.0 DEFINITIONS AND ACRONYMS

Term	*Description*
Type A	Government Mandated Relocations
Type B	System Integrity – Replacements
Type C	System Growth
Type D	System Integrity – Capacity
Type E	Tools/Equipment/Other

Black Hills Corporation	TECHNICAL STANDARD		
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6.0 PROCEDURE

Type A: Government Mandated Relocations	Type A projects must be completed due to conflicts with government projects, such as: • City street or road improvement projects • State, Federal or County highway projects • Any other government backed projects requiring relocation of our facilities Type A funding is imperative and precedes funding of any other network enhancements, expansions, or customer additions. An examples of a project that is essential to complete is a main relocation project due to a street or highway project. Although the exact scope or timing of the project could be debated, there is no question that the project has to be funded and completed.
Type B: System Integrity Replacements	Type B projects are integrity projects to replace pipe or equipment due to deterioration and would be ranked utilizing a points system. Using the priority ranking values on the following pages, along with judgment, based upon experience, as to the impact on public relations, economics, and risk. Examples of projects to be ranked could include: A. Priority Ranking Type B projects are to be ranked (when possible) in accordance with the following values. These are used to provide a starting point for relative project priority. Judgment as to the impact on public relations, economics, and risk would be used as necessary to adjust these rankings. Priority Ranking Key High Priority .... 1 Medium High Priority .... 2 Medium Priority .... 3 Medium Low Priority .... 4 Low Priority .... 5 Require Attention .... 6 Require More Justification .... 7 1) Priority Ranking 1 - High Priority • Over 500 points on the replacement model • Current segment leakage • Safety code compliance issues • Odorizer functions erratically/high maintenance • Floating pipe • Shallow or exposed line in a high-risk exposure area

Type B: System Integrity – Replacements *(Continued)*

Type B (Continued)

2) Priority Ranking 2 - Medium High Priority

- Over 400 points on the replacement model
- Non-safety code compliance issues
- Shallow or exposed line in a medium risk exposure area

3) Priority Ranking 3 - Medium Priority

- Over 300 points on the replacement model
- Shallow or exposed line in a low-exposure area
- Odorizer day tank too small
- System emergency shutdown/restorations capability

4) Priority Ranking 4 - Medium - Low Priority

- Over 200 points on the replacement model
- Regulator, meter, equipment obsolescence, possible compliance issues
- Odorizer bulk tank too small, inadequate or non-existent

5) Priority Ranking 5 - Low Priority

- Under 200 points on the replacement model
- Regulator, meter, equipment obsolescence but still in compliance
- System emergency shutdown/restoration capability 24-72 hours

6) Priority Ranking 6 - Requires Attention

- System emergency shutdown/restoration capabilities - 24 hours

7) Priority Ranking 7 - Require More Justification

- Needs additional supporting documentation

Type B: System Integrity – Replacements *(Continued)*

Type B (Continued)

B. Repair vs. Replace Evaluation

In addition to the preceding Type B situations, capital funding is to be allocated to replacement projects based upon economics and risk as identified by the replacement model. The decision to replace a segment of main rather than repair (e.g. continue to maintain) can sometimes be determined by economics alone; however, generally additional factors that contribute to risk need to be considered. Each project of this type is to be evaluated using a financial/replacement model to determine if it makes more sense to replace than repair (or continue to repair). If the project does not clear the financial model hurdle, then other subjective factors may dictate, but at least the financial model provides a starting point for the relative priority of the project.

There are many factors to evaluate when considering whether to maintain or replace a portion of a system. Some of these factors are indicators that a leak may soon exist. Other factors must be considered in the event that a leak does occur. All these factors must be used to weigh one segment against another and ultimately to weigh one segment against all other capital projects. Some of these factors are:

- Number of corrosion leaks past five years
- Cathodic protection history past three years
- Type coating
- Type pipe
- Age of pipe
- Type of joints
- Size
- Operating pressure
- Class location
- Surface cover over pipe
- Land use of pipe
- Public relations/customer inconvenience
- Safety

It is generally understood that pipelines and facilities do not last forever and eventually need to be replaced.

Type C: Load	Type C projects must meet specific financial return criteria (i.e. hurdle ROE). Funding of this category is not limited since each project provides economic benefit to the corporation (i.e. feasible or not feasible). Projects not meeting the financial return criteria but necessary for strategic positioning are prioritized with projects in category D.
Type D – System Integrity – Capacity	Type D projects include system expansions/improvements for strategic positioning, uprating systems or equipment to allow additional capacity, and installing additional pipe as needed to supply existing customers. A. <u>Priority Ranking</u> Type D projects are to be ranked (when possible) in accordance with the following values. These are used to provide a starting point for relative project priority. Judgment as to the impact on public relations, economics, and risk would be used as necessary to adjust these rankings. <u>Priority Ranking Key</u> High Priority .... 1 Medium High Priority.............. 2 Medium Priority...................... 3 Medium Low Priority................ 4 Low Priority .... 5 Require Attention .... 6 Require More Justification....... 7 1) <u>Priority Ranking 1 - High Priority</u> • Minimum system pressure 50% or less than nominal • Peak hour more than 110% of the meter capacity 2) <u>Priority Ranking 2 - Medium High Priority</u> • Minimal system pressure 51 - 70% of nominal • System pressure below adequate pressure for a specific large volume customer. • Peak hour at 100 - 110% of the meter capacity 3) <u>Priority Ranking 3 - Medium Priority</u> • Projects that are part of long term system growth plans and staged to distribute capital requirements to allow for orderly development of our distribution systems without massive investments in any given year.

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Type E: Tools, Equipment or Other

Type E projects are capital budget items that do not match any of the other previously outlined categories. Included in this group are specialty tools or equipment, facility additions or improvements such as a new service center or office.

Type E projects are to be ranked (when possible) in accordance with the following values:

These are used to provide a starting point for relative project priority. Judgment as to the impact on public relations, economics, and risk would be used as necessary to adjust these rankings.

Priority Ranking Key
High Priority 1
Medium High Priority............... 2
Medium Priority 3
Medium Low Priority 4
Low Priority 5
Require Attention 6
Require More Justification....... 7

7.0 SUMMARY

Type A and C projects are always funded; Type A are government mandated projects and Type C provides financial return. Type A projects must be completed to accommodate city, county or state road reconstruction projects with timing dictated by the particular governmental agency.

Type B projects are integrity projects to replace pipe or equipment due to deterioration. Type D projects are integrity projects to enhance system capacities either by installing main or uprating pressure with associated pressure regulation modifications. Type E projects consist of non-distribution system items such as buildings, land, tools and equipment. Type B, D, and E projects would be judged and prioritized by state management. State management would assess the urgency of projects for eligibility in these categories, based on the criteria listed.

State Management should meet periodically throughout the year to reevaluate priorities consistent with the dynamics of project activity, capital availability, and regulatory decisions.

TECHNICAL STANDARD			
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APPENDIX A			

APPENDIX A:

System Integrity Capital Justification Data

Black Hills Corporation	TECHNICAL STANDARD		
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APPENDIX A			

Integrity Project Prioritization

Pipe Replacement Plan

As the Company has grown and acquired new systems, the distribution systems have become a mixture of old and new pipe of various materials in varying condition. By adopting a long term pipe replacement program and consistent replacement methodology, the Company will also ensure future operating cost savings, as certain types of pipe currently existing in our distribution and transmission systems, such as cast iron, ductile iron and unprotected bare steel, require significantly greater maintenance and oversight, e.g. leak repair/surveys, cathodic protection, etc.

In developing this replacement program, priority was given to the types of pipe that experience the greatest occurrence of leaks and failures. The order of priority would be cast iron, ductile iron, unprotected bare steel, copper, PVC, and so on. Class location of each type of pipe was also given a high priority, in order to limit our liability and ensure customer safety. Class 4 type locations, or business districts, would be the greatest priority followed by class 3, 2, and 1, residential and rural classes of property. Additional analyses can be performed to identify the location of low pressure “ounce systems”, which could also fit into the overall capital improvement plan.

Beyond pipe replacement, the Company routinely spends a significant amount of Capital and O&M dollars to keep odorizers, district regulator stations, and town border stations in compliance with Public Service Commission/DOT requirements. Additional analyses can and should be performed to identify the age, reliability, and performance of these system components and, a similar methodology should be adopted for long-term improvements and or replacement.

The following schedule is prioritized by leak history, segment material, leak potential, and potential hazard leaks may cause. Systems will be divided into segments (over 500 ft., but less than 5,280 ft. of the same material and age) and evaluated to determine a replacement priority by a demerit point system. This program is intended to provide a methodology for long term pipe replacements, and is in no way is to be used for emergency situations.

Note: The minimum demerit point threshold for main replacements in Kansas is 500 points. Main segments rated below 500 points may furthermore be replaced at the Company’s discretion based on additional safety factors and/or business considerations.

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APPENDIX A			

PRIORITIZATION METHODOLOGY

1) LEAK POTENTIAL: POINTS:

Leak History (Last 5 years)	Class I	= 50 pts	
	Class II	= 30 pts	
	Class III	= 10 pts	
Vintage of Pipe	Pre 50's	= 50 pts	
	Pre 70's	= 30 pts	
	70's & newer	= 0 pts	
Types of Joints	Mech.	= 50 pts	
	Other	= 30 pts	
Average Soil Type	Clay	= 50 pts	(0 to 3k Ohm cm)
	Normal	= 30 pts	(3k-10k Ohm cm)
	Sand	= 10 pts	(10k & over)

2) POTENTIAL HAZARD:

Class Location	Class 4	= 50 pts
	Class 3	= 30 pts
	Class 2	= 10 pts
	Class 1	= 0 pts
Surface Cover	Paved	= 50 pts
	Earth	= 30 pts
Foreign Utilities	Within 1 ft	= 50 pts
	1 to 3 ft	= 30 pts
	> 3ft	= 0 pts
Pressure Rating	$\leq$1 and $\geq$100 lbs.	= 50 pts
	1<>99 lbs.	= 30 pts

3) SEGMENT MATERIAL:

Unapproved	Cast Iron	=100 pts
	Ductile Iron	= 50 pts
	Bare Steel	= 50 pts
	PVC	= 20 pts
Approved	PE, Coated & Wrapped steel	= 10 pts

EXAMPLE Worksheet

Copy of blank Worksheet: MyBHC > Utilities >Gas Engineering Services >Scroll to bottom of Page—Click on G-PN1002 Integrity Project Priority-Pipe Replace Plan Worksheet

Segment Number	Example	**Length**	200 feet	
Location	Cast Iron main	**Size**	8	

1) LEAK POTENTIAL

LEAK HISTORY (Last 5 years)					**TYPES OF JOINTS**				
	(Enter # of leaks in appropriate box)					(Enter 1 in appropriate box)			
Class 1	2		100		Mechanical & Screw	1		50	
Class 2	1		30		Other			0	
Class 3			0						
			130	Total pts				**50**	Total pts

VINTAGE OF PIPE					**SOIL TYPE**				
	(Enter 1 in appropriate box)					(Enter 1 in appropriate box)			
Pre 1950	1		50		Clay (0-3K ohm cm)	1		50	
1950-1970			0		Normal (3K-10K ohm cm)			0	
1970-newer			0		Sand (10K & over)			0	
			50	Total pts				**50**	Total pts

TOTAL POINTS LEAK POTENTIAL	**280**

EXAMPLE Worksheet

2) POTENTIAL HAZARD

CLASS LOCATION

	(Enter 1 in appropriate box)		
Class 4		0	
Class 3	1	30	
Class 2		0	
Class 1		0	
		30	Total pts

FOREIGN UTILITIES

	(Enter 1 in appropriate box)		
Within 1 ft.		0	
1 to 3 ft.	1	30	
More than 3 ft.		0	
		30	Total pts

SURFACE COVER

	(Enter 1 in appropriate box)		
Hard	1	50	
Normal		0	
		50	Total pts

PRESSURE RATING

	(Enter 1 in appropriate box)		
<u><</u>1 or <u>></u>100 lbs.	1	50	
>1 or <99 lbs.		0	
		50	Total pts

TOTAL POINTS POTENTIAL HAZARD	**160**

3) SEGMENT MATERIAL

	(Enter 1 for Bare steel/Ductile iron, enter 2 for Cast iron)		
Unapproved	2	100	
Approved (Enter 2 for PVC)	0	0	
		100	Total pts

TOTAL POINTS SEGMENT MATERIAL	**100**
TOTAL SEGMENT POINTS	**540**

Notes:

Other segment information to be considered:

Blank Worksheet

Copy of Worksheet: MyBHC > Utilities >Gas Engineering Services >Scroll to bottom of Page—Click on G-PN1002 Integrity Project Priority-Pipe Replace Plan Worksheet

Segment Number	0	**Length**	0	feet
Location	0	**Size**	0	

1) LEAK POTENTIAL

LEAK HISTORY (Last 5 years)			
	(Enter # of leaks in appropriate box)		
Class 1	0	0	
Class 2	0	0	
Class 3	0	0	
			Total pts

TYPES OF JOINTS			
	(Enter 1 in appropriate box)		
Mechanical & Screw	0	0	
Other	0	0	
		50	Total pts

VINTAGE OF PIPE			
	(Enter 1 in appropriate box)		
Pre 1950	0	0	
1950-1970	0	0	
1970-newer	0	0	
			Total pts

SOIL TYPE			
	(Enter 1 in appropriate box)		
Clay (0-3K ohm cm)	0	0	
Normal (3K-10K ohm cm)	0	0	
Sand (10K & over)	0	0	
			Total pts

TOTAL POINTS LEAK POTENTIAL	**0**

Blank Worksheet

Page 2 of 2

2) POTENTIAL HAZARD

CLASS LOCATION	(Enter 1 in appropriate box)			FOREIGN UTILITIES	(Enter 1 in appropriate box)		
Class 4	0	0		Within 1 ft.	0	0	
Class 3	0	0		1 to 3 ft.	0	0	
Class 2	0	0		More than 3 ft.	0	0	
Class 1	0	0					
		0	Total pts			**0**	Total pts

SURFACE COVER	(Enter 1 in appropriate box)			PRESSURE RATING	(Enter 1 in appropriate box)		
Hard	0	0		≤1 or ≥100 lbs.	0	0	
Normal	0	0		>1 or <99 lbs.	0	0	
		0	Total pts			**0**	Total pts

TOTAL POINTS POTENTIAL HAZARD	**0**

3) SEGMENT MATERIAL

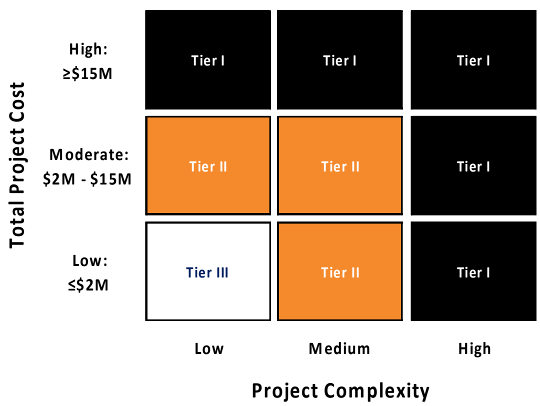
	(Enter 1 for Bare steel/Ductile iron, enter 2 for Cast iron)		
Unapproved	0	0	
Approved (Enter 2 for PVC)	0	0	
		0	Total pts

TOTAL POINTS SEGMENT MATERIAL	**0**
TOTAL SEGMENT POINTS	**0**

Notes:

Other segment information to be considered:	

NGU Project Profile Matrix



Complexity Considerations

- **Degree of Difficulty** considering Technology to be implemented, the Regulatory Environment, Scope Complexity, and Schedule Compression
- **Interface Complexity** considering Level of Key Stakeholders and Extent and Attributes of Project Interfaces
- **Benefit or Risk Value** considering the Strategic Value of the Project, Impact on other Projects and Public Interest in the Project.

Black Hills Corporation

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June 1, 2020

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

Attn: Mr. Mike Hybl
Executive Director

Re: **Progress Report**

Black Hills/Nebraska Gas Utility Company, LLC d/b/a Black Hills Energy Seeking Approval to adjust the surcharge for the Farm Tap Safety Program for 2019-2020 and Associated Tariff Application No. NG-0090.2 – Final Report

Dear Mr. Hybl:

Pursuant to the Nebraska Public Service Commission's ("Commission") Hearing Officer Order dated October 29, 2019 in the above-captioned proceeding. That Order stated:

> *"Within sixty (60) days of completion of the project, Black Hills should file its Final Report summarizing the Farm Tap Project and including final expenditures, surcharge revenue collected, the number of service lines purchase, replaced, or abandoned, a progress report based upon the implementation plan including any customer requests for line upgrades or extensions, and any other information necessary for adequate review of the complete project."*

As of June 1, the Farm Tap Replacement Project has not been completed due to legal disputes and easement issues. BH Nebraska Gas provides this Progress Farm Tap Report that includes all of the reporting requirements of the Final Report. This Report is shown in Exhibit A contains information current as of April 30, 2020. BH Nebraska Gas will file a Final Report within 60 days of the completion of the project.

All customer requests for line upgrades or extensions were analyzed independently, and no related construction costs were charged to the Farm Tap Workorders.

BH Nebraska Gas continues to investigate and to resolve the few remaining Farm Taps that continue to have easement disputes or other landowner issues. In compliance with the BH Nebraska Gas tariff, if these easement disputes and related issues are not be resolved by mutual agreement after repeated attempts by BH Nebraska Gas, then BH Nebraska Gas will plan to stop serving these customers. There will be no service disconnections in the winter and customers will be given ample notice for them to switch to propane. Any costs associated with the Farm Taps remaining to be purchased or replace due to the easement issues will be included in a future regulatory filing with the Commission.

If you have any questions or concerns regarding the enclosed filing, please contact me at your earliest convenience.

Respectfully submitted,

/s/ Jason Bennett

Jason Bennett
Manager of Regulatory & Finance – Nebraska

And

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ATTORNEY FOR BLACK HILLS NEBRASKA GAS, LLC d/b/a Black Hills Energy

cc: Service List

Black Hills Nebraska Gas, LLC **Exhibit A**
Progress Farm Tap Report
As of April 30, 2020

Capital Costs:	A	B	C	D	E = A + B + C + D
	Jan-Dec 2017	Jan-Dec 2018	Jan-Dec 2019	Jan-Apr 2020	**Total Project**
External Labor	$ -	$ 778,072	$ 2,702,898	$ 1,261,190	**$ 4,742,160**
Materials	$ -	$ 254,579	$ 734,999	$ 121,328	**$ 1,110,906**
Internal Labor	$ -	$ 221,453	$ 165,492	$ 63,747	**$ 450,691**
Vehicle Expense	$ -	$ 26,328	$ 16,766	$ 7,004	**$ 50,098**
Office Expense	$ -	$ 12,198	$ 1,405	$ -	**$ 13,603**
Travel Expense	$ -	$ 618	$ 685	$ 267	**$ 1,570**
IT Costs	$ -	$ 536	$ -	$ -	**$ 536**
Loadings	$ -	$ 351,691	$ 849,576	$ 374,214	**$ 1,575,480**
Total	$ -	$ 1,645,474	$ 4,471,821	$ 1,827,749	**$ 7,945,044**

Testing Costs:	A	B	C	D	E = A + B + C + D
	Jan-Dec 2017	Jan-Dec 2018	Jan-Dec 2019	Jan-Apr 2020	**Total Project**
Materials	$ 12,792	$ 12,792	$ -	$ -	**$ 25,584**
Internal Labor	$ 4,329	$ 20,035	$ -	$ -	**$ 24,364**
Office Expense	$ 5,086	$ 54	$ -	$ -	**$ 5,140**
Vehicle Expense	$ 536	$ 2,901	$ -	$ -	**$ 3,437**
Travel Expense	$ 33	$ -	$ -	$ -	**$ 33**
	$ 22,776	$ 35,782	$ -	$ -	**$ 58,558**

	A	B = A / E	C	D = B / C	E
Project Status:	Total Project Costs	Average Line Costs	Average Line Footage	Average Cost per Foot	**Total Project Count**
Purchased	$ 122,369	$ 1,275	772	$ 1.65	**96**
Replaced	$ 7,822,676	$ 16,573	859	$ 19.28	**472**
NNG A-Line/Non-Active	$ -	$ -	744	$ -	**99**
Total Completed	$ 7,945,044	$ 11,912	830	$ 14.36	**667**
* In Process	$ 206,576	$ 17,215	893	$ 19.28	**12**
Total Project	$ 8,151,621	$ 12,005	831	$ 14.45	**679**

**includes 8 with Easement issues; Total Project Costs based on Average Line Costs and Count; Average Line Costs based on Average Line Footage and Average Cost per Foot; Average Cost per Foot based on Replaced/Purchase Cost per Foot*

Surcharge Revenue Collected:	A	B	C	D	E = A + B + C + D
	Jan-Dec 2017	Jan-Dec 2018	Jan-Dec 2019	Jan-Apr 2020	**Total Project**
Residential	$ 40,191	$ 198,266	$ 211,401	$ 97,602	**$ 547,459**
Commercial	$ 8,467	$ 41,480	$ 44,301	$ 21,446	**$ 115,694**
Transport	$ 3,646	$ 17,644	$ 19,312	$ 9,572	**$ 50,173**
	$ 52,304	$ 257,389	$ 275,014	$ 128,620	**$ 713,326**

Black Hills Corporation

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June 1, 2020

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

Attn: Mr. Mike Hybl
Executive Director

Re: Black Hills Nebraska Gas, LLC d/b/a Black Hills Energy
Docket No. NG-109 – In the matter of the application of Black Hills Nebraska Gas, LLC d/b/a Black Hills Energy seeking approval of a general rate increase

Dear Mr. Hybl:

By this Application, Black Hills Nebraska Gas is proposing to adjust the Safety and Integrity Charges and the Pipeline Replacement Charges applicable to all Jurisdictional Residential, Commercial, and Commercial – Energy Options customers.

The rates submitted with this Application reflects the overall Safety and Integrity Charges applicable to the referenced rate schedules to cover the incremental annual revenue requirement impact of costs incurred by the Company with respect to System Safety and Integrity Rider ("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, Docket No. NG-109 and will be in service and used and useful by December 31, 2021. If approved by the Commission, the monthly Safety and Integrity Charges shall be as follows:

	Residential	Commercial	Commercial – Energy Options
Current SSIR Charge - $/month	$0.65	$1.30	$1.30

The proposed 2021 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 2021 projects included in SSIR

Exhibit 2 – Calculation of the SSIR

Calculation of Safety and Integrity Charge

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

Table A – this table shows the derivation of the 2021 SSIR for the Residential and Commercial[1] customer classes. The rates are determined by dividing each customer class's portion of (1) the jurisdictional revenue requirement attributable to 2021 capital projects and (2) the jurisdictional portion of 2021 DIIP costs, by the estimated number of bills[2] used in the Rate Review in Docket No. NG-109.

Table B – this table shows the 2021 True Up amounts. Since this is the initial filing, there are no 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 2021 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	Total Jurisdictional Revenue Requirement
2021 Projects	$1,549,791	$744,817	$2,294,608
Total	$1,549,791	$744,817	$2,294,608

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 10.0% 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 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 2021.

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

[2] This initial filing is proposed to have an effective date of March 1, 2021, so this instant filing uses the number of bills for the ten months Mar-Dec 2021. Future filings with an annual effective date of January 1 will use the annual number of bills.

Table D – this table lists jurisdictional portion of the 2021 capital SSIR Projects included in the 2021 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 2021 SSIR projects net of all betterment credits as follows:

	Total Estimated Net Project Costs
2021 Projects	$43,794,542
Total	$43,794,542

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 2021 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 proposed in the most current general rate case, Docket No. NG-109.

Table L – this table further separates the 2021 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 proposed 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 2021 costs, (2) the portion recoverable in the SSIR revenue requirement, and (3) variances between proposed and actual costs.

Please contact me at (402) 858-3560 if you have any questions or need additional information.

Very truly yours,

Black Hills Nebraska Gas, LLC
d/b/a Black Hills Energy

/s/ Jason Bennett
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Enclosures

Cc: Nicole Mulcahy, Director of Natural Gas Department, NPSC
William Austin, Esq., Nebraska Public Advocate

SSIR EXHIBIT 1

NARRATIVE

2021 PROJECTS NARRATIVE
REFLECTED IN THE
SYSTEM SAFETY AND INTEGRITY RIDER
FOR BLACK HILLS NEBRASKA GAS, LLC
IN NEBRASKA

Black Hills Energy

Improving life with energy

June 1, 2020

2021 PROJECTS REFLECTED IN THE SYSTEM SAFETY AND INTEGRITY RIDER FOR BLACK HILLS NEBRASKA GAS, LLC IN NEBRASKA

Filed June 1, 2020

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2021 PROJECTS REFLECTED IN THE

SYSTEM SAFETY AND INTEGRITY RIDER

FOR BLACK HILLS NEBRASKA GAS, LLC IN NEBRASKA

I. INTRODUCTION

As set forth on First Revised 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 (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 the same effective date as Docket No. NG-109.

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, 2021 through December 31, 2021 through the Safety and Integrity Charge (the "SSIR Charge") over the period March 1, 2021 through December 31, 2021. 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 proposed 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 proposed 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 proposed 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; and

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.

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 are considered "Reliability Projects".

As shown in Exhibit 2, Table K page 11 of 13 to this application, the Company has identified 93 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 2021 SSIR Projects total $50,321,427.

All 94 Projects will be in service in 2021.

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 2021 (*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 its 2022 annual filing, 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). For Nebraska the range is 10.4% to 61.2%.

2) The DIMP risk model[1] 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-threats[2] to be evaluated for each pipeline segment. The likelihood of failure and consequence of failure and asset consequence of sub-threats are quantified and accumulated to determine the score for projects. For Nebraska, the range of scores are 698.8 to 3389.

[1] The Black Hills Energy DIMP O&M Risk Assessment is included as Appendix A.
[2] The Threat Matrix of the 75 sub-threats are included as Appendix B.

3) The ARMR risk model[3] 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. For Nebraska, the range of scores are 2.57 to 2,480,896.80.

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.

II. 2021 SSIR PROJECTS

A. Replacement of Bare Steel Distribution Main

1. Background

The Company operates almost 5000 miles of distribution system in Nebraska, of which approximately 15% 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

[3] The workflow of the ARMR Program Identification & Prioritization Process is included as Appendix C.

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 three 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 management constraints, local economic development plans and customer impact.

3. Program Description

The Company has identified three specific bare steel distribution main replacement projects scheduled to be completed in 2021. 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 2021 is estimated to be $*2,286,001*.

4. Specific Projects

a) Crete, Nebraska – Bare Main Replacement

This SSIR project will consist of replacing 330 feet of unprotected bare steel main that was installed in the 1970's in Crete, NE. It will also involve the replacement of 123 service lines, each averaging 50 to 100 feet in length with one-inch PE pipe. The max score for this project is 2066.7 based on the risk model. The estimated total capital cost of this SSIR Project is $13,012. The anticipated in-service date is October 31, 2021.

b) Peru, Nebraska – Bare Main Replacement

This SSIR project will consist of replacing 428 feet of unprotected bare steel main that was installed in the 1970's in Peru, NE. The max score for this project is 1972.4 based on the risk model. The estimated total capital cost of this SSIR Project is $16,840. The anticipated in-service date is October 31, 2021.

c) Wayne, Nebraska – Bare Main Replacement

This SSIR project will consist of replacing 57,272 feet of unprotected bare steel main that was installed in the 1970's in Wayne, NE. It will also involve the replacement of 690 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 $2,256,149. The anticipated in-service date is October 31, 2021.

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 2021 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 not identified any specific transmission replacement project scheduled to be completed in 2021.

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 2021 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 does not plan to install any barricades in 2021.

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 2021 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 not identified any cathodic protection SSIR Projects that require the replacement or installation of anode ground beds or rectifiers in 2021.

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 2021 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 piping. For 2021, the Company has identified and scheduled for the replacement of 6 TBS at a total estimated capital cost of $*936,000*.

The Company has also identified 32 Line Heaters that need replacement at a total estimated capital cost of 607,002. These Projects are expected to be completed by December 31, 2021.

4. <u>Specific Projects</u>

a) <u>Alliance, Nebraska – TBS Relocation & Replacement</u>

This SSIR Project includes the relocation and replacement of a TBS in Alliance, 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 pressure regulating equipment that needs updating. The max score for this project is 3254 based on the risk model. The new TBS will include a much safer manufactured water bath line heater, proper pipe supports, standby alternate path to avoid system outage, new valves, and new pressure regulating equipment. The total capital cost of this SSIR Project is estimated at $*156,000*, with a scheduled in-service date of November 30, 2021.

b) <u>Clearwater, Nebraska – TBS Relocation & Replacement</u>

This SSIR Project includes the relocation and replacement of a TBS in Clearwater, 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 pressure regulating equipment that needs updating. The max score for this project is 3209 based on the risk model. The new TBS will include a much safer manufactured water bath line heater, proper pipe supports, standby alternate path to avoid system outage, new valves, and new pressure regulating equipment. The total capital cost of this SSIR Project is estimated at $*156,000*, with a scheduled in-service date of November 30, 2021.

c) <u>McCook, Nebraska – TBS Relocation & Replacement</u>

This SSIR Project includes the relocation and replacement of a TBS in McCook, 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 pressure regulating equipment that needs updating. The max score for this project is 3257 based on the risk model. The new TBS will include a much safer manufactured water bath line heater, proper pipe supports, standby alternate path to avoid system outage, new valves, and new pressure regulating equipment. The total capital cost of this SSIR Project is estimated at $*156,000*, with a scheduled in-service date of November 30, 2021.

d) Ogallala, Nebraska – TBS Relocation & Replacement

This SSIR Project includes the relocation and replacement of a TBS in Ogallala, 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 pressure regulating equipment that needs updating. The max score for this project is 3203.7 based on the risk model. The new TBS will include a much safer manufactured water bath line heater, proper pipe supports, standby alternate path to avoid system outage, new valves, and new pressure regulating equipment. The total capital cost of this SSIR Project is estimated at $*156,000*, with a scheduled in-service date of November 30, 2021.

e) Plainview, Nebraska – TBS Relocation & Replacement

This SSIR Project includes the relocation and replacement of a TBS in Plainview, 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 pressure regulating equipment that needs updating. The max score for this project is 3256 based on the risk model. The new TBS will include a much safer manufactured water bath line heater, proper pipe supports, standby alternate path to avoid system outage, new valves, and new pressure regulating equipment. The total capital cost of this SSIR Project is estimated at $*156,000*, with a scheduled in-service date of November 30, 2021.

f) Utica, Nebraska – TBS Relocation & Replacement

This SSIR Project includes the relocation and replacement of a TBS in Utica, 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 pressure regulating equipment that needs updating. The max score for this project is 3241 based on the risk model. The new TBS will include a much safer manufactured water bath line heater, proper pipe supports, standby alternate path to avoid system outage, new valves, and new pressure regulating equipment. The total capital cost of this SSIR Project is estimated at $*156,000*, with a scheduled in-service date of November 30, 2021.

g) Multiple Locations, Nebraska – Line Heater Replacement

The company has identified 25 line heaters that are to be replaced with Catalytic Panels. They are located throughout the state, specifically in Bayard, Bertrand, Broadwater, Burwell, Cambridge, Clearwater, Davenport, Deshler, Ewing, Fairfield, Franklin, Greeley, Henderson, Hildreth, Indianola, Lewellen, Lodgepole, Long Pine, Loup City, North Loup, Orchard, Oshkosh, Potter, Sargent and Wilcox. The total capital cost of these projects is estimated at $219,648 ($8,786 each), with a scheduled in-service date of November 30, 2021.

The company has identified 7 line heaters to be replaced by safe and efficient manufactured water bath style line heaters. They are located throughout the state, specifically in Elgin, Genoa, Gibbon, Laurel, McCook (East), Ravenna and St Edward. The total capital cost of these projects is estimated at $387,354 ($55,336 each), with a scheduled in-service date of November 30, 2021.

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

2. <u>SSIR Project Classification</u>

a) <u>Classification Under SSIR Tariff</u>

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 ten 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 ten SSIR Projects in 2021 is estimated to be $16,842,264. All ten TOG, Span, Shallow and Exposed Pipe SSIR Projects are expected to be completed by December 31, 2021.

4. **Specific Projects**

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

This SSIR project will consist of replacing 113,544 feet (21.5 miles) of pipe, all of which is TOG and installed between 1947 and 1963 in Eustis, NE. The max score for this project is 2650.9 based on the risk model. The estimated total capital cost of this SSIR Project is $3,373,405. The anticipated in-service date is October 31, 2021.

b) **Sutton, Nebraska – TOG Replacement 3900160-6**

This SSIR project will consist of replacing 130,457 feet (24.7 miles) of pipe, all of which is TOG and installed between 1957 and 1958 in Benedict, NE. The max score for this project is 2924.4 based on the risk model. The estimated total capital cost of this SSIR Project is $1,707,766. The anticipated in-service date is October 31, 2021.

c) **Sutton, Nebraska – TOG Replacement 4603480-20**

This SSIR project will consist of replacing 101,017 feet (19.1 miles) of pipe, all of which is TOG and installed between 1955 and 1966 in Sutton, NE. The max score for this project is 2323.9 based on the risk model. The estimated total capital cost of this SSIR Project is $2,831,619. The anticipated in-service date is October 31, 2021.

d) Sutton, Nebraska - Exposed Main Replacement 63213.87

This SSIR project will consist of replacing 1,738 feet of exposed pipe installed in 1959 in Shelton, NE. The ROF for this project is 25.4% based on the TIMP risk model. The estimated total capital cost of this SSIR Project is $970,366. The anticipated in-service date is October 31, 2021.

e) Sutton, Nebraska - Shallow Main Replacement 68332.92

This SSIR project will consist of replacing 131 feet of shallow pipe installed in 1959 in Shelton, NE. The ROF for this project is 24.7% based on the TIMP risk model. The estimated total capital cost of this SSIR Project is $108,379. The anticipated in-service date is October 31, 2021.

f) Kearney, Nebraska - Span Main Replacement 50171.96

This SSIR project will consist of replacing 332 feet of unsupported span pipe installed in North Loup, NE. The ROF for this project is 24.9% based on the TIMP risk model. The estimated total capital cost of this SSIR Project is $288,438. The anticipated in-service date is October 31, 2021.

g) Kearney, Nebraska - Shallow Pipe Replacement 1498.52

This SSIR project will consist of replacing 185 feet of shallow pipe installed in 1996 in Litchfield, NE. The ROF for this project is 24.7% based on the TIMP risk model. The estimated total capital cost of this SSIR Project is $147,720. The anticipated in-service date is October 31, 2021.

h) Albion, Nebraska - Exposed Pipe Replacement 1292.97

This SSIR project will consist of replacing 1,888 feet of exposed pipe installed in 1953 in Plainview, NE. The ROF for this project is 24.4% based on the TIMP risk model. The estimated total capital cost of this SSIR Project is $1,158,639. The anticipated in-service date is October 31, 2021.

i) Albion, Nebraska - Shallow Pipe Replacement 20122.78

This SSIR project will consist of replacing 8,016 feet of shallow pipe installed in 1953 in Breslau, NE. The ROF for this project is 24.4% based on the TIMP risk model. The estimated total capital cost of this SSIR Project is $3,003,281. The anticipated in-service date is October 31, 2021.

j) Albion, Nebraska - Shallow Pipe Replacement 31129.47

This SSIR project will consist of replacing 8,877 feet of shallow pipe installed in 1953 in Breslau, NE. The ROF for this project is 23.7% based on the TIMP risk model. The estimated total capital cost of this SSIR Project is \$3,252,650. The anticipated in-service date is October 31, 2021.

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 we do 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.

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 5272 meters in 2021. The total capital expenditure for meter relocations in 2021 is estimated to be $22,848,800. All meter relocation SSIR Projects listed are expected to be completed by December 31, 2021.

4. Specific Projects

Below are the towns and cities where the 2021 Meter Relocation Projects will occur and may not correspond to the project names.

a) Beatrice, Nebraska – Meter Relocation

The Company will relocate 33 meters from vulnerable locations and place them next to structures in Beatrice, NE. All meters are outside of buildings. The average max score for these meters is 6,844.2 based on the risk model. The total capital cost is estimated at $143,022, and all replacements are scheduled to be in service by December 31, 2021.

b) Chadron, Nebraska – Meter Relocation

The Company will relocate 121 meters from vulnerable locations and place them next to structures in Chadron, NE. 118 meters are in alleys with an average max score of 76,572.4, 2 meters are at easement lines with an average max score of 91,139.7, and 1 meter is outside of a building with a max score of 52,386.2 based on the risk model. The average max score for all 121 meters is 76,613.3 based on the risk model. The total capital cost is estimated at $524,413 and all replacements are scheduled to be in service by December 31, 2021.

c) Cozad, Nebraska – Meter Relocation

The Company will relocate 11 meters from vulnerable locations and place them next to structures in Cozad, NE. All meters are at easement lines. The average max score for these meters is 4.7 based on the risk model. The total capital cost is estimated at $47,674, and all replacements are scheduled to be in service by December 31, 2021.

d) Fairbury, Nebraska – Meter Relocation

The Company will relocate 1 meter from a vulnerable location and place it next to the structure in Fairbury, NE. The meter is outside of a building. The max score for this meter is 721.5 based on the risk model. The total capital cost is estimated at $4,334, and the replacement is scheduled to be in service by December 31, 2021.

e) Gering, Nebraska – Meter Relocation

The Company will relocate 242 meters from vulnerable locations and place them next to structures in Gering, NE. 208 meters are in alleys with an average max score of 76,279.8, and 34 meters are at easement lines with an average max score of 75,440.7 based on the risk model. The average max score for all 242 meters is 76,161.9 based on the risk model. The total capital cost is estimated at $1,048,826 and all replacements are scheduled to be in service by December 31, 2021.

f) Holdrege, Nebraska – Meter Relocation

The Company will relocate 171 meters from vulnerable locations and place them next to structures in Holdrege, NE. 166 meters are in alleys with an average max score of 100,249.0, 4 meters are at easement lines with an average max score of 94,432.2, and 1 meter is outside of a building with a max score of 87,139.6 based on the risk model. The average max score for all 171 meters is 100,036.3 based on the risk model. The total capital cost is estimated at $741,112 and all replacements are scheduled to be in service by December 31, 2021.

g) Lexington, Nebraska – Meter Relocation

The Company will relocate 878 meters from vulnerable locations and place them next to structures in Lexington, NE. 658 meters are in alleys with an average max score of 20,799.3, 200 meters are at easement lines with an average max score of 9,232.4, 17 meters are inside structures with an average max score of 72,953.0, and 3 meters are outside of buildings with an average max score of 4,906.7 based on the risk model. The average max score for all 658 meters is 19,120 based on the risk model. The total capital cost is estimated at $3,805,244 and all replacements are scheduled to be in service by December 31, 2021.

h) **<u>Lincoln, Nebraska – Meter Relocation</u>**

The Company will relocate 2,076 meters from vulnerable locations and place them next to structures in Lincoln, NE. 1,343 meters are inside structures with an average max score of 93,667.0, and 733 meters are outside of buildings with an average max score of 24,908.1 based on the risk model. The average max score for all 2,076 meters is 69,389.4 based on the risk model. The total capital cost is estimated at $8,997,365 and all replacements are scheduled to be in service by December 31, 2021.

i) **<u>McCook, Nebraska – Meter Relocation</u>**

The Company will relocate 171 meters from vulnerable locations and place them next to structures in McCook, NE. 162 meters are in alleys with an average max score of 61,748.8, 8 meters are at easement lines with an average max score of 60,862.0, and 1 meter is outside of a building with a max score of 27,363.1 based on the risk model. The average max score for all 171 meters is 61,506.3 based on the risk model. The total capital cost is estimated at $741,112 and all replacements are scheduled to be in service by December 31, 2021.

j) **<u>Ogallala, Nebraska – Meter Relocation</u>**

The Company will relocate 500 meters from vulnerable locations and place them next to structures in Ogallala, NE. 410 meters are in alleys with an average max score of 14,859.2, 85 meters are at easement lines with an average max score of 11,797.1, 1 meter is inside a structure with a max score of 9,561.6, and 4 meters are outside of buildings with an average max score of 4,078.5 based on the risk model. The average max score for all 500 meters is 14,241.8 based on the risk model. The total capital cost is estimated at $2,166,995 and all replacements are scheduled to be in service by December 31, 2021.

k) **<u>O'Neill, Nebraska – Meter Relocation</u>**

The Company will relocate 615 meters from vulnerable locations and place them next to structures in O'Neill, NE. 415 meters are in alleys with an average max score of 9,130.8, 198 meters are at easement lines with an average max score of 8,722.2, and 2 meters are outside of buildings with an average max score of 3,244.2 based on the risk model. The average max score for all 615 meters is 8,980.1 based on the risk model. The total capital cost is estimated at $2,665,404 and all replacements are scheduled to be in service by December 31, 2021.

l) Scottsbluff, Nebraska – Meter Relocation

The Company will relocate 194 meters from vulnerable locations and place them next to structures in Scottsbluff, NE. 173 meters are in alleys with an average max score of 86,820.5, 20 meters are at easement lines with an average max score of 97,045.1, and 1 meter is inside a structure with a max score of 99,537.5 based on the risk model. The average max score for all 194 meters is 87,940.1 based on the risk model. The total capital cost is estimated at $840,794 and all replacements are scheduled to be in service by December 31, 2021.

m) Seward, Nebraska – Meter Relocation

The Company will relocate 1 meter from a vulnerable location and place it next to the structure in Seward, NE. The meter is outside of a building. The max score for this meter is 8.9 based on the risk model. The total capital cost is estimated at $4,334, and the replacement is scheduled to be in service by December 31, 2021.

n) Terrytown, Nebraska – Meter Relocation

The Company will relocate 8 meters from vulnerable locations and place them next to structures in Terrytown, NE. 7 meters are in alleys with an average max score of 31,752.4, and 1 meter is at an easement line with a max score of 31,752.4 based on the risk model. The average max score for all 8 meters is 31,752.4 based on the risk model. The total capital cost is estimated at $34,672 and all replacements are scheduled to be in service by December 31, 2021.

o) York, Nebraska – Meter Relocation

The Company will relocate 80 meters from vulnerable locations and place them next to structures in York, NE. 1 meter is in an alley with a max score of 29,587.2, 29 meters are at easement lines with an average max score of 2,349.0, and 50 meters are outside buildings with an average max score of 3,292.2 based on the risk model. The average max score for all 80 meters is 3,279.0 based on the risk model. The total capital cost is estimated at $346,719 and all replacements are scheduled to be in service by December 31, 2021.

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 Orangeberg.

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 six specific PVC distribution main pipelines that will be replaced with PE pipe in 2021. The total capital expenditure for these six SSIR Projects in 2021 is estimated to be $*1,625,284*. All six of these PVC SSIR Projects are expected to be completed by December 31, 2021.

4. Specific Projects

a) Holdrege, Nebraska PVC 270-2174 – PVC Main Replacement

This SSIR project will consist of replacing 7,849 feet of PVC main that was installed in 1971 in Atlanta, 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 $125,320. The anticipated in-service date is October 31, 2021.

b) Kearney, Nebraska PVC 470-1612 – PVC Main Replacement

This SSIR project will consist of replacing 4,154 feet of PVC main that was installed in 1973 in Bloomington, NE. The max score for this project is 3,120.5 based on the risk model. The estimated total capital cost of this SSIR Project is $63,913. The anticipated in-service date is October 31, 2021.

c) Scottsbluff, Nebraska PVC 110-2653 – PVC Main Replacement

This SSIR project will consist of replacing 12,913 feet 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 $206,960. The anticipated in-service date is October 31, 2021.

d) Sutton 20, Nebraska PVC 460-2515 – PVC Main Replacement

This SSIR project will consist of replacing 5,269 feet of PVC main that was installed in 1967 in Deshler, 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 $349,976. The anticipated in-service date is October 31, 2021.

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

This SSIR project will consist of replacing 54,463 feet 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 $840,493. The anticipated in-service date is October 31, 2021.

f) **Sutton 10, Nebraska PVC 460-2826 – PVC Main Replacement**

This SSIR project will consist of replacing 5,171 feet of PVC main that was installed in 1972 in Trumbull, 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 $38,622. The anticipated in-service date is October 31, 2021.

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 2021 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 project could arise. Therefore, as part of its quarterly surveillance reports, the Company will provide updates of its facility relocation projects in connection with state or municipal infrastructure projects and, through its 2022 annual filing, will seek to recover the Eligible System Safety and Integrity Costs associated with those projects that occurred in 2021.

J. 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, develop GIS tools, close known data gaps, and continuously improve system knowledge. The Company will implement a Data Infrastructure Improvement Program ("DIIP") to close known data gaps, develop and improve GIS tools, 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.

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, Subpar 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, programmatic improvements, and the continued roll-out of Digital As-Built Technology in Nebraska.

3. Program Description

The Company has identified nine projects within the DIIP as described below. The total expenditure for 2021 is estimated to be $961,164, of which $91,116 are internal costs and are not included in the SSIR Application. The remaining $865,048 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 (MAOP) and MAOP attributes and update any missing pipeline attributes and features in GIS. Include the following record sources in the project for review: Historical Computer

Aided Drafting (CAD) and Platt Book records, In-Line Inspection (ILI) records.

There are no costs for this project in 2021.

b) **Gas Service Card Mapping**

This is a two-phase project.

Phase 1: This phase of the project will include adding all electronically generated service lines to our GIS database that are not currently in live production. This will include adding legacy Captricity and Distribution Integrity Management (DIMP) automatically generated service lines to production GIS data, performing a gap analysis to identify what spatial and attribute data issues we still have. The project will involve identifying all stakeholders who use service line data and displaying the created service lines in a way that communicates the risks with the spatial accuracy of these lines. Service lines already in the production GIS database with centerline accuracy issues will also be considered during phase one to promote consistency. The project will create a service line centerline for all active service points that do not currently have a service connection to the main.

Phase 2: This phase includes mapping, verifying, or adjusting the centerlines of roughly 190,000 electronic Nebraska service line as-builts that are currently stored in the document management system. This phase would include updating the pipeline and pressure test attributes on these service lines from the information gathered from the as-builts.

The total expenditure for 2021 is estimated to be $961,164, of which $91,116 are internal costs and are not included in the SSIR Application. The remaining $865,048 are external costs and are included in the SSIR Application

c) **Distribution Main & Service Centerline Survey**

This project includes the 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. Other information to be gathered and updated includes meter structure location, meter number, and abandoned live services (Service Point Status), above grade facilities, unlocatable mains. This survey should be combined with the required atmospheric corrosion survey. Towns will be prioritized using DIMP analysis. The GIS updates as a result of this project will be made as a part of the “Distribution Data Attribute Improvement” project for efficiency purposes.

There are no costs for this project in 2021.

d) Distribution Data Attribute Improvement

This project includes updating high priority pipeline attributes and features in GIS that are gathered from historic data, and records. This project will include the review of legacy data sets including historical CAD data, the MAOP access database for Legacy Source Gas Nebraska and the original construction records. The process to review construction records will include the scanning and indexing records, linking the records to GIS including the original construction documents and MAOP documentation. GIS updates and corrections from the Centerline Survey project will be included in this project. Prioritization will follow the same method as the centerline survey.

There are no costs for this project in 2021.

e) GIS Pressure Systems

This project will create pressure systems in GIS that will share a unique ID with Gas Valve and Asset Suite. This pressure systems will be updated with data for system MAOP, Operating Pressure, and odorized, and take points. Correction of connectivity issues will be included in the scope of this project.

There are no costs for this project in 2021.

f) GIS Emergency Response Zones

This project includes the creation and standardization of Emergency Response Zones per O&M to support company O&M 116 and Emergency Valves in GIS. Ensuring consistency with these GIS features to the CIS+ Valve database and WAM system. Includes the digitization of the Emergency response plans for each system and linking to these zones.

There are no costs for this project in 2021.

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 2021.

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

This project would use electronically available buried pipe inspection information and Subject Matter Expert knowledge to analyze and identify data issues. The data would then be corrected in the GIS system. It would include a process to verify the quality of this data before any updates are made.

There are no costs for this project in 2021.

i) Document Management Migration

This project includes the migration of the following documents sources to the new FileNet document management location: SharePoint Maximum Allowable Operating Pressure (MAOP) Library, FileNet Gas Service Cards, N: Drive As-built polygon files.

There are no costs for this project in 2021.

K. Reliability Projects

1. Background

While the focus of integrity projects is to replace aging or at -risk infrastructure, the focus of reliability projects is to ensure that 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.

2. SSIR Project Classification

a) Classification Under SSIR Tariff

The Company identified the Reliability 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 seven specific projects to improve the reliability of the distributions system in 2021. The total capital expenditure for these eight SSIR Projects in 2021 is estimated to be $*4,214,912*. All seven of these SSIR Projects are expected to be completed by December 31, 2021.

4. **Specific Projects**

a) **Giles to Valeretta Drive Loop**

This Project is designed to support the north side of the Gretna distribution system that is primarily fed from the southeast part of Gretna. Customers in this area will benefit with a two-way feed into this expanding area from a connection that will be coming from the north. The estimated total capital cost of this SSIR Project is $127,760. The anticipated in-service date is October 31, 2021.

b) **Highway 31 & Giles DRS Loop**

This Project will continue to support our growth in western Sarpy County by bringing much-needed capacity to the intersection of 204th and Giles Road. This project is necessary to serve the "Giles to Valeretta Drive Loop Project and additional growth to the west and north of this intersection. The estimated total capital cost of this SSIR Project is $120,000. The anticipated in-service date is October 31, 2021.

c) <u>Columbus Capacity Loop</u>

This Project is necessary to support the Columbus distribution system in the north and west areas of the community. The Lakeview community in the north has continued to grow over the years and has caused some bottlenecks in the current infrastructure. Also, this loop will support the western part of the Columbus system by providing a two-way feed into the Columbus distribution system. The estimated total capital cost of this SSIR Project is $40,600. The anticipated in-service date is October 31, 2021.

d) <u>David City Capacity Loop</u>

This Project is necessary to maintain the minimum pressure requirements in the north end of the David City distribution system. Over the years, existing customers have expanded operations causing some stress on the overall performance of the distribution system in the north part of the community. The estimated total capital cost of this SSIR Project is $121,000. The anticipated in-service date is October 31, 2021.

e) <u>Kearney ERT Upgrade</u>

This project is to exchange 40G Electronic Reading Transmitters (ERTs) that were installed 15-20 years ago in Kearney, NE. The typical life span of ERTs are 16-20 years. If these ERTs are not replaced, the accuracy of the monthly usage reads will begin to degrade rapidly and will eventually cease, causing missing reads and estimated bills. The estimated total capital cost of this SSIR Project is $2,333,185. The anticipated in-service date is October 31, 2021.

f) <u>Holdrege ERT Upgrade</u>

This project is to exchange 40G Electronic Reading Transmitters (ERTs) that were installed 15-20 years ago in Holdrege, NE. The typical life span of ERTs are 16-20 years. If these ERTs are not replaced, the accuracy of the monthly usage reads will begin to degrade rapidly and will eventually cease, causing missing reads and estimated bills. The estimated total capital cost of this SSIR Project is $1,485,867. The anticipated in-service date is October 31, 2021.

g) <u>Scottsbluff Chart Replacements</u>

This Project consists of replacing outdated chart recording equipment in Scottsbluff 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. The estimated total capital cost of this SSIR Project is $13,500. The anticipated in-service date is October 31, 2021.

SSIR EXHIBIT 1

APPENDIX A –

DIMP OM RISK ASSESSMENT

Black Hills Energy

DIMP O&M Risk Assessment

Project # 1960008.00

Prepared for:

Black Hills Energy

Prepared by:

EN Engineering

November 8, 2019

Version 2

Table of Contents

Appendices

1.0 INTRODUCTION

Black Hills Energy (BHE) is modifying their approach to analyzing risk for their Distribution system. The current BHE Distribution risk model is a reactive model that analyzes leak history and damages. BHE requested assistance from EN Engineering to develop an updated risk model. For a more proactive analysis of system risk, the new model uses spatial analysis and external factors beyond leak and damage history.

Pilot risk models were completed for Colorado and Wyoming with the results being effective as of the following dates:

- For the state of Colorado service territory – June 1, 2019
- For the state of Wyoming service territory – July 19, 2019

The risk model was refined and run for all six (6) states – Arkansas, Colorado, Iowa, Kansas, Nebraska, and Wyoming.

This document will be utilized for future support of O&M development and will be incorporated into the existing O&M manual upon successful completion of the risk model development and implementation for all six (6) states within the BHE service territory.

2.0 THREAT IDENTIFICATION

2.1. Introduction

49 CFR 192 Subpart P provides guidance regarding defining system threats and threat categories. Operators are required to consider the following eight primary threat categories:

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

Within each threat category, sub-threats are identified based on operator input and data.

Consideration of equipment failure is vital to a robust risk model. During Phase 1 of the Colorado risk model development and run, equipment failure was not considered, as the focus was on existing and active mains and services only. Equipment failure was integrated into the assessment of Wyoming risk during Phase 2 as well as being included for all states during Phase 3. Phase 3 included updating the risk results for Colorado and Wyoming to incorporate changes identified during the Phase 3 threat review.

2.2. Threat Identification Process

To identify threats to the BHE Distribution system, EN Engineering was on site to conduct an in-person data source assessment with BHE personnel. Through this process, the availability and reliability of operator data was assessed, threats and sub-threats were discussed, and the analysis process was reviewed.

EN Engineering also conducted teleconference interviews with identified BHE SMEs. Through these interviews, SME knowledge and experience was captured and used to assess and identify threats to the Black Hills Energy Distribution service territories.

The following individuals were interviewed:

SME Area of Expertise	SME Name and Title
Overall DIMP Program	Marc Lewis – Director of Gas Pipeline and System Integrity Kyle Purcell – DIMP Manager Nick Pribyl – Integrity Coordinator – CO Nate Richardson – Pipeline Integrity Coordinator – IA Mike Munoz – Pipeline Integrity Coordinator – KS
Corrosion	Matt Mangin – Sr. Cathodic Protection Specialist – AR Nikki Sims – Integrity & Pipeline Safety – Corrosion – WY & CO
Operations	Brian Davenport – Gas Operations Supervisor II – AR Mike Kite – Gas Operations Supervisor II – AR Chris Bauman – Manager Gas Operations II – CO Nathan Stewart – Damage Prevention Program Manger Christian Latham – Sr. Operations Manager – CO BJ Hartley – Damage Prevention Coordinator – CO Eric Spellerberg – Gas Operations Supervisor II – IA Jeff Staudenmaier – Gas Operations Manager II – IA Steve Stone – Sr. Gas Operations Manager – IA Ron Carey – Gas Operations Manager II – NE Kevin Jarosz – Operations Director – NE Bo Secrest – Manager Gas Operations II – WY Gary Hogan – Manager Gas Operations I – WY
Stations and Materials	Kerry Mitchell – Technical Services Manager – AR Charles Bayles – Engineering Manager & Project Manager – AR

SME Area of Expertise	SME Name and Title
	Christian Latham – Sr. Operations Manager - CO Matt Walshe – Design Engineering – CO Joe McAreavy – Construction Planning Manager – IA Larry Claycomb – Technical Services Manager – KS Alan Steele – Principal Gas Engineer – KS Brad Fleming – Principal Gas Engineer – NE Paul Dodson – Sr. Gas Engineer – NE Brandon Malleck – Construction Planning Manager – NE Walter Fees – Engineer Gas SR – WY Rod Wietzki – Supervisor Gas Technical Services – WY

Based on the SME input from the interviews as well as the discussions and data obtained from the on-site workshop, a list of threats and sub threats were developed.

A Threat Matrix was developed to assign likelihood and consequence scores to the different sub threats. To determine the likelihood scores, questions were listed for each of the different sub threats. Each question has a range of possible answers which are assigned various index scores used to calculate the likelihood for that threat. Consequence scores are determined based on SME input regarding total failure, partial failure, or minimal or temporary failure of a pipeline segment that would be the result for the given threat. The consequence score also takes into account factors including operating pressure, material type, diameter, population density, proximity to infrastructure, and ability to isolate the segment. The assigned likelihood and consequence scores are then used to calculate the relative risk for each segment. The Threat Matrix can be found in **Appendix A**.

3.0 DATA SOURCES

A variety of data sources, both internal and external, were used to develop the model and assess risk for the BHE Distribution system.

In the Threat Matrix, the applicable data source is listed for each threat and sub threat. The complete list of data sources can be found in the Threat Matrix in **Appendix A**.

The available GIS data layers are overlaid with Distribution system asset shapefiles creating segmentation of the system based on applicable threats to each area. A layer was created within GIS to allow for SME input. The risk calculations are overlaid with GIS data to create a map showing the risk for all BHE distribution mains and services.

4.0 RISK ANALYSIS METHODOLOGY

Risk is calculated using the following equation:

$$Risk = LOF \times COF$$

Where:

LOF = Likelihood of Failure

COF = Consequence of Failure

4.1. Likelihood

The likelihood of a particular threat is assigned a relative score on a 10 point scale with 10 being the highest likelihood, 1 being the lowest likelihood, and 0 being not applicable to the system. Several subthreats include responses for mitigative measures that BHE has implemented. These measures help to reduce the relative risk for the given segment which is represented by negative index scores that are associated with those measures.

For each sub-threat, likelihood scores are assigned based on the responses to the questions included in the Threat Matrix. These responses come from SME input, operator data such as leak and damage history, or GIS layers such as flood plains and earthquake zones.

As an additional proactive measure to identify segments that are indicative of potential future failure, pipe profiles were developed based on leak and damage history. This approach is discussed in the following subsections.

4.1.1. *Leak Profile*

Leak history data was utilized to develop pipe profiles to determine if assets with similar characteristics are likely for potential future failure. One profile was specific to the external corrosion failure mode and the second profile includes data for all leak causes. Frequency of leaks resulting from various causes were analyzed according to characteristics including material type, vintage, and location.

4.1.2. *Damage Profile*

Damage history data was utilized to develop a pipe profile to determine if assets with similar characteristics are likely for potential future failure due to excavation damage, natural force damage, other outside force damage, or other causes. Frequency of damages resulting from these failure modes were analyzed according to characteristics including material type, vintage, and location.

Known vehicle damage history was also analyzed and a heat map was created to identify areas with a high density of hits. These areas were assigned higher risk scores as they are more susceptible to future damage.

4.2. Consequence

Consequence scores are an additive combination of Threat consequence and Asset consequence.

Threat consequence is the severity of the impact of a failure or situation caused by each individual threat. Threat consequence scores are assigned based on total failure, partial failure, or minimal/temporary failure of the segment.

Asset consequence is the consequence of an event due to the characteristics or location of the given segment. Asset consequence consideration includes pressure, material type, pipe diameter, population density, ability to isolate the segment, and proximity to infrastructure.

4.3. Accounting for Unknowns

To account for the effect of unknown information in the risk model, P50 and P90 risk scores are calculated as well as the delta to account for the difference between these values.

As described in section 4.1, likelihood scores are assigned on a 10 point scale. If the response to a given threat question is unknown, a score of 5 will be used in the P50 risk score calculation for that particular sub-threat and a score of 9 will be used for the P90 calculation.

P50 and P90 scores are also used in the calculation of asset consequence. Consequence scores are assigned on a scale from 0 to 1. The P50 score is represented by 0.5 and the P90 score is represented by 0.9.

The P90 approach calculates a higher risk score resulting from the assignment of a likelihood score of 9 and asset consequence score of 0.9. P90 is a higher confidence level, meaning that there is a higher likelihood that the true value of the unknown parameters would calculate a risk score that would fall at or below the P90 calculated score.

Delta values are calculated as the difference between the P50 and P90 scores. Analysis of this value is a way to assess the impact of the unknown data and the effect it has on driving up the risk score value.

4.4. Segmentation

The system is segmented based on the applicable threats to different areas. In the ArcMap system, various GIS and spatial layers are overlaid to evaluate the relative risk. At every point where there is a change in applicable threats, a new segment is identified. A minimum segment length of ten (10) feet was identified.

The following subsections provide additional detail on the minimum segmentation process for mains and services.

4.4.1. *Main Segmentation*

In the event that a segment is less than ten (10) feet in length is identified, it is merged with its highest scoring neighbor over 10ft. The merged segment assumes the highest risk score from its components. The original risk scores for each of the components comprising the merged length are noted in the segment list and they are flagged as merged.

4.4.2. *Service segmentation*

Segmentation for service lines is handled differently. All segments identified on a service line are grouped together to create one segment representative of the entire service. The highest segment score is applied to the entire length of the service. The original risk scores for each of the components comprising the merged length are noted in the segment list and they are flagged as merged.

5.0 INTERPRETING THREAT AND RISK RESULTS

5.1. Summary of Risk Analysis

Using operator data and SME input as well as supplemental external data sources, threats to the Distribution system are identified and relative risk scores are calculated with likelihood and consequence values for each threat. The risk model results are displayed geographically with ArcMap and the areas of highest risk are readily identifiable based on the assigned color scale and filter.

5.2. Interpreting Risk Results

The risk results can be interpreted using several different methods described in the following sections.

5.2.1. *Segment Risk Score Tiers*

Risk scores were divided into four (4) statistically determined tiers with Tier 1 including the highest risk scores and Tier 4 including the lowest risk scores.

Tiers are determined based on P90 risk scores such that Tier 1 includes the top 5% highest risk segments, Tier 2 includes the next highest 20% of segments, Tier 3 includes 25% of the segments, Tier 4 includes the lowest 50% of the segments. Thus Tiers 1 and 2 are considered high risk, Tier 3 is medium risk, and Tier 4 is low risk.

These groupings are used as a tool for BHE to prioritize maintenance and inspection programs and it should not be assumed that segments ranked in the higher tiers are unsafe or require additional mitigative actions to reduce risk.

Programs will be developed around the segments grouped into Tiers 1 and 2 as part of the solution to remove or otherwise mitigate the highest risk assets.

The risk segment feature class can be viewed in ArcMap or ArcGIS Pro and symbolized based on BHE's internal symbology.

P50 risk scores may also be analyzed as a way to address threats that may not come out as highest risk in the P90 calculations as that elevates the impact of unknown information. Known threats may be more prevalent in the P50 risk analysis enabling the DIMP plan to drive system changes both in addressing unknown assets and known risks.

5.2.2. *Analysis of Threats*

Risk model data can also be analyzed based on threat categories. Data can be plotted and analyzed to identify trends based on threat category and other factors such as material type.

The method can be used to target inspection, maintenance, and mitigation activities based on threat type and activities can be implemented across the service territory.

Possible analysis may include the following:

- For each threat category, the segment total risk scores can be plotted against total risk score to evaluate the contribution of that particular threat to the overall risk score.
- The data can also be broken down based on material type. For each material the average risk score for each threat category can be compared to analyze how the various threat categories impact different material types.

5.3. Utilization of Results

Risk model results will be reviewed annually by BHE SMEs. Results and rankings are subject to change based on the availability of new data.

The risk model results will be used as guidance for planning and prioritizing projects. Additional factors may contribute to the scheduling of work and flexibility may be allowed to shift projects within the overall work plan while maintaining the overall goal to reduce risk within BHE's Distribution system.

Appendix A

Threat Matrix

Likelihood Scores

Field Name	Threat Category	Threat/SubThreat	Data Layer	etention	Data Source	Default Answer	Threat Consequence	Answer 1	Answer 2	Answer 3	Answer 4	Answer 5	Answer 6	Answer 7	Answer 8	Answer 9	Answer 10	Answer 11	Answer 12	Answer 13	Score 1	Score 2	Score 3	Score 4	Score 5	Score 6	Score 7	Score 8	Score 9	Score 10	Score 11	Score 12	Score 13	Threat Consequence Score
CC_LQ1	Corrosion	Is the pipe cathodically protected?	Centerlines_Proc		SME Input	N/A	Partial Failure of Pipeline Segment	Yes - protected since installation	Yes - currently protected but historic gaps in CP	No - not currently protected but was previously protected	No - never protected	Unknown P50	Unknown P90	N/A							1	5	6	10	5	9	0							0.5
CC_LQ2	Corrosion	Are CP readings consistently adequate?	Centerlines_Proc		CIS + CP, PCS Test Points	N/A	Minimal or Temp failure of segment	CP Readings indicating Highest Risk	CP Readings indicating Medium Risk	CP Readings indicating Low Risk	Unknown P50	Unknown P90	N/A								10	7	1	5	9	0								0.1
CC_LQ3	Corrosion	Is the steel pipe segment isolated from the CP system?	Centerlines_Proc		Isolated Services Spreadsheet; Export from MasterEquipment; CIS+; Isolated Short Segments in PCS	N/A	Partial Failure of Pipeline Segment	No	Yes-Under 100'	Yes-Over 100'	Unknown, Under 100' (P50)	Unknown, Under 100' (P90)	Unknown, Over 100' (P50)	Unknown, Over 100' (P90)	N/A						1	10	7	6	9	5	8	0						0.5
CC_LQ4	Corrosion	Is the Pipe Type, Age, and Location (district) likely for external corrosion?	Centerlines_Proc		Leak Spreadsheet	N/A	Partial Failure of Pipeline Segment	Highest Likelihood	High Likelihood	Low Likelihood	Lowest Likelihood	N/A	Unknown P50	Unknown P90							10	7	3	1	0	5	9							0.5
CC_LQ5	Corrosion	Are there known sources of stray current in the area?	Centerlines_Proc		SME Input	N/A	Partial Failure of Pipeline Segment	Yes - AC	Yes - DC	Yes - But Mitigated	N/A	Unknown P50	Unknown P90								10	8	5	0	5	9								0.5
CC_LQ6	Corrosion	Does the segment contain a shorted casing?	Centerlines_Proc		CIS+; PCS	N/A	Minimal or Temp failure of segment	Yes	No	Unknown P50	Unknown P90	N/A									10	1	5	9	0									0.1
CC_LQ7	Corrosion	Coating condition-ground to air interface?	Centerlines_Proc		SME Input	N/A	Partial Failure of Pipeline Segment	Poor	Good	Excellent	Unknown P50	Unknown P90	N/A								10	3	1	5	9	0								0.5
CC_LQ8	Corrosion	Is the Pipe Type, Age and Location (district) likely for internal corrosion?	Centerlines_Proc		Leak Spreadsheet	N/A	Partial Failure of Pipeline Segment	High Likelihood	Low Likelihood	N/A	Unknown P50	Unknown P90									5	1	0	2	4									0.5
CC_LQ9	Corrosion	Have liquids been found in the system?	Centerlines_Proc		SME Input	N/A	Minimal or Temp failure of segment	Yes	No	Unknown P50	Unknown P90	N/A									10	1	5	9	0									0.1
CC_LQ10	Corrosion	Has gas quality data identified high levels of corrosive elements?	Centerlines_Proc		SME Input	N/A	Partial Failure of Pipeline Segment	Yes, within the last 3 years	Yes, within the last 5 years	Yes, over 5 years	Unknown P50	Unknown P90	No	N/A							10	7	3	5	9	1	0							0.5
CC_LQ11	Corrosion	Has atmospheric corrosion been identified on above grade pipe or pipe in vaults?	Centerlines_Proc		CIS + Survey	N/A	Partial Failure of Pipeline Segment	Yes	No	Unknown P50	Unknown P90	N/A									10	1	5	9	0									0.5
CC_LQ12	Corrosion	What is the segment's coating type?	Centerlines_Proc		GIS	N/A	Partial Failure of Pipeline Segment	Bare	Coal Tar or Tape	Extruded PE	Epoxy (Including FBE)	Unknown P50	Unknown P90	N/A							10	8	6	2	5	9	0							0.5
CC_LQ13	Corrosion	What is the joint coating type?	Centerlines_Proc		SME Input	N/A	Partial Failure of Pipeline Segment	Known use of shrink sleeves	Known use of grey tape and powercrete	Only approved coatings utilized	Unknown P50	Unknown P90	N/A								10	6	1	5	9	0								0.5
ED_LQ1	Excavation Damage	Are there service stubs?	SMEInput_Polygon		SME Input	Unknown	Total Failure of Pipeline Segment	Yes	No	Unknown P50	Unknown P90										10	1	5	9										1
ED_LQ2	Excavation Damage	Are there facilities in the distribution system that are unlocatable?	Centerlines_Proc		SME Input	Unknown	Total Failure of Pipeline Segment	Yes-Area is unlocatable	Yes - line is unlocatable but has good records and can be located by drawings easily	Unknown: Vintage Plastic P50	Unknown: Vintage Plastic P90	Unknown P50	Unknown P90	No							10	6	6	9	5	8	1							1
ED_LQ3	Excavation Damage	Are there areas of unmapped/missing data?	MissingData		GeoCode Process / Services w/out mains	Unknown	Total Failure of Pipeline Segment	Location of missing Data	No	Unknown P50	Unknown P90										10	1	5	9										1
ED_LQ4	Excavation Damage	Are there regions of previous damage due to not following one-call laws?	Damages_Proc		Damage Spreadsheet	No	Total Failure of Pipeline Segment	Previous damage due to not following one-call laws	No	Unknown P50	Unknown P90										10	1	5	9										1
ED_LQ5	Excavation Damage	Is there a system in place for clearing sewer lines?	SMEInput_Polygon		SME Input	Unknown	Total Failure of Pipeline Segment	Yes	No	Unknown P50	Unknown P90										1	10	5	9										1
ED_LQ6	Excavation Damage	Has there been damage due to mislocated lines/poorly performing locators?	Damages_Proc		Damage Spreadsheet	No	Total Failure of Pipeline Segment	Previous known damage	No	Unknown P50	Unknown P90										10	1	5	9										1
ED_LQ7	Excavation Damage	Has there been damage due to facilities not marked?	Damages_Proc		Damage Spreadsheet	No	Total Failure of Pipeline Segment	Previous known damage	No	Unknown P50	Unknown P90										10	1	5	9										1
ED_LQ8	Excavation Damage	Has there been damage due to improper backfill operations?	Damages_Proc		Damage Spreadsheet	No	Partial Failure of Pipeline Segment	Previous damage due to improper backfilling practices	No	Unknown P50	Unknown P90										10	1	5	9										0.5
ED_LQ9	Excavation Damage	Has the region conducted public safety awareness meetings specific to Excavation Damage in the year prior to the risk assessment?	SMEInput_Polygon		SME Input	Unknown	Minimal or Temp failure of segment	Implemented all 3 mitigation activities of Social Media Outreach, Public Meetings, and Mailers	2 of the 3 options	1 of the 3 options	No	Unknown P50	Unknown P90								-3	-2	-1	10	5	9								0.1
ED_LQ10	Excavation Damage	Are construction audits performed in the area?	TBD		SMS Data Repository	Unknown	TBD	No	Yes - with negative results	Yes - with positive results	Unknown P50	Unknown P90									10	6	4	5	9									TBD
EQ_LQ1	Equipment	Have equipment malfunctions been experienced?	SMEInput_Polygon		SME Input	Unknown	Partial Failure of Pipeline Segment	3 or more identified outside of regular survey and maintenance	No more than 2 identified outside of regular survey and maintenance	Identified during survey	None	Unknown P50	Unknown P90								10	7	3	0	5	9								0.5
EQ_LQ2	Equipment	Have equipment leaks been experienced?	Leaks_Proc		Leak Spreadsheet	No	Partial Failure of Pipeline Segment	Yes	No												10	1												0.5
EQ_LQ3	Equipment	Is outdated/vintage/obsolete system equipment present in the distribution system?	SMEInput_Polygon		SME Input	No	Minimal or Temp failure of segment	Yes, obsolete equipment	Yes, vintage equipment	No	Unknown P50	Unknown P90									10	7	0	5	9									0.1
EQ_LQ4	Equipment	Is outdated/vintage/obsolete control equipment present at the customer meter setting?	SMEInput_Polygon		SME Input	Unknown	Minimal or Temp failure of segment	Yes, obsolete equipment	Yes, vintage equipment	No	Unknown P50	Unknown P90									10	7	0	5	9									0.1
EQ_LQ5	Equipment	Have there been instances of over pressurization due to equipment failure?	SMEInput_Polygon		SME Input	Unknown	Minimal or Temp failure of segment	One or more high high alarms on the system	One or more high alarms on the system	No	Unknown P50	Unknown P90									10	4	1	3	7									0.1
IO_LQ1	Incorrect Operations	Have failures and/or near misses been experienced due to inadequate procedures?	CountyLevel_SME		SME Input	Unknown	Minimal or Temp failure of segment	Yes, factor known to have contributed to a failure(s) within the last year	Yes, factor known to have contributed to a near miss(es) within the last year	Yes, factor known to have contributed to a failure(s) within the last 2 years	Yes, factor known to have contributed to a near miss(es) within the last 2 years	Yes, factor known to have contributed to a failure(s) within the last 5 years	Yes, factor known to have contributed to a near miss(es) within the last 5 years	Factor may have contributed to a failure(s) or near miss(es) within the last year	No or N/A	Unknown P50	Unknown P90				10	8	7	6	5	4	2	1	5	9				0.1
IO_LQ2	Incorrect Operations	Have there been instances of over pressurization due to incorrect operations?	SMEInput_Polygon		SME Input	Unknown	Minimal or Temp failure of segment	One or more high high alarms on the system	One or more high alarms on the system	No or N/A	Unknown P50	Unknown P90									10	4	1	5	9									0.1
IO_LQ3	Incorrect Operations	Have failures and/or near misses been experienced due to failure to follow procedures?	CountyLevel_SME		SME Input	Unknown	Minimal or Temp failure of segment	Yes, factor known to have contributed to a failure(s) within the last year	Yes, factor known to have contributed to a near miss(es) within the last year	Yes, factor known to have contributed to a failure(s) within the last 2 years	Yes, factor known to have contributed to a near miss(es) within the last 2 years	Yes, factor known to have contributed to a failure(s) within the last 5 years	Yes, factor known to have contributed to a near miss(es) within the last 5 years	Factor may have contributed to a failure(s) or near miss(es) within the last year	No or N/A	Unknown P50	Unknown P90				10	8	7	6	5	4	2	1	5	9				0.1
IO_LQ4	Incorrect Operations	Have there been cases of contractor or company personnel performing covered tasks without valid OQ?	CountyLevel_SME		SME Input	Unknown	Minimal or Temp failure of segment	Yes, known instances of improper OQ, without repercussions within the last year	Yes, known instances of improper OQ, with zero tolerance within the last year	Yes, known instances of improper OQ, without repercussions within the last 2 years	Yes, known instances of improper OQ, with zero tolerance within the last 2 years	Yes, known instances of improper OQ, without repercussions within the last 5 years	Yes, known instances of improper OQ, with zero tolerance within the last 5 years	Potential cases of improper OQ may have occurred within the last year	No or N/A	Unknown P50	Unknown P90				10	9	7	6	4	3	2	1	5	9				0.1
IO_LQ5	Incorrect Operations	Known location of incorrect operations leading to a leak?	Leaks_Proc		Leak Spreadsheet	No	Minimal or Temp failure of segment	Yes	No												10	1												0.1
IT_LQ1	Interactive Threats	Interactive threats	TBD		TBD																													
LL_LQ1	Leaks	Is the pipe profile indicative of potential for leaks?	Centerlines_Proc		Leak Spreadsheet	Lowest Likelihood	Partial Failure of Pipeline Segment	Highest Likelihood	High Likelihood	Low Likelihood	Lowest Likelihood	Unknown P50	Unknown P90								10	7	3	1	5	9								0.5
LL_LQ2	Leaks	Have there been mitigation activities to reduce Leaks in year prior to the risk assessment (e.g., Accelerated Leak Surveys)?	SMEInput_Polygon		SME Input	Unknown	Partial Failure of Pipeline Segment	Yes-2 or more activities	Yes-1 activity	No	Unknown P50	Unknown P90									-2	-1	0	5	9									0.5
MW_LQ1	Materials/Welds/Joints	Are there known manufacturing defects on pipe or non-pipe components within the system?	SMEInput_Polygon		SME Input	Unknown	Partial Failure of Pipeline Segment	Known region with frequent defects	Know region with sporadic defects	No	Unknown P50	Unknown P90									10	7	1	5	9									0.5
MW_LQ2	Materials/Welds/Joints	At risk materials (Century Utility Products, PE3306, Driscopipe 8000 High Density polyethylene pipe installed between 1978 and 1999, Drisco8000, XTRUBE coated) present?	SMEInput_Polygon		SME Input	Unknown	Partial Failure of Pipeline Segment	Yes, multiple at risk materials within the system	Yes, singular instance of at risk material in the system	No	Unknown P50	Unknown P90									10	7	1	5	9									0.5
MW_LQ3	Materials/Welds/Joints	Is the pipe segment PVC?	Centerlines_Proc		GIS	Unknown	Total Failure of Pipeline Segment	PVC Pipe	No	Unknown P50	Unknown P90										10	0	2	9										1
MW_LQ4	Materials/Welds/Joints	Is the pipe segment Copper?	Centerlines_Proc		GIS	Unknown	Partial Failure of Pipeline Segment	Copper Pipe	No	Unknown P50	Unknown P90										10	0	2	9										0.5
MW_LQ5	Materials/Welds/Joints	Does the pipe segment have thin-walled pipe?	Centerlines_Proc		GIS	Unknown	Partial Failure of Pipeline Segment	Known location of thin-walled pipe	No	Unknown P50	Unknown P90										10	0	2	9										0.5
MW_LQ6	Materials/Welds/Joints	Does the pipe segment have known failures in welds or joints resulting in leaks?	Leaks_Proc		Leak Spreadsheet	No	Partial Failure of Pipeline Segment	Yes	No	Unknown P50	Unknown P90										10	1	4	8										0.5
MW_LQ7	Materials/Welds/Joints	Is the pipe segment Aldyl-A?	Centerlines_Proc		GIS	Unknown Material/Date	Minimal or Temp failure of segment	Aldyl A	General Plastic Installed Prior 1983	Material Unknown, Pre 1983 P50	Material Unknown, Pre 1983 P90	Unknown material unknown date P50	Unknown material unknown date P90	N/A							10	8	5	9	2	8	0							0.1
NF_LQ1	Natural Forces	Is the pipe segment susceptible to earthquakes?	Earthquake_Proc		FEMA	Zone A	Partial Failure of Pipeline Segment	Zone E	Zone D-2	Zone D-1	Zone D-0	Zone C	Zone B	Zone A							10	8	7	5	3	1	0							0.5
NF_LQ2	Natural Forces	What is the annual average snowfall?	Snow_Proc		NOAA	None	Minimal or Temp failure of segment	Over 179 inches	139 - 179 inches	98 - 139 inches	58 - 98 inches	Under 58 inches	None								10	8	6	4	2	1								0.1
NF_LQ3	Natural Forces	Is the pipe segment in an area susceptible to floods?	FloodHazardZones_Proc		FEMA	Unknown	Partial Failure of Pipeline Segment	Yes-Regulatory Floodway	Undetermined	Yes-1% Annual chance	Yes-.2% Annual chance	Reduced risk due to levee	Minimal Flood Hazard	No	Unknown P50	Unknown P90					10	7	5	3	2	1	0	5	9					0.5
NF_LQ4	Natural Forces	Is the pipe segment susceptible to washouts or potentially exposed?	WashoutSusceptability_Proc		NRCS and NHD	Unknown All	Partial Failure of Pipeline Segment	Low pipe depth, loose soil, and flowline	Loose soil, and flowline & unknown pipe depth P50	Loose soil, and flowline & unknown pipe depth P90	Low pipe depth	Flowline location-unknown pipe depth P50	Flowline location-unknown pipe depth P90	Loose soil- unknown pipe depth P50	Loose soil- unknown pipe depth P90	No	Unknown All P50	Unknown All P90			10	6	9	7	5	8	4	7	1	3	6			0.5
NF_LQ5	Natural Forces	What is the likelihood of snow drifting?	SMEInput_Polygon		SME Input	None	Minimal or Temp failure of segment	High Likelihood	Medium likelihood	Low likelihood	None	Unknown P50	Unknown P90								10	7	4	1	5	9								0.1
NF_LQ6	Natural Forces	What is the probability of a tornado within 25 miles of the segment on any given day?	Tornado_Proc		NOAA	Under .1%	Partial Failure of Pipeline Segment	Over 1.4 %	.96% - 1.4%	.53% - .96%	.1% - .53 %	Under .1%									10	8	6	4	2									0.5
NF_LQ7	Natural Forces	Has the pipe segment experienced damage due to land subsidence?	Damages_Proc		Damage Spreadsheet; CIS+	Unknown	Partial Failure of Pipeline Segment	Yes, previous damage due to land movement	Unknown P50	Unknown P90											10	5	9											0.5
NF_LQ8	Natural Forces	What is the segment's depth in relationship to the frost line?	CountyLevel_SME		SME Input	Unknown All	Partial Failure of Pipeline Segment	Above Frost Line	Within 1' above frost line	At Frost Line	Within 1' below Frost Line	Significantly Below Frost Line	Unknown Pipe Depth, but Frost depth is below 60 -P50	Unknown Pipe Depth, but Frost depth is below 60 -P90	Unknown Pipe Depth, but frost depth is 30 or under- P50	Unknown Pipe Depth, but frost depth is 30 or under- P90	Unknown Pipe Depth, but frost depth is between 30 & 60- P50	Unknown Pipe Depth, but frost depth is between 30 & 60- P90	Unknown All P50	Unknown All P90	10	8	6	4	1	6	9	4	7	5	8	3	6	0.5
NF_LQ9	Natural Forces	Has the pipe segment experienced damage due to frost heave?	Damages_Proc		Damage Spreadsheet	No known frost heave dam	Partial Failure of Pipeline Segment	Previous damage from Frost Heave	No known frost heave damage												10	1												0.5
NF_LQ10	Natural Forces	Is the segment in a water crossing regardless of pipe depth or install method?	Water_Proc		NHD	No	Minimal or Temp failure of segment	Yes, crossing waterbody	No												10	1												0.1
NF_LQ11	Natural Forces	Is the pipe segment susceptible to tree roots?	LandUse_Proc		TIGER	Unknown	Partial Failure of Pipeline Segment	Area with high tree population	Area with minimal tree population	Unknown P50	Unknown P90										10	1	5	9										0.5
NF_LQ12	Natural Forces	Is lightning mitigation system installed on above grade facilities?	SMEInput_Polygon		SME Input	N/A	Minimal or Temp failure of segment	Yes	No	Unknown P50	Unknown P90	N/A									-1	10	5	9	0									0.1
NF_LQ13	Natural Forces	What is the probability of an avalanche?	SMEInput_Polygon		SME Input	None	Minimal or Temp failure of segment	High Avalanche Likelihood	Medium Avalanche Likelihood	Low Avalanche Likelihood	None	Unknown P50	Unknown P90								10	7	4	1	5	9								0.1
NF_LQ14	Natural Forces	Does the segment experience extreme temperature fluctuation that may result in rapid expansion and contraction?	TBD		TBD																													
OF_LQ1	Other Outside Force	What is the segment's potential for vehicular damage?	Damages_Vehicle_Proc		SME/Damage Spreadsheet	Low risk area	Minimal or Temp failure of segment	Highest Risk Area	High Risk Area	Medium Risk Area	Low Risk Area	Lowest Risk Area									10	7	5	3	1									0.1
OF_LQ2	Other Outside Force	Has the segment experienced damage or leakage due to malicious actions of individuals?	SMEInput_Polygon		SME Input	No	Partial Failure of Pipeline Segment	Yes, areas with frequent significant damage	Yes, areas with frequent superficial damage	Area of concern	No	Unknown P50	Unknown P90								10	6	3	0	5	9								0.5
OF_LQ3	Other Outside Force	Are there active security measures (e.g., cameras, alarms, etc.) in place to prevent vandalism?	SMEInput_Polygon		SME Input	No	Minimal or Temp failure of segment	Yes	No												-3	0												0.1
OF_LQ4	Other Outside Force	Does the potential for blasting operations exist near gas facilities (Such as active mines, gas/oil drilling)?	SMEInput_Polygon		SME Input	No	Minimal or Temp failure of segment	Yes	No	Unknown P50	Unknown P90										10	1	5	9										0.1
OF_LQ5	Other Outside Force	Have failures due to mechanical damage been experienced such as underground structures in contact with facilities?	SMEInput_Polygon		SME Input	Unknown	Partial Failure of Pipeline Segment	Yes	No	Unknown P50	Unknown P90										10	1	5	9										0.5
OF_LQ6	Other Outside Force	What is the segment's susceptibility to fire?	SMEInput_Polygon		SME Input	Lowest Risk	Minimal or Temp failure of segment	Highest Risk	High Risk	Moderate Risk	Low Risk	Lowest Risk	Unknown P50	Unknown P90							10	7	5	3	1	5	9							0.1
OF_LQ7	Other Outside Force	Does the service line have an at risk meter?	Centerlines_Proc		Risk Meter Spreadsheet	N/A	Total Failure of Pipeline Segment	Meter risk is ranked Tier 1	Meter is ranked Tier 2	Meter is ranked Tier 3	Meter is ranked Tier 4	Service, with no At Risk Meter	N/A								10	8	6	4	1	0								1
OF_LQ8	Other Outside Force	Are there vacant risers?	SMEInput_Polygon		SME Input	Unknown	Minimal or Temp failure of segment	Yes- Vacant Riser	Unknown P50	Unknown P90	N/A										10	3	7	0										0.1
OF_LQ9	Other Outside Force	Animal damage	TBD		TBD																													
OF_LQ10	Other Outside Force	Rock impingement	TBD		TBD																													
OR_LQ1	Other	Are there known instances of significant hot gas within the system?	CountyLevel_SME		SME Input	No	Minimal or Temp failure of segment	Yes, within the last year	Yes, within the last 3 years	Yes, within the last 5 years	No	Unknown P50	Unknown P90								10	7	5	0	5	9								0.1
OR_LQ2	Other	Have there been instances of unauthorized turn on by a customer (diversion)?	SMEInput_Polygon		SME Input	Unknown	Minimal or Temp failure of segment	Yes, known area with density of unauthorized turn ons	SME-Area of concern	No	Unknown P50	Unknown P90									10	7	1	5	9									0.1
OR_LQ3	Other	Are there dresser couplings on the pipe segment?	SMEInput_Polygon		SME Input	Unknown	Partial Failure of Pipeline Segment	Known location of dresser couplings	Similar location/type to known instances P50	Similar location/type to known instances P90	No	Unknown P50	Unknown P90								10	5	9	1	4	8								0.5
OR_LQ4	Other	Are there instances of joint trenches (e.g., inadequate separation of electrical and gas facilities with the potential for electrical burnout)?	SMEInput_Polygon		SME Input	No	Partial Failure of Pipeline Segment	Yes	No	Unknown P50	Unknown P90										10	1	5	9										0.5
OR_LQ5	Other	Are there areas that encroach on the distribution system ROW? (e.g., trailer parks)	SMEInput_Polygon		SME Input	No	Minimal or Temp failure of segment	Known area of encroachments	Potential for future encroachments	No	Unknown P50	Unknown P90									10	5	1	5	9									0.1
OR_LQ6	Other	Are there hazardous materials, i.e. chemicals or explosives, stored in neighboring facilities?	SMEInput_Polygon		SME Input	Unknown	Partial Failure of Pipeline Segment	Yes	Unknown P50	Unknown P90											10	2	6											0.5
OR_LQ7	Other	Is the segment in a location of an unvented casings?	Casing_Proc		GIS	N/A	Minimal or Temp failure of segment	Location of unvented casings	Location of casing, unvented unknown P50	Location of casing, unvented unknown P90	Vented Casing	N/A									10	5	9	2	0									0.1
OR_LQ8	Other	Is this a known location of a bridge, span, or washout?	SMEInput_Polygon		SME & Bridge Span Spreadsheet; Other for WY	N/A	Partial Failure of Pipeline Segment	Known bridge crossing	Known span	Known washout	Potential Spot-Unknown type P50	Potential Spot-Unknown type	N/A								10	8	6	5	9	0								0.5
OR_LQ9	Other	Does the segment have adequate MAOP documentation?	SMEInput_Polygon		SME Input	Unknown	Minimal or Temp failure of segment	No MAOP documentation	MAOP documentation exists - poor quality	Unknown P50	Unknown P90	Excellent, recent MAOP records exist									10	7	7	9	1									0.1
OR_LQ10	Other	Is the segment in an area with the potential for cross bores?	Centerlines_Proc		GIS Centerlines - installation method	Pipe installation method =	Total Failure of Pipeline Segment	Pipe installation method = bore	Pipe installation method = other	Pipe installation method = Unknown P50	Pipe installation method = Unknown P90										10	0	5	9										1
OR_LQ11	Other	Is the service attached to an inside meter?	Centerlines_Proc		Meter Spreadsheet	N/A	Total Failure of Pipeline Segment	Yes	Unknown P50	Unknown P90	No	N/A									10	5	9	0	0									1

Likelihood Scores

Field Name	Threat Category	Threat/SubThreat	Data Layer	etention	Data Source	Default Answer	Threat Consequence
OR_LQ12	Other	Have there been failures on stab type, nut follower type, bolted type, or other mechanical fittings?	SMEInput_Polygon		SME Input	No	Partial Failure of Pipeline Segment
OR_LQ13	Other	Is the segment a location of a pipe insert?	Centerlines_Proc		GIS	Unknown	Minimal or Temp failure of segment
OR_LQ14	Other	What is the likelihood of incorrect data within the particular region?	TBD		GIS, BPIR	Unknown	TBD

Field Name	Answer 1	Answer 2	Answer 3	Answer 4	Answer 5	Answer 6	Answer 7	Answer 8	Answer 9	Answer 10	Answer 11	Answer 12	Answer 13
OR_LQ12	Known region with frequent component failure	Similar location/type to known failures P50	Similar location/type to known failures P90	No									
OR_LQ13	Install method is insert	Install method is not insert	Unknown P50	Unknown P90									
OR_LQ14	High Likelihood	Medium Likelihood	Low Likelihood	Unknown P50	Unknown P90								

Field Name	Score 1	Score 2	Score 3	Score 4	Score 5	Score 6	Score 7	Score 8	Score 9	Score 10	Score 11	Score 12	Score 13	Threat Consequence Score
OR_LQ12	10	5	9	1										0.5
OR_LQ13	10	1	5	9										0.1
OR_LQ14														TBD

Asset Consequence Scores

GIS Field Name	Asset Consequence	Data Source	Answer1	Answer2	Answer3	Answer4	Answer5	Answer6	Answer7	Answer8	Score 1	Score 2	Score 3	Score 4	Score 5	Score 6	Score 7	Score 8
PRESSURE	Pressure	GIS Centerlines	Low (<1psi)	Extra High (100psi +)	High (50psi - 100psi)	Medium (1psi - 50psi)	Unknown P50	Unknown P90			1	0.7	0.3	0.1	0.5	0.9		
MATERIAL	Material	GIS Centerlines	PVC or Adyl-A	Iron or Extrude	Copper	Steel	Fiberglass	Plastic	Unknown P50	Unknown P90	1	0.8	0.6	0.4	0.2	0.1	0.5	0.9
NOMINALDIAMETER	Pipe Diameter	GIS Centerlines	Diameter ≥ 16"	10" ≤ Diameter < 16"	6" ≤ Diameter < 10"	2" ≤ Diameter < 6"	Diameter < 2"	Unknown P50	Unknown P90		1	0.8	0.6	0.4	0.1	0.5	0.9	
STANDARDSIZE	Non Standard Pipe Size	GIS Centerlines	Yes	No	Unknown P50	Unknown P90					1	0.1	0.5	0.9				
DEN_SQMI	Population Density	Census	Greater then 87737 density per square mile	23598 - 87737 density per square mile	10208 - 23598 density per square mile	3720 - 10208 density per square mile	Under 3720 density per square mile				1	0.8	0.6	0.4	0.1			
AC_IS	Isolation Plan	SMEInput_Polygon	No isolation plan	Paper isolation plan only	Digital Isolation plan	Verified Spatial Isolation Plan	Unknown P50	Unknown P90			1	0.6	0.4	0.1	0.5	0.9		
BUFF_DIST	Proximity to Infrastructure	HIFLD, USGS, NRCS, TIGER	Within 25ft of road, railroad, dam, electrical substation, or powerline	Within 50ft of road, railroad, dam, electrical substation, or powerline	Within 100ft of road, railroad, dam, electrical substation, or powerline	N/A					1	0.8	0.6	0				
AC_PSS	Proximity to Sensitive Structures	SMEInput_Polygon	Within 25ft of school, hospital, prison, religious building, government building, etc.	Within 50ft of school, hospital, prison, religious building, government building, etc.	Within 100ft of school, hospital, prison, religious building, government building, etc.	N/A					1	0.7	0.4	0.1				
AC_LRT	Leak Response Time	CountyLevel_SME	Fast	Medium	Slow	Unknown P50	Unknow P90				0.3	0.7	1	0.5	0.9			
AC_SCADA	SCADA Alarm	SMEInput_Polygon	One or more high high alarms on the system	One or more high alarms on the system	No						1	0.4	0.1					
	SMYS	TBD																

SSIR EXHIBIT 1

APPENDIX B –

THREAT MATRIX

Threat Matrix

Field Name	Threat Category	Threat/SubThreat	Future State Improvement	Data Layer	Data Ret	Data Source	Default Answer	Threat Consequence
CC_LQ1	Corrosion	Is the pipe cathodically protected?	Associate CP to a "Pressure System Level" Use FIPS code to structure city and town boundaries	SMEInput_Polygon		SME Input	N/A	Partial Failure of Pipeline Segment
CC_LQ2	Corrosion	Are CP readings consistently adequate?	CP data to come from PCS	Centerline_Proc		CIS + CP, PCS Test Points	N/A	Minimal or Temp failure of segment
CC_LQ3	Corrosion	Is the steel pipe segment isolated from the CP system?		Centerline_Proc		Isolated Services Spreadsheet; Export from MasterEquipment; CIS+; Isolated Short Segments in PCS	N/A	Partial Failure of Pipeline Segment
CC_LQ4	Corrosion	Is the Pipe Type, Age, and Location (district) likely for external corrosion?	Incorporate additional data sources Correlate soil type from USGS and BHE failures/water table Incorporate Europe data	Centerline_Proc		Leak Spreadsheet	N/A	Partial Failure of Pipeline Segment
CC_LQ5	Corrosion	Are there known sources of stray current in the area?		SMEInput_Polygon		SME Input	N/A	Partial Failure of Pipeline Segment
CC_LQ7	Corrosion	Coating condition-ground to air interface?		SMEInput_Polygon		SME Input	N/A	Partial Failure of Pipeline Segment
CC_LQ8	Corrosion	Is the Pipe Type, Age and Location (district) likely for internal corrosion?	Incorporate additional data sources Incorporate corrosive element data	Centerline_Proc		Leak Spreadsheet	N/A	Partial Failure of Pipeline Segment
CC_LQ9	Corrosion	Have liquids been found in the system?	Associate data to a "Network Level"	SMEInput_Polygon		SME Input	N/A	Minimal or Temp failure of segment
CC_LQ10	Corrosion	Has gas quality data identified high levels of corrosive elements?	Associate data to a "Network Level" Correlate meter points and chromatograph points to the spatial network Incorporate landfill gas	CountyLevel_SME		SME Input	N/A	Partial Failure of Pipeline Segment
CC_LQ11	Corrosion	Has atmospheric corrosion been identified on above grade pipe or pipe in vaults?		AtmosphericSurvey_Proc		CIS + Survey	N/A	Partial Failure of Pipeline Segment
CC_LQ12	Corrosion	What is the segment coating type?		Centerline_Proc		GIS	N/A	Partial Failure of Pipeline Segment
CC_LQ13	Corrosion	What is the joint coating type?	TownLevel_SME following incorporation of digital as-builts Mobile mapping solution to collect data in the field	SMEInput_Polygon		SME Input	N/A	Partial Failure of Pipeline Segment
CC_LQ14	Corrosion	Does the segment contain a shorted casing?	Data to come from PCS	Casings		CIS+; PCS	N/A	Minimal or Temp failure of segment
ED_LQ2	Excavation Damage	Are there facilities in the distribution system that are unlocatable?	Utilize redline tool for all states and pull data into risk model (GIS)	SMEInput_Polygon & Centerline_Proc		SME Input	Unknown	Total Failure of Pipeline Segment
ED_LQ3	Excavation Damage	Are there areas of unmapped/missing data?		Missing_Area		GeoCode Process / Services w/out mains	Unknown	Total Failure of Pipeline Segment
ED_LQ4	Excavation Damage	Are there regions of previous damage due to not following one-call laws?		Damages_Proc		Damage Spreadsheet	No	Total Failure of Pipeline Segment
ED_LQ5	Excavation Damage	Is there a system in place for clearing sewer lines?	Incorporate digital as-builts	SMEInput_Polygon		SME Input	Unknown	Total Failure of Pipeline Segment
ED_LQ6	Excavation Damage	Has there been damage due to mislocated lines/poorly performing locators?		Damages_Proc		Damage Spreadsheet	No	Total Failure of Pipeline Segment
ED_LQ7	Excavation Damage	Has there been damage due to facilities not marked?		Damages_Proc		Damage Spreadsheet	No	Total Failure of Pipeline Segment
ED_LQ8	Excavation Damage	Has there been damage due to improper backfill operations?		Damages_Proc		Damage Spreadsheet	No	Partial Failure of Pipeline Segment
ED_LQ9	Excavation Damage	Has the region conducted public safety awareness meetings specific to Excavation Damage in the year prior to the risk assessment?		SMEInput_Polygon		SME Input	Unknown	Minimal or Temp failure of segment
ED_LQ12	Excavation Damage	Are there service stubs?	Meter point analysis tool - pull historic meter points that were disconnected, discontinued account but service point remains	SMEInput_Polygon		SME Input	Unknown	Total Failure of Pipeline Segment
EQ_LQ1	Equipment	Have equipment malfunctions been experienced?	Relate EAM and GIS through ESRI sync Standardize granularity of equipment documentation in GIS	SMEInput_Polygon		SME Input	Unknown	Partial Failure of Pipeline Segment
EQ_LQ2	Equipment	Have equipment leaks been experienced?				Leak Spreadsheet	No	Partial Failure of Pipeline Segment
EQ_LQ3	Equipment	Is outdated/vintage/obsolete system equipment present in the distribution system?	Tie distribution system equipment to the network pressure system	SMEInput_Polygon		SME Input	No	Minimal or Temp failure of segment
EQ_LQ4	Equipment	Is outdated/vintage/obsolete equipment present at the service point?	Tie distribution system equipment to the network pressure system	SMEInput_Polygon		SME Input	Unknown	Minimal or Temp failure of segment
EQ_LQ5	Equipment	Have there been instances of over pressurization due to equipment failure?	Incorporate equipment from the mapping system and tie to SCADA data	SMEInput_Polygon		SME Input	Unknown	Minimal or Temp failure of segment
IO_LQ1	Incorrect Operations	Have failures and/or near misses been experienced due to inadequate procedures?	Incorporate PSMS report for failures and near misses Update leak input types to include incorrect operations subtypes	CountyLevel_SME		SME Input	Unknown	Minimal or Temp failure of segment
IO_LQ3	Incorrect Operations	Have failures and/or near misses been experienced due to failure to follow procedures?	Incorporate leaks from IO subtype, account for near misses in calculations	CountyLevel_SME		SME Input	Unknown	Minimal or Temp failure of segment
IO_LQ4	Incorrect Operations	Have there been cases of contractor or company personnel performing covered tasks without valid OQ?	Incorporate OQ team audits	CountyLevel_SME		SME Input	Unknown	Minimal or Temp failure of segment
IO_LQ7	Incorrect Operations	Have there been instances of over pressurization due to incorrect operations?		SMEInput_Polygon		SME Input	Unknown	Minimal or Temp failure of segment
IO_LQ8	Incorrect Operations	Known location of incorrect operations leading to a leak?		Leaks		Leak Spreadsheet	No	Minimal or Temp failure of segment
LL_LQ1	Leaks	Is the pipe profile indicative of potential for leaks?		Centerline_Proc		Leak Spreadsheet	Lowest Likelihood	Partial Failure of Pipeline Segment
LL_LQ2	Leaks	Have there been mitigation activities to reduce Leaks in year prior to the risk assessment (e.g., Accelerated Leak Surveys)?		SMEInput_Polygon		SME Input	Unknown	Partial Failure of Pipeline Segment
MW_LQ1	Materials/Welds/Joints	Are there known manufacturing defects on pipe or non-pipe components within the system?	Incorporate recall and batch issues	SMEInput_Polygon		SME Input	Unknown	Partial Failure of Pipeline Segment
MW_LQ2	Materials/Welds/Joints	At risk materials (Century Utility Products, PE3306, Driscopipe 8000 High Density polyethylene pipe installed between 1978 and 1999, Drisco8000, XTRUBE coated) present?		SMEInput_Polygon		SME Input	Unknown	Partial Failure of Pipeline Segment
MW_LQ3	Materials/Welds/Joints	Is the pipe segment PVC?		Centerline_Proc		GIS	Unknown	Total Failure of Pipeline Segment
MW_LQ4	Materials/Welds/Joints	Is the pipe segment Copper?		Centerline_Proc		GIS	Unknown	Partial Failure of Pipeline Segment
MW_LQ5	Materials/Welds/Joints	Does the pipe segment have thin-walled pipe?		Centerline_Proc		GIS	Unknown	Partial Failure of Pipeline Segment
MW_LQ6	Materials/Welds/Joints	Does the pipe segment have known failures in welds or joints?		Leaks		Leak Spreadsheet	No	Partial Failure of Pipeline Segment
MW_LQ9	Materials/Welds/Joints	Is the pipe segment Aldyl-A?		Centerline_Proc		GIS	Unknown Material/Date	Minimal or Temp failure of segment
NF_LQ1	Natural Forces	Is the pipe segment susceptible to earthquakes?		Earthquakes_Proc		FEMA	Zone A	Partial Failure of Pipeline Segment
NF_LQ2	Natural Forces	What is the annual average snowfall?		Snow_Proc		NOAA	None	Minimal or Temp failure of segment
NF_LQ3	Natural Forces	Is the pipe segment in an area susceptible to floods?		FloodHazardZones_Proc		FEMA	Unknown	Partial Failure of Pipeline Segment
NF_LQ4	Natural Forces	Is the pipe segment susceptible to washouts or potentially exposed?		WashoutSusceptabilities_Proc		NRCS and NHD	Unknown All	Partial Failure of Pipeline Segment
NF_LQ7	Natural Forces	Has the pipe segment experience damage due to land subsidence?		Damages_Proc		Damage Spreadsheet; CIS+	Unknown	Partial Failure of Pipeline Segment
NF_LQ8	Natural Forces	What is the segment's depth in relationship to the frost line?		CountyLevel_SME		SME Input	Unknown All	Partial Failure of Pipeline Segment
NF_LQ9	Natural Forces	Has the pipe segment experienced damage due to frost heave?	Evaluate other leak data types	Damages_Proc		Damage Spreadsheet	No known frost heave dam	Partial Failure of Pipeline Segment
NF_LQ10	Natural Forces	Is the segment in a water crossing regardless of pipe depth or install method?		Water_Proc		NHD	No	Minimal or Temp failure of segment
NF_LQ11	Natural Forces	Is the pipe segment susceptible to tree roots?		LandUse_Proc		TIGER	Unknown	Partial Failure of Pipeline Segment
NF_LQ12	Natural Forces	Is lightning mitigation system installed on above grade facilities		SMEInput_Polygon		SME Input	N/A	Minimal or Temp failure of segment
NF_LQ13	Natural Forces	What is the probability of an avalanche?		SMEInput_Polygon		SME Input	None	Minimal or Temp failure of segment
NF_LQ14	Natural Forces	What is the probability of a tornado within 25 miles of the segment on any given day?		Tornado_Proc		NOAA	Under .1%	Partial Failure of Pipeline Segment
NF_LQ15	Natural Forces	What is the likelihood of snow drifting?		SMEInput_Polygon		SME Input	None	Minimal or Temp failure of segment
OF_LQ1	Other Outside Force	What is the segment's potential for vehicular damage?	Identify above grade and below grade features from CIS+/EAM/Equipment lists	SMEInput_Polygon		SME/Damage Spreadsheet	Low risk area	Minimal or Temp failure of segment
OF_LQ2	Other Outside Force	Has the segment experienced damage or leakage due to malicious actions of individuals?		SMEInput_Polygon		SME Input	No	Partial Failure of Pipeline Segment
OF_LQ3	Other Outside Force	Are there active security measures (e.g., cameras, alarms, etc.) in place to prevent vandalism?	Associate risk score to downstream networks	SMEInput_Polygon		SME Input	No	Minimal or Temp failure of segment

OF_LQ4	Other Outside Force	Does the potential for blasting operations exist near gas facilities (Such as active mines, gas/oil drilling)?		SMEInput_Polygon		SME Input	No	Minimal or Temp failure of segment
OF_LQ5	Other Outside Force	Have failures due to mechanical damage been experienced such as underground structures in contact with facilities?		SMEInput_Polygon		SME Input	Unknown	Partial Failure of Pipeline Segment
OF_LQ6	Other Outside Force	What is the segment's susceptibility to fire?		SMEInput_Polygon		SME Input	Lowest Risk	Minimal or Temp failure of segment
OF_LQ7	Other Outside Force	Does the service line have an at risk meter?	Incorporate results of ongoing evaluation of at risk meters	Centerline_Proc		Risk Meter Spreadsheet	N/A	Total Failure of Pipeline Segment
OF_LQ9	Other Outside Force	Are there vacant risers?		SMEInput_Polygon		SME Input	Unknown	Minimal or Temp failure of segment
OR_LQ1	Other	Are there known instances of significant hot gas within the system?		CountyLevel_SME		SME Input	No	Minimal or Temp failure of segment
OR_LQ2	Other	Have there been instances of unauthorized turn on by a customer (diversion)?		SMEInput_Polygon		SME Input	Unknown	Minimal or Temp failure of segment
OR_LQ3	Other	Are there dresser couplings on the pipe segment?		SMEInput_Polygon		SME Input	Unknown	Partial Failure of Pipeline Segment
OR_LQ4	Other	Are there instances of joint trenches (e.g., inadequate separation of electrical and gas facilities with the potential for electrical burnout)?		SMEInput_Polygon		SME Input	No	Partial Failure of Pipeline Segment
OR_LQ5	Other	Are there areas that encroach on the distribution system ROW? (e.g., trailer parks)		SMEInput_Polygon		SME Input	No	Minimal or Temp failure of segment
OR_LQ6	Other	Are there hazardous materials, i.e. chemicals or explosives, stored in neighboring facilities?		SMEInput_Polygon		SME Input	Unknown	Partial Failure of Pipeline Segment
OR_LQ7	Other	Is the segment in a location of an unvented casings?		Casings		GIS	N/A	Minimal or Temp failure of segment
OR_LQ8	Other	Is this a known location of a bridge, span, or washout?		SMEInput_Polygon		SME & Bridge Span Spreadsheet; Other for WY	N/A	Partial Failure of Pipeline Segment
OR_LQ10	Other	Is the segment in an area with the potential for cross bores?		Centerline_Proc		GIS Centerlines - installation method	Pipe installation method = u	Total Failure of Pipeline Segment
OR_LQ11	Other	Is the service attached to an inside meter?				CIS+	N/A	Total Failure of Pipeline Segment
OR_LQ12	Other	Have there been failures on stab type, nut follower type, bolted type, or other mechanical fittings?	Incorporate mechanical fitting failure reports	SMEInput_Polygon		SME Input	Unknown	Partial Failure of Pipeline Segment
OR_LQ13	Other	Is the segment a location of a pipe insert?		Centerlines_Proc		GIS	Unknown	Minimal or Temp failure of segment
OR_LQ15	Other	Does the segment have adequate MAOP documentation?		SMEInput_Polygon		SME Input	Unknown	Minimal or Temp failure of segment

SSIR EXHIBIT 1

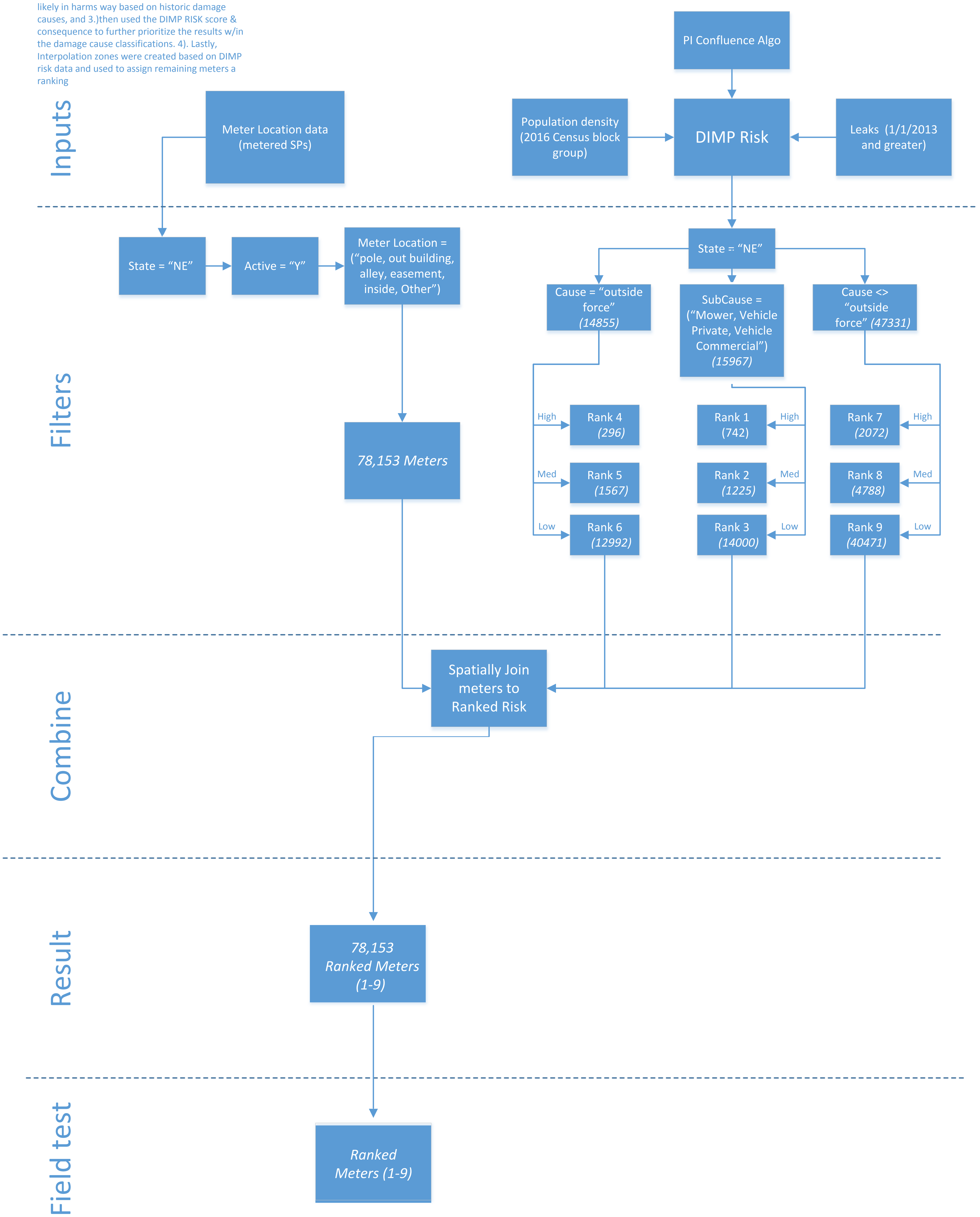
APPENDIX C –

ARMR WORKFLOW

Methodology Summary

1.) Used BHE meter location data to identify meters most likely at risk based on location assignment and then 2.) applying leak data to determine a subset of those meters that are most likely in harms way based on historic damage causes, and 3.)then used the DIMP RISK score & consequence to further prioritize the results w/in the damage cause classifications. 4). Lastly, Interpolation zones were created based on DIMP risk data and used to assign remaining meters a ranking

At Risk Meter Relocation Program – Nebraska
Meter Identification & Prioritization Process



SSIR EXHIBIT 2

REVENUE REQUIREMENT

BLACK HILLS NEBRASKA GAS
SSIR RATE CALCULATION
For the Ten Months Ended December 31, 2021

Exhibit 2
Table A
Page 1 of 1

Line No.	Item	Reference	(a) Residential	(b) Commercial	(c) Total
1	Consolidated Revenue Requimement	Table C, Line 10, column f			$ 1,549,791
2	Allocation of Revenue Requirements to Customer Class	Table L, Line 22	73.03%	26.97%	-100%
3	Revenue Requierement by Customer Class	Line 1 * Line 2	$ 1,131,863	$ 417,928	$ (1,549,791)
4	Data Improvement Project Estimate	Company Estimate			865,048.00
5	Allocation Factor of Account 880 from Rate Review		61.42%	24.68%	86.10%
6	Revenue Requierement by Customer Class	Line 4(c) * Line 5	531,341	213,476	
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 Improvement Project True Up	Table B, Line 18	-	-	
10	Amount to collect in 2021	Sum of lines 3, 6, 7, 8, and 9	$ 1,663,204	$ 631,404	
11	Forecasted Total Customer Bills (Jurisdictional Only)		2,556,780	485,900	
12	SSIR rate for 2021	Line 6 / Line 7	$ 0.6505	$ 1.2995	

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

Exhibit 2
Table B
Page 1 of 1

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		$ 0.6505	$ 1.2995	
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			1,549,791.01
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			1,549,791.01
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)			61.42%	24.68%	86.10%
16	Data Improvement Expenses (actual)		2021	$ -	$ -	
17	Forecasted Data Improvement Expenses		2021			
18	(Over) / Under Estimated Expenses	Line 16 - Line 17		-	-	

BLACK HILLS NEBRASKA GAS
SSIR Annual Revenue Requirement
For Rate Year 2021

Exhibit 2
Table C
Page 1 of 1

Line No.	Description	Reference	(a) TIMP 12/31/2021	(b) DIMP 12/31/2021	(c) PHMSA 12/31/2021	(d) Facility Relocate 12/31/2021	(e) Reliability 12/31/2021	(f) Consolidated 12/31/2021
1	Gross Plant - 13 Month Average December 31, 2021	Table D, Columns (h, I, j, k)	1,314,987	10,284,995	-	-	1,403,481	13,003,463
2	Accumulated Depreciation - 13 Month Average December 31, 2021	Table E, Columns (h, I, j, k)	(4,310)	(55,261)	-	-	(8,140)	(67,712)
3	ADIT Pro Rated (net of 190 and 282)	Table H, Line 15 + Line 90	10,147	(55,762)	-	-	(11,079)	(56,694)
4	Total Rate Base	Line 1 + Line 2 + Line 3	1,320,824	10,173,971	-	-	1,384,262	12,879,057
5	Weighted Average Cost of Capital	Table J	7.06%	7.06%	7.06%	7.06%	7.06%	7.06%
6	Return on Plant	Line 4 * Line 5	93,184	717,774	-	-	97,660	908,617
7	Income Tax Expense	Table F, Line 18	24,637	189,775	-	-	25,821	240,233
8	Depreciation Expense	Table E, Columns (c, d, e, f)	33,050	258,496	-	-	35,274	326,820
9	Property Tax Expense	Line 1 * 0.0057	7,495	58,624	-	-	8,000	74,120
10	Revenue Requirement	Sum of Lines 6 through 9	158,367	1,224,670	-	-	166,754	1,549,791

BLACK HILLS NEBRASKA GAS
Gross Plant Additions

	(a)	(b)	(c)	(d)	(e)	(f)		(g)	(h)	(i)	(j)	(k)		(l)
			Gross Plant Additions (Jurisdictional Only)						Accumulated Balances					
Line No.	Month in Service	Actual / Forecast	TIMP	DIMP	PHMSA	Facility Relocate	Reliability	Consolidated	TIMP	DIMP	PHMSA	Facility Relocate	Reliability	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	445,523	22,423,057	-	-	3,649,050	26,517,630	445,523	22,423,057	-	-	3,649,050	26,517,630
9	Sep-21	Forecast	-	-	-	-	-	-	445,523	22,423,057	-	-	3,649,050	26,517,630
10	Oct-21	Forecast	-	1,903,048	-	-	-	1,903,048	445,523	24,326,105	-	-	3,649,050	28,420,678
11	Nov-21	Forecast	7,433,610	7,940,254	-	-	-	15,373,864	7,879,133	32,266,359	-	-	3,649,050	43,794,542
12	Dec-21	Forecast	-	-	-	-	-	-	7,879,133	32,266,359	-	-	3,649,050	43,794,542
13	13 Month Average								1,314,987	10,284,995	-	-	1,403,481	13,003,463

BLACK HILLS NEBRASKA GAS
Depreciation Expense

Exhibit 2
Table E
Page 1 of 1

	(a)	(b)	(c)	(d)	(e)	(f)		(g)	(h)	(i)	(j)	(k)		(l)
			Depreciation Expense						Accumulated Depreciation Balances					
Line No.	Month in Service	Actual / Forecast	TIMP	DIMP	PHMSA	Facility Relocate	Reliability	Consolidated	TIMP	DIMP	PHMSA	Facility Relocate	Reliability	Consolidated
1	Annual Depreciation Rate		2.32%	2.32%	2.32%	2.32%	2.32%							
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	861	43,351	-	-	7,055	44,213	(861)	(43,351)	-	-	(7,055)	(44,213)
11	Sep-21	Forecast	861	43,351	-	-	7,055	44,213	(1,723)	(86,702)	-	-	(14,110)	(88,425)
12	Oct-21	Forecast	861	47,030	-	-	7,055	47,892	(2,584)	(133,733)	-	-	(21,164)	(136,317)
13	Nov-21	Forecast	15,233	62,382	-	-	7,055	77,615	(17,817)	(196,115)	-	-	(28,219)	(213,932)
14	Dec-21	Forecast	15,233	62,382	-	-	7,055	77,615	(33,050)	(258,496)	-	-	(35,274)	(291,546)
15	13 Month Average								(4,310.39)	(55,261)	-	-	(8,140)	(59,572)

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**	**Reliability**	**Consolidated**
1	**2021 Tax Calculation**							
2	Rate Base	Table C, Line 4	1,320,824	10,173,971	-	-	1,384,262	12,879,057
3	Weighted average Cost of Capital	Table J, Line 3	7.06%	7.06%	7.06%	7.06%	7.06%	7.06%
4	Weighted average Cost of Debt	Table J, Line 1	2.06%	2.06%	2.06%	2.06%	2.06%	2.06%
5								
6	Revenues	Table C, Line 10	158,367	1,224,670	-	-	166,754	1,549,791
7	Interest Expense	Line 7 * Line 4	27,143	209,075	-	-	28,447	264,665
8	Property Tax Expense	Table C, Line 9	7,495	58,624	-	-	8,000	74,120
9	Tax Depreciation	Table I, Line 41	295,467	1,209,988	-	-	136,839	1,642,295
10	Taxable Income	Line 6 less Lines 7 through 9	(171,739)	(253,018)	-	-	(6,531)	(431,289)
11	Federal Income Tax Rate		27.17%	27.17%	27.17%	27.17%	27.17%	27.17%
12	Current Tax Expense (Before NOL)	Line 10 * Line 11	(46,661)	(68,745)	-	-	(1,775)	(117,181)
13	NOL Offset (Account 190)		46,661	68,745	-	-	1,775	117,181
14								
15	Book Depreciation	Table C, Line 8	33,050	258,496	-	-	35,274	326,820
16	Temp Difference	Line 15 - line 9	(262,417)	(951,492)	-	-	(101,565)	(1,315,475)
17	Total Deferred Tax Expense	Line 16 * -(Line 11)	24,637	189,775	-	-	25,821	240,233
18	Total Tax Expense	Line 12 + Line 13 + Line 17	24,637	189,775	-	-	25,821	240,233

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**	**Reliability**	**Consolidated**
1	ADIT Balance (Account 282)							
2	2020	Beginning Balance	-	-	-	-	-	-
3	2021	Line 2 + Table F, Line 17	(24,637)	(189,775)	-	-	(25,821)	(240,233)
4	2022	Line 3 + Table F, Line 35	(151,319)	(705,097)	-	-	(83,929)	(940,345)
5	2023	Line 4 + Table F, Line 53	(244,592)	(1,087,065)	-	-	(127,127)	(1,458,784)
6	2024	Line 5 + Table F, Line 71	(327,161)	(1,425,199)	-	-	(165,367)	(1,917,727)
7	2025	Line 6 + Table F, Line 89	(424,630)	(1,824,350)	-	-	(210,507)	(2,459,488)
8								
9	NOL Offset (Account 190)							
10	2020	Beginning Balance	-	-	-	-	-	-
11	2021	Line 10 + Table F, Line 13	46,661	68,745	-	-	1,775	117,181
12	2022	Line 11 + Table F, Line 31	24,855	(17,092)	-	-	(7,763)	-
13	2023	Line 12 + Table F, Line 49	24,855	(17,092)	-	-	(7,763)	-
14	2024	Line 13 + Table F, Line 67	24,855	(17,092)	-	-	(7,763)	-
15	2025	Line 14 + Table F, Line 85	24,855	(17,092)	-	-	(7,763)	-
16								
17	Total ADIT							
18	2020	Line 2 + Line 10 + Line 18	-	-	-	-	-	-
19	2021	Line 3 + Line 11 + Line 19	22,024	(121,030)	-	-	(24,046)	(123,052)
20	2022	Line 4 + Line 12 + Line 20	(126,464)	(722,189)	-	-	(91,692)	(940,345)
21	2023	Line 5 + Line 13 + Line 21	(219,737)	(1,104,157)	-	-	(134,890)	(1,458,784)
22	2024	Line 6 + Line 14 + Line 22	(302,306)	(1,442,291)	-	-	(173,130)	(1,917,727)
23	2025	Line 7 + Line 15 + Line 23	(399,775)	(1,841,443)	-	-	(218,270)	(2,459,488)

BLACK HILLS NEBRASKA GAS
ADIT Calculation

Exhibit 2
Table H
Page 1 of 1

Account 282

Line No.	Description	Days in the Month	Number of Days Prorated	Total Days in Test Year	Proration Amount (C / D)	TIMP Projected Activity	TIMP Prorated Activity	TIMP Accumulated Balance	DIMP Projected Activity	DIMP Prorated Activity	DIMP Accumulated Balance	PHMSA Projected Activity	PHMSA Prorated Activity	PHMSA Accumulated Balance	Facility Relocate Projected Activity	Facility Relocate Prorated Activity	Facility Relocate Accumulated Balance	Reliability Projected Activity	Reliability Prorated Activity	Reliability Accumulated Balance	Consolidated Accumulated Balance
1	2021 projected Balance Account 282							-			-			-			-			-	0
2	January	31	334	365	0.915068	(2,053)	(1,879)	(1,879)	(15,815)	(14,471)	(14,471)	-	-	-	-	-	-	(2,152)	(1,969)	(1,969)	
3	February	28	306	365	0.838356	(2,053)	(1,721)	(3,600)	(15,815)	(13,258)	(27,730)	-	-	-	-	-	-	(2,152)	(1,804)	(3,773)	
4	March	31	275	365	0.753425	(2,053)	(1,547)	(5,147)	(15,815)	(11,915)	(39,645)	-	-	-	-	-	-	(2,152)	(1,621)	(5,394)	
5	April	30	245	365	0.671233	(2,053)	(1,378)	(6,525)	(15,815)	(10,615)	(50,260)	-	-	-	-	-	-	(2,152)	(1,444)	(6,838)	
6	May	31	214	365	0.586301	(2,053)	(1,204)	(7,729)	(15,815)	(9,272)	(59,532)	-	-	-	-	-	-	(2,152)	(1,262)	(8,100)	
7	June	30	184	365	0.504110	(2,053)	(1,035)	(8,764)	(15,815)	(7,972)	(67,505)	-	-	-	-	-	-	(2,152)	(1,085)	(9,185)	
8	July	31	153	365	0.419178	(2,053)	(861)	(9,624)	(15,815)	(6,629)	(74,134)	-	-	-	-	-	-	(2,152)	(902)	(10,087)	
9	August	31	122	365	0.334247	(2,053)	(686)	(10,311)	(15,815)	(5,286)	(79,420)	-	-	-	-	-	-	(2,152)	(719)	(10,806)	
10	September	30	92	365	0.252055	(2,053)	(517)	(10,828)	(15,815)	(3,986)	(83,406)	-	-	-	-	-	-	(2,152)	(542)	(11,348)	
11	October	31	61	365	0.167123	(2,053)	(343)	(11,171)	(15,815)	(2,643)	(86,049)	-	-	-	-	-	-	(2,152)	(360)	(11,708)	
12	November	30	31	365	0.084932	(2,053)	(174)	(11,346)	(15,815)	(1,343)	(87,392)	-	-	-	-	-	-	(2,152)	(183)	(11,890)	
13	December	31	1	365	0.002740	(2,053)	(6)	(11,351)	(15,815)	(43)	(87,435)	-	-	-	-	-	-	(2,152)	(6)	(11,896)	
14	Activity					(24,637)			(189,775)			-			-			(25,821)			
15	**2021 Projected Average Balance Account 282**							**(11,351)**			**(87,435)**			**-**			**-**			**(11,896)**	**(98,787)**
	Account 190																				
76	2021 projected Balance Account 190							-			-			-			-			-	0
77	January	31	334	365	0.915068	3,888	3,558	3,558	5,729	5,242	5,242	-	-	-	-	-	-	148	135	135	
78	February	28	306	365	0.838356	3,888	3,260	6,818	5,729	4,803	10,045	-	-	-	-	-	-	148	124	259	
79	March	31	275	365	0.753425	3,888	2,930	9,748	5,729	4,316	14,361	-	-	-	-	-	-	148	111	371	
80	April	30	245	365	0.671233	3,888	2,610	12,358	5,729	3,845	18,206	-	-	-	-	-	-	148	99	470	
81	May	31	214	365	0.586301	3,888	2,280	14,638	5,729	3,359	21,565	-	-	-	-	-	-	148	87	557	
82	June	30	184	365	0.504110	3,888	1,960	16,598	5,729	2,888	24,453	-	-	-	-	-	-	148	75	631	
83	July	31	153	365	0.419178	3,888	1,630	18,228	5,729	2,401	26,855	-	-	-	-	-	-	148	62	693	
84	August	31	122	365	0.334247	3,888	1,300	19,528	5,729	1,915	28,769	-	-	-	-	-	-	148	49	743	
85	September	30	92	365	0.252055	3,888	980	20,508	5,729	1,444	30,213	-	-	-	-	-	-	148	37	780	
86	October	31	61	365	0.167123	3,888	650	21,157	5,729	957	31,171	-	-	-	-	-	-	148	25	805	
87	November	30	31	365	0.084932	3,888	330	21,488	5,729	487	31,657	-	-	-	-	-	-	148	13	817	
88	December	31	1	365	0.002740	3,888	11	21,498	5,729	16	31,673	-	-	-	-	-	-	148	0	818	
89	Activity					46,661			68,745			-			-			1,775			
90	**2021 Projected Average Balance Account 190**							**21,498**			**31,673**			**-**			**-**			**818**	**53,171**

BLACK HILLS NEBRASKA GAS | **Exhibit 2**
Calculation of Tax Depreciation | **Table I**
For the Twelve Months Ended December 31, 2021 | **Page 1 of 1**

	(a)	(b)	(c)	(d)	(e)	(f)	(g)
Line No.	**Description**	**Reference**	**TIMP**	**DIMP**	**PHMSA**	**Facility Relocate**	**Reliability**
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	7,879,133	32,266,359	-	-	3,649,050
10		2022 Table D, Sum of Lines 13 through 24	-	-	-	-	-
11		2023 Table D, Sum of Lines 25 through 36	-	-	-	-	-
12		2024 Table D, Sum of Lines 37 through 48	-	-	-	-	-
13		2025 Table D, Sum of Lines 49 through 60	-	-	-	-	-
14							
15	2021 Plant Depreciation Tax Expense						
16		2021 Line 2 * Line 9	295,467	1,209,988	-	-	136,839
17		2022 Line 3 * Line 9	568,795	2,329,308	-	-	263,425
18		2023 Line 4 * Line 9	526,090	2,154,425	-	-	243,647
19		2024 Line 5 * Line 9	486,694	1,993,093	-	-	225,402
20		2025 Line 6 * Line 9	450,135	1,843,377	-	-	208,470
21							

BLACK HILLS NEBRASKA GAS
Weighted Average Cost of Capital Calculation
For Rate Year 2021

	(a)	(b)	(c)	(d)
Line No.	**Description**	**Percent of Total**	**Cost of Capital**	**Weighted Cost of Capital**
1	Long-Term Debt	50.00%	4.11%	2.06%
2	Common Equity	50.00%	10.00%	5.00%
3		100.00%		7.06%
	Property tax Rate			0.57%

BLACK HILLS NEBRASKA GAS
Project Listing and Jurisdictional Allocation
For Rate Year 2021

Exhibit 2
Table K
Page 1 of 1

Line No.	Project #	Project Name	Criteria	Project Category/ Account Allocator	In Service Date	Total Company Project Amount	Actual/Forecast	36700	36903	Distribution Plant - Land 374.01	Land Rights 374.02	Land Rights - Right of Way 374.03	Structures and Improvements 375.01	Structures and Improvements - Other 375.2	Distribution Plant - Mains 376	Distribution Plant - Meas. & Reg. Sta. Equip. - General 378	Measuring and regulating station equipment—City gate check stations 379	Distribution Plant - Services 380	Meters 381	Meter Installations 382.01	Distribution Plant - House Regulators 383.01	Distribution Plant - House Regulators - Farm Taps 383.71	House regulator installations 384.01	Distribution Plant - Industrial Measuring & Regulating Station Equipment 385	Other Property on Customers' Premises 386	Other Equipment 387					Jurisdictional Totals	Non-Jurisdictional Totals
							Note1	55.31%	61.50%	67.47%	71.30%	71.30%	67.29%	71.30%	82.98%	67.11%	71.30%	99.32%	86.90%	86.90%	86.90%	86.90%	86.90%	86.90%	99.32%	86.17%					88.72%	11.28%
1	FP.10075236	10075236 - ARMR - LSW1-1	DIMP	ARMR	Aug-21	$ 4,571,840	Forecast	-	-	-	-	-	30,762	-	189,684	30,682	-	3,223,984	317,849	397,311	158,924	-	-	-	-	-	-	-	-	-	4,349,196	222,644
2	FP.10075237	10075237 - ARMR - LNE1-1	DIMP	ARMR	Aug-21	$ 3,980,080	Forecast	-	-	-	-	-	26,780	-	165,132	26,711	-	2,806,685	276,708	345,884	138,354	-	-	-	-	-	-	-	-	-	3,786,254	193,826
3	FP.10075238	10075238 - ARMR - LSW1-2	DIMP	ARMR	Aug-21	$ 192,920	Forecast	-	-	-	-	-	1,298	-	8,004	1,295	-	136,044	13,412	16,766	6,706	-	-	-	-	-	-	-	-	-	183,525	9,395
4	FP.10075239	10075239 - ARMR - LNW1,2,3,5,6	DIMP	ARMR	Aug-21	$ 80,080	Forecast	-	-	-	-	-	539	-	3,322	537	-	56,471	5,567	6,959	2,784	-	-	-	-	-	-	-	-	-	76,179	3,901
5	FP.10075240	10075240 - ARMR - LSW4-1	DIMP	ARMR	Aug-21	$ 160,160	Forecast	-	-	-	-	-	1,078	-	6,645	1,075	-	112,942	11,135	13,919	5,567	-	-	-	-	-	-	-	-	-	152,361	7,799
6	FP.10075241	10075241 - ARMR - LSE1-1	DIMP	ARMR	Aug-21	$ 120,120	Forecast	-	-	-	-	-	808	-	4,984	806	-	84,707	8,351	10,439	4,176	-	-	-	-	-	-	-	-	-	114,271	5,849
7	FP.10075242	10075242 - ARMR - LNW4-1	DIMP	ARMR	Aug-21	$ 127,400	Forecast	-	-	-	-	-	857	-	5,286	855	-	89,840	8,857	11,072	4,429	-	-	-	-	-	-	-	-	-	121,196	6,204
8	FP.10075243	10075243 - ARMR - LNE2-1	DIMP	ARMR	Aug-21	$ 265,720	Forecast	-	-	-	-	-	1,788	-	11,025	1,783	-	187,381	18,474	23,092	9,237	-	-	-	-	-	-	-	-	-	252,780	12,940
9	FP.10075244	10075244 - ARMR - LSE4-1	DIMP	ARMR	Aug-21	$ 389,480	Forecast	-	-	-	-	-	2,621	-	16,159	2,614	-	274,655	27,078	33,847	13,539	-	-	-	-	-	-	-	-	-	370,513	18,967
10	FP.10075245	10075245 - ARMR - LSE2-1	DIMP	ARMR	Aug-21	$ 134,680	Forecast	-	-	-	-	-	906	-	5,588	904	-	94,974	9,363	11,704	4,682	-	-	-	-	-	-	-	-	-	128,121	6,559
11	FP.10075246	10075246 - ARMR - LSE5,6,7	DIMP	ARMR	Aug-21	$ 3,640	Forecast	-	-	-	-	-	24	-	151	24	-	2,567	253	316	127	-	-	-	-	-	-	-	-	-	3,462	178
12	FP.10075248	10075248 - ARMR - LSW4-2	DIMP	ARMR	Aug-21	$ 76,440	Forecast	-	-	-	-	-	514	-	3,171	513	-	53,904	5,314	6,643	2,657	-	-	-	-	-	-	-	-	-	72,716	3,724
13	FP.10075249	10075249 - ARMR - LSE1-2	DIMP	ARMR	Aug-21	$ 356,720	Forecast	-	-	-	-	-	2,400	-	14,800	2,394	-	251,553	24,800	31,000	12,400	-	-	-	-	-	-	-	-	-	339,347	17,373
14	FP.10075252	10075252 - ARMR - LSE2-2	DIMP	ARMR	Aug-21	$ 564,200	Forecast	-	-	-	-	-	3,796	-	23,408	3,786	-	397,864	39,225	49,031	19,612	-	-	-	-	-	-	-	-	-	536,722	27,478
15	FP.10075247	10075247 - ARMR - BET 1,4,5	DIMP	ARMR	Aug-21	$ 120,120	Forecast	-	-	-	-	-	808	-	4,984	806	-	84,707	8,351	10,439	4,176	-	-	-	-	-	-	-	-	-	114,271	5,849
16	FP.10075253	10075253 - ARMR - FRBY-1	DIMP	ARMR	Aug-21	$ 3,640	Forecast	-	-	-	-	-	24	-	151	24	-	2,567	253	316	127	-	-	-	-	-	-	-	-	-	3,462	178
17	FP.10075188	10075188 - ARMR - COL 1,2,3	DIMP	ARMR	Aug-21	$ 21,840	Forecast	-	-	-	-	-	147	-	906	147	-	15,401	1,518	1,898	759	-	-	-	-	-	-	-	-	-	20,776	1,064
18	FP.10075250	10075250 - ARMR - SEWD-1	DIMP	ARMR	Aug-21	$ 3,640	Forecast	-	-	-	-	-	24	-	151	24	-	2,567	253	316	127	-	-	-	-	-	-	-	-	-	3,462	178
19	FP.10075251	10075251 - ARMR - YOR 1,2,3	DIMP	ARMR	Aug-21	$ 291,200	Forecast	-	-	-	-	-	1,959	-	12,082	1,954	-	205,349	20,245	25,306	10,123	-	-	-	-	-	-	-	-	-	277,018	14,182
20	FP.10075123	10075123 - ARMR - LEXT-1	DIMP	ARMR	Aug-21	$ 3,380,520	Forecast	-	-	-	-	-	22,746	-	140,256	22,687	-	2,383,886	235,024	293,780	117,512	-	-	-	-	-	-	-	-	-	3,215,891	164,629
21	FP.10075124	10075124 - ARMR - MCCK-1	DIMP	ARMR	Aug-21	$ 622,440	Forecast	-	-	-	-	-	4,188	-	25,825	4,177	-	438,934	43,274	54,092	21,637	-	-	-	-	-	-	-	-	-	592,127	30,313
22	FP.10075189	10075189 - ARMR - ONLL-1	DIMP	ARMR	Aug-21	$ 2,238,600	Forecast	-	-	-	-	-	15,063	-	92,879	15,023	-	1,578,623	155,634	194,543	77,817	-	-	-	-	-	-	-	-	-	2,129,582	109,018
23	FP.10075269	10075269 - ARMR - CDRN-1	DIMP	ARMR	Aug-21	$ 622,440	Forecast	-	-	-	-	-	4,188	-	25,825	4,177	-	438,934	43,274	54,092	21,637	-	-	-	-	-	-	-	-	-	592,127	30,313
24	FP.10075125	10075125 - ARMR - HLDG-1	DIMP	ARMR	Aug-21	$ 622,440	Forecast	-	-	-	-	-	4,188	-	25,825	4,177	-	438,934	43,274	54,092	21,637	-	-	-	-	-	-	-	-	-	592,127	30,313
25	FP.10075270	10075270 - ARMR - GRNG-1	DIMP	ARMR	Aug-21	$ 622,440	Forecast	-	-	-	-	-	4,188	-	25,825	4,177	-	438,934	43,274	54,092	21,637	-	-	-	-	-	-	-	-	-	592,127	30,313
26	FP.10075271	10075271 - ARMR - SCBF-1	DIMP	ARMR	Aug-21	$ 618,800	Forecast	-	-	-	-	-	4,164	-	25,674	4,153	-	436,367	43,021	53,776	21,510	-	-	-	-	-	-	-	-	-	588,665	30,135
27	FP.10075273	10075273 - ARMR - GRNG-2	DIMP	ARMR	Aug-21	$ 218,400	Forecast	-	-	-	-	-	1,470	-	9,061	1,466	-	154,012	15,184	18,980	7,592	-	-	-	-	-	-	-	-	-	207,765	10,635
28	FP.10075272	10075272 - ARMR - KMBL-1	DIMP	ARMR	Aug-21	$ 618,800	Forecast	-	-	-	-	-	4,164	-	25,674	4,153	-	436,367	43,021	53,776	21,510	-	-	-	-	-	-	-	-	-	588,665	30,135
29	FP.10075126	10075126 - ARMR - OGLA-1	DIMP	ARMR	Aug-21	$ 1,820,000	Forecast	-	-	-	-	-	12,246	-	75,511	12,214	-	1,283,433	126,532	158,165	63,266	-	-	-	-	-	-	-	-	-	1,731,367	88,633
30	FP.10070722	10070722 - TOG - Holdrege-Eustis Area 10	DIMP	TOG/Shallow/Expo:	Nov-21	$ 3,373,405	Forecast	-	-	-	72,156	-	22,698	-	2,435,323	22,639	-	167,526	29,316	-	29,316	-	-	29,316	-	-	-	-	-	-	2,808,290	565,115
31	FP.10075017	10075017 - TOG - Sutton-4603480-20	DIMP	TOG/Shallow/Expo:	Nov-21	$ 2,831,619	Forecast	-	-	-	60,568	-	19,053	-	2,044,198	19,003	-	140,620	24,608	-	24,608	-	-	24,608	-	-	-	-	-	-	2,357,266	474,353
32	FP.10075206	10075206 - TOG - Sutton-3900160-6	DIMP	TOG/Shallow/Expo:	Nov-21	$ 1,707,766	Forecast	-	-	-	36,529	-	11,491	-	1,232,868	11,461	-	84,809	14,841	-	14,841	-	-	14,841	-	-	-	-	-	-	1,421,681	286,085
33	FP.10075143	10075143 - Plainview TBS Replacement	DIMP	Town Border Statio	Aug-21	$ 156,000	Forecast	-	-	-	1,112	-	1,050	-	2,589	3,141	88,981	-	-	-	-	-	-	17,624	-	-	-	-	-	-	114,497	41,503
34	FP.10075144	10075144 - Clearwater TBS Replacement	DIMP	Town Border Statio	Aug-21	$ 156,000	Forecast	-	-	-	1,112	-	1,050	-	2,589	3,141	88,981	-	-	-	-	-	-	17,624	-	-	-	-	-	-	114,497	41,503
35	FP.10075256	10075256 - Alliance #1 TBS Replacement	DIMP	Town Border Statio	Aug-21	$ 156,000	Forecast	-	-	-	1,112	-	1,050	-	2,589	3,141	88,981	-	-	-	-	-	-	17,624	-	-	-	-	-	-	114,497	41,503
36	FP.10075018	10075018 - McCook EAST TBS Replacement	DIMP	Town Border Statio	Aug-21	$ 156,000	Forecast	-	-	-	1,112	-	1,050	-	2,589	3,141	88,981	-	-	-	-	-	-	17,624	-	-	-	-	-	-	114,497	41,503
37	FP.10075019	10075019 - Ogallala #3 TBS Replacement	DIMP	Town Border Statio	Aug-21	$ 156,000	Forecast	-	-	-	1,112	-	1,050	-	2,589	3,141	88,981	-	-	-	-	-	-	17,624	-	-	-	-	-	-	114,497	41,503
38	FP.10075209	10075209 - Utica TBS Replacement	DIMP	Town Border Statio	Aug-21	$ 156,000	Forecast	-	-	-	1,112	-	1,050	-	2,589	3,141	88,981	-	-	-	-	-	-	17,624	-	-	-	-	-	-	114,497	41,503
39	FP.10075207	10075207 - Crete Bare Steel	DIMP	Bare Steel	Oct-21	$ 13,012	Forecast	-	-	-	278	-	88	-	9,394	87	-	646	113	-	113	-	-	113	-	-	-	-	-	-	10,832	2,180
40	FP.10075145	10075145 - Wayne Bare Steel	DIMP	Bare Steel	Oct-21	$ 2,256,149	Forecast	-	-	-	48,258	-	15,181	-	1,628,756	15,141	-	112,042	19,607	-	19,607	-	-	19,607	-	-	-	-	-	-	1,878,199	377,950
41	FP.10075208	10075208 - Peru Bare Steel	DIMP	Bare Steel	Oct-21	$ 16,840	Forecast	-	-	-	360	-	113	-	12,157	113	-	836	146	-	146	-	-	146	-	-	-	-	-	-	14,017	2,823
42	FP.10075021	10075021 - Holdrege: Atlanta 3 mile n/w	DIMP	PVC	Nov-21	$ 125,320	Forecast	-	-	-	2,681	-	843	-	90,471	841	-	6,223	1,089	-	1,089	-	-	1,089	-	-	-	-	-	-	104,326	20,994
43	FP.10075257	10075257 - Scottsbluff 4: Chappell South	DIMP	PVC	Nov-21	$ 206,960	Forecast	-	-	-	4,427	-	1,393	-	149,408	1,389	-	10,278	1,799	-	1,799	-	-	1,799	-	-	-	-	-	-	172,292	34,668
44	FP.10075020	10075020 - Kearney 1: Bloomington 7 mile n/e	DIMP	PVC	Nov-21	$ 63,913	Forecast	-	-	-	1,367	-	430	-	46,140	429	-	3,174	555	-	555	-	-	555	-	-	-	-	-	-	53,205	10,708
45	FP.10075022	10075022 - Sutton 20: Deshler 4 Mile s/w	DIMP	PVC	Nov-21	$ 349,976	Forecast	-	-	-	7,486	-	2,355	-	252,654	2,349	-	17,380	3,041	-	3,041	-	-	3,041	-	-	-	-	-	-	291,347	58,629
46	FP.10075210	10075210 - Sutton: Hansen 2 Mile n/e	DIMP	PVC	Nov-21	$ 840,493	Forecast	-	-	-	17,978	-	5,655	-	606,768	5,641	-	41,740	7,304	-	7,304	-	-	7,304	-	-	-	-	-	-	699,694	140,799
47	FP.10075211	10075211 - Sutton: Trumbull 1 Mile West	DIMP	PVC	Nov-21	$ 38,622	Forecast	-	-	-	826	-	260	-	27,882	259	-	1,918	336	-	336	-	-	336	-	-	-	-	-	-	32,153	6,469
48	FP.10075071	10075071 - Exposed Main - SUTTON 63213.87	TIMP	TOG/Shallow/Expo:	Nov-21	$ 970,366	Forecast	-	-	-	20,756	-	6,529	-	700,525	6,512	-	48,189	8,433	-	8,433	-	-	8,433	-	-	-	-	-	-	807,810	162,556
49	FP.10075072	10075072 - Shallow Main - SUTTON 68332.92	TIMP	TOG/Shallow/Expo:	Nov-21	$ 108,379	Forecast	-	-	-	2,318	-	729	-	78,241	727	-	5,382	942	-	942	-	-	942	-	-	-	-	-	-	90,223	18,156
50	FP.10075073	10075073 - Span Main - KEARNEY 50171.96	TIMP	TOG/Shallow/Expo:	Nov-21	$ 288,438	Forecast	-	-	-	6,170	-	1,941	-	208,229	1,936	-	14,324	2,507	-	2,507	-	-	2,507	-	-	-	-	-	-	240,121	48,317
51	FP.10075074	10075074 - Shallow Main - KEARNEY 1498.52	TIMP	TOG/Shallow/Expo:	Nov-21	$ 147,720	Forecast	-	-	-	3,160	-	994	-	106,642	991	-	7,336	1,284	-	1,284	-	-	1,284	-	-	-	-	-	-	122,975	24,745
52	FP.10075168	10075168 - Exposed Main - ALBION 1292.97	TIMP	TOG/Shallow/Expo:	Nov-21	$ 1,158,639	Forecast	-	-	-	24,783	-	7,796	-	836,443	7,776	-	57,539	10,069	-	10,069	-	-	10,069	-	-	-	-	-	-	964,544	194,095
53	FP.10075169	10075169 - Shallow Main - ALBION 20122.78	TIMP	TOG/Shallow/Expo:	Nov-21	$ 3,003,281	Forecast	-	-	-	64,239	-	20,208	-	2,168,124	20,155	-	149,145	26,100	-	26,100	-	-	26,100	-	-	-	-	-	-	2,500,171	503,110
54	FP.10075170	10075170 - Shallow Main - ALBION 31129.47	TIMP	TOG/Shallow/Expo:	Nov-21	$ 3,252,650	Forecast	-	-	-	69,573	-	21,886	-	2,348,148	21,829	-	161,529	28,267	-	28,267	-	-	28,267	-	-	-	-	-	-	2,707,766	544,884
55	FP.10075161	10075161 - Line Heater - Laurel	TIMP	Town Border Statio	Aug-21	$ 55,336	Forecast	-	-	-	395	-	372	-	918	1,114	31,563	-	-	-	-	-	-	6,252	-	-	-	-	-	-	40,614	14,722
56	FP.10075234	10075234 - Line Heater - Henderson	TIMP	Town Border Statio	Aug-21	$ 8,786	Forecast	-	-	-	63	-	59	-	146	177	5,011	-	-	-	-	-	-	993	-	-	-	-	-	-	6,449	2,337
57	FP.10075054	10075054 - Line Heater - Gibbon	TIMP	Town Border Statio	Aug-21	$ 55,336	Forecast	-	-	-	395	-	372	-	918	1,114	31,563	-	-	-	-	-	-	6,252	-	-	-	-	-	-	40,614	14,722
58	FP.10075056	10075056 - Line Heater - Ravenna	TIMP	Town Border Statio	Aug-21	$ 55,336	Forecast	-	-	-	395	-	372	-	918	1,114	31,563	-	-	-	-	-	-	6,252	-	-	-	-	-	-	40,614	14,722
59	FP.10075057	10075057 - Line Heater - Bertrand	TIMP	Town Border Statio	Aug-21	$ 8,786	Forecast	-	-	-	63	-	59	-	146	177	5,011	-	-	-	-	-	-	993	-	-	-	-	-	-	6,449	2,337
60	FP.10075058	10075058 - Line Heater - Burwell	TIMP	Town Border Statio	Aug-21	$ 8,786	Forecast	-	-	-	63	-	59	-	146	177	5,011	-	-	-	-	-	-	993	-	-	-	-	-	-	6,449	2,337
61	FP.10075067	10075067 - Line Heater - Loup City	TIMP	Town Border Statio	Aug-21	$ 8,786	Forecast	-	-	-	63	-	59	-	146	177	5,011	-	-	-	-	-	-	993	-	-	-	-	-	-	6,449	2,337
62	FP.10075068	10075068 - Line Heater - North Loup	TIMP	Town Border Statio	Aug-21	$ 8,786	Forecast	-	-	-	63	-	59	-	146	177	5,011	-	-	-	-	-	-	993	-	-	-	-	-	-	6,449	2,337
63	FP.10075069	10075069 - Line Heater - Sargent	TIMP	Town Border Statio	Aug-21	$ 8,786	Forecast	-	-	-	63	-	59	-	146	177	5,011	-	-	-	-	-	-	993	-	-	-	-	-	-	6,449	2,337
64	FP.10075159	10075159 - Line Heater - ELGIN	TIMP	Town Border Statio	Aug-21	$ 55,336	Forecast	-	-	-	395	-	372	-	918	1,114	31,563	-	-	-	-	-	-	6,252	-	-	-	-	-	-	40,614	14,722
65	FP.10075160	10075160 - Line Heater - Genoa	TIMP	Town Border Statio	Aug-21	$ 55,336	Forecast	-	-	-	395	-	372	-	918	1,114	31,563	-	-	-	-	-	-	6,252	-	-	-	-	-	-	40,614	14,722
66	FP.10075162	10075162 - Line Heater - St Edward	TIMP	Town Border Statio	Aug-21	$ 55,336	Forecast	-	-	-	395	-	372	-	918	1,114	31,563	-	-	-	-	-	-	6,252	-	-	-	-	-	-	40,614	14,722
67	FP.10075163	10075163 - Line Heater - Clearwater	TIMP	Town Border Statio	Aug-21	$ 8,786	Forecast	-	-	-	63	-	59	-	146	177	5,011	-	-	-	-	-	-	993	-	-	-	-	-	-	6,449	2,337
68	FP.10075164	10075164 - Line Heater - Ewing	TIMP	Town Border Statio	Aug-21	$ 8,786	Forecast	-	-	-	63	-	59	-	146	177	5,011	-	-	-	-	-	-	993	-	-	-	-	-	-	6,449	2,337
69	FP.10075165	10075165 - Line Heater - Greeley	TIMP	Town Border Statio	Aug-21	$ 8,786	Forecast	-	-	-	63	-	59	-	146	177	5,011	-	-	-	-	-	-	993	-	-	-	-	-	-	6,449	2,337
70	FP.10075166	10075166 - Line Heater - Long Pine	TIMP	Town Border Statio	Aug-21	$ 8,786	Forecast	-	-	-	63	-	59	-	146	177	5,011	-	-	-	-	-	-	993	-	-	-	-	-	-	6,449	2,337
71	FP.10075063	10075063 - Line Heater - Franklin	TIMP	Town Border Statio	Aug-21	$ 8,786	Forecast	-	-	-	63	-	59	-	146	177	5,011	-	-	-	-	-	-	993	-	-	-	-	-	-	6,449	2,337
72	FP.10075064	10075064 - Line Heater - Hildreth	TIMP	Town Border Statio	Aug-21	$ 8,786	Forecast	-	-	-	63	-	59	-	146	177	5,011	-	-	-	-	-	-	993	-	-	-	-	-	-	6,449	2,337
73	FP.10075070	10075070 - Line Heater - Wilcox	TIMP	Town Border Statio	Aug-21	$ 8,786	Forecast	-	-	-	63	-	59	-	146	177	5,011	-	-	-	-	-	-	993	-	-	-	-	-	-	6,449	2,337
74	FP.10075263	10075263 - Line Heater - Bayard	TIMP	Town Border Statio	Aug-21	$ 8,786	Forecast	-	-	-	63	-	59	-	146	177	5,011	-	-	-	-	-	-	993	-	-	-	-	-	-	6,449	2,337
75	FP.10075264	10075264 - Line Heater - Broadwater	TIMP	Town Border Statio	Aug-21	$ 8,786	Forecast	-	-	-	63	-	59	-	146	177	5,011	-	-	-	-	-	-	993	-	-	-	-	-	-	6,449	2,337
76	FP.10075265	10075265 - Line Heater - Lewellen	TIMP	Town Border Statio	Aug-21	$ 8,786	Forecast	-	-	-	63	-	59	-	146	177	5,011	-	-	-	-	-	-	993	-	-	-	-	-	-	6,449	2,337
77	FP.10075266	10075266 - Line Heater - Lodgepole	TIMP	Town Border Statio	Aug-21	$ 8,786	Forecast	-	-	-	63	-	59	-	146	177	5,011	-	-	-	-	-	-	993	-	-	-	-	-	-	6,449	2,337
78	FP.10075267	10075267 - Line Heater - Oshkosh	TIMP	Town Border Statio	Aug-21	$ 8,786	Forecast	-	-	-	63	-	59	-	146	177	5,011	-	-	-	-	-	-	993	-	-	-	-	-	-	6,449	2,337
79	FP.10075268	10075268 - Line Heater - Potter	TIMP	Town Border Statio	Aug-21	$ 8,786	Forecast	-	-	-	63	-	59	-	146	177	5,011	-	-	-	-	-	-	993	-	-	-	-	-	-	6,449	2,337
80	FP.10075055	10075055 - Line Heater - McCook East	TIMP	Town Border Statio	Aug-21	$ 55,336	Forecast	-	-	-	395	-	372	-	918	1,114	31,563	-	-	-	-	-	-	6,252	-	-	-	-	-	-	40,614	14,722
81	FP.10075059	10075059 - Line Heater - Cambridge	TIMP	Town Border Statio	Aug-21	$ 8,786	Forecast	-	-	-	63	-	59	-	146	177	5,011	-	-	-	-	-	-	993	-	-	-	-	-	-	6,449	2,337
82	FP.10075065	10075065 - Line Heater - Indianola	TIMP	Town Border Statio	Aug-21	$ 8,786	Forecast	-	-	-	63	-	59	-	146	177	5,011	-	-	-	-	-	-	993	-	-	-	-	-	-	6,449	2,337
83	FP.10075060	10075060 - Line Heater - Davenport	TIMP	Town Border Statio	Aug-21	$ 8,786	Forecast	-	-	-	63	-	59	-	146	177	5,011	-	-	-	-	-	-	993	-	-	-	-	-	-	6,449	2,337
84	FP.10075061	10075061 - Line Heater - Deshler	TIMP	Town Border Statio	Aug-21	$ 8,786	Forecast	-	-	-	63	-	59	-	146	177	5,011	-	-	-	-	-	-	993	-	-	-	-	-	-	6,449	2,337
85	FP.10075062	10075062 - Line Heater - Fairfield	TIMP	Town Border Statio	Aug-21	$ 8,786	Forecast	-	-	-	63	-	59	-	146	177	5,011	-	-	-	-	-	-	993	-	-	-	-	-	-	6,449	2,337
86	FP.10075167	10075167 - Line Heater - Orchard	TIMP	Town Border Statio	Aug-21	$ 8,786	Forecast	-	-	-	63	-	59	-	146	177	5,011	-	-	-	-	-	-	993	-	-	-	-	-	-	6,449	2,337
87	FP.10063929	10063929-Giles to Valaretta Drive (system loop)	Reliability	Loops	Aug-21	$ 127,760	Forecast	-	-	-	2,733	-	860	-	79,511	2,572	911	10,151	-	-	7,772	-	-	2,221	-	-	-	-	-	-	106,731	21,029
88	FP.10064514	10064514-Hwy 31 & Giles DRS (system loop/bolster)	Reliability	Loops	Aug-21	$ 120,000	Forecast	-	-	-	2,567	-	807	-	74,681	2,416	856	9,535	-	-	7,300	-	-	2,086	-	-	-	-	-	-	100,248	19,752
89	FP.10072085	10072085-Columbus Capacity Loop	Reliability	Loops	Aug-21	$ 40,600	Forecast	-	-	-	868	-	273	-	25,267	817	289	3,226	-	-	2,470	-	-	706	-	-	-	-	-	-	33,916	6,684
90	FP.10072131	10072131-David City Capacity Loop	Reliability	Loops	Aug-21	$ 121,000	Forecast	-	-	-	2,588	-	814	-	75,304	2,436	863	9,614	-	-	7,361	-	-	2,103	-	-	-	-	-	-	101,083	19,917
91	FP.10075287	10075287 - Chart Replacements - Scottsbluff	Reliability	Charts	Aug-21	$ 13,500	Forecast	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11,632	-	-	-	-	11,632	1,868
92	FP.10075277	10075277 - LSG ERT Upgrade - KEARNEY	Reliability	Meter Install	Aug-21	$ 2,333,185	Forecast	-	-	-	-	-	-	-	-	-	-	-	1,013,814	1,013,814	-	-	-	-	-	-	-	-	-	-	2,027,628	305,557
93	FP.10075278	10075278 - LSG ERT Upgrade - HOLDREGE	Reliability	Meter Install	Aug-21	$ 1,458,867	Forecast	-	-	-	-	-	-	-	-	-	-	-	633,906	633,906	-	-	-	-	-	-	-	-	-	-	1,267,812	191,055
94	FP00109							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
95	FP00110							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
96	FP00111							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
97	FP00112							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
98	FP00113							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
99	FP00114							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
100	FP00115																															
101	FP00116					49,360,263		-	-	-	463,681	-	306,514	-	16,210,732	331,926	883,021	17,175,748	3,416,595	3,633,366	999,521	-	-	361,806	-	11,632	-	-	-	-	43,794,542	5,565,721
																															43,794,542	
																															-	Check

Note 1: Percentage allocation from Rate Design proposed in Docket No. NG-109

BLACK HILLS NEBRASKA GAS
Customer Class Allocation
For Rate Year 2021

Exhibit 2
Table L
Page 1 of 1

	(a)	(b)	(c)	(d)	(e)	(f)
		Note 1	Note 2		b * c	b * d
Line No.	**Account #**	**Jurisdictional Amounts**	Residential %	Commercial %	Residential $	Commercial $
1	36700	-	58.96%	41.04%	-	-
2	36903	-	58.96%	41.04%	-	-
3	374.01	-	58.95%	41.05%	-	-
4	374.02	463,681	58.95%	41.05%	273,323	190,358
5	374.03	-	58.95%	41.05%	-	-
6	375.01	306,514	58.95%	41.05%	180,679	125,835
7	375.2	-	58.95%	41.05%	-	-
8	376	16,210,732	69.56%	30.44%	11,275,462	4,935,270
9	378	331,926	58.95%	41.05%	195,658	136,268
10	379	883,021	58.95%	41.05%	520,508	362,513
11	380	17,175,748	79.78%	20.22%	13,703,445	3,472,303
12	381	3,416,595	69.28%	30.72%	2,366,996	1,049,599
13	382.01	3,633,366	69.28%	30.72%	2,517,174	1,116,192
14	383.01	999,521	69.28%	30.72%	692,462	307,059
15	383.71	-	69.28%	30.72%	-	-
16	384.01	-	69.28%	30.72%	-	-
17	385	361,806	69.28%	30.72%	250,657	111,149
18	386	-	79.78%	20.22%	-	-
19	387	11,632	70.72%	29.28%	8,226	3,406
20					-	-
21	Totals	43,794,542			31,984,590	11,809,952
22	Allocation %				73.03%	26.97%

Note 1: Totals from Worksheet L - Project Listing & Jurisdictional Allocation in Docket No. NG-109
Note 2: Inputs from Rate Design proposed in Docket No. NG-109

BLACK HILLS NEBRASKA GAS
Data Integrity Improvement Plan (DIIP)
For Rate Year 2021

Exhibit 2
Table M
Page 1 of 1

Line No. FP #	Sub Projects	Forecast	2021 Actual	Variance
1	External Costs - Recoverable in SSIR			
2	Transmission/Gathering TVC Records NE			
3				
4	Gas Service Card Mapping NE	865,048		
5				
6	Distribution Main & Service Centerline Survey NE			
7				
8	Distribution Data Attribute Improvement NE			
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			
19				
20	Total External Costs - Recoverable in SSIR	865,048	-	-
21				
22	Internal Costs - Not Recoverable in SSIR			
23	Transmission/Gathering TVC Records NE			
24	Gas Service Card Mapping NE	96,116		
25	Distribution Main & Service Centerline Survey NE			
26	Distribution Data Attribute Improvement NE			
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			
32	Total Internal Costs - Not Recoverable in SSIR	96,116	-	-
33				
34	Total Program Costs	961,164	-	-

PUBLIC VERSION

Public Attachment JLB- 6

Five Year Capital Spend Plan

BLACK HILLS NEBRASKA GAS, LLC
CITY OF LINCOLN
COMPUTATION OF ALLO FIBER OPTICS FEES
ALLOCATION OF ALLO FIBER OPTICS FEES
SUMMARY

	*********** 2020 Franchise Fees Method *****		36 month
Customer Group	**No. of Customers**	**Allocated Amount**	**Cost Per Cust.**
Residential	90,461		
Com / Ind Firm (under 180,000)	8,475		
Small Volume Firm & Inter	12		
Large Volume (over 360,000)	23		
TOTAL	98,971	$ 1,526,000	0.43

Regulatory Asset

Amount to be recovered over 36 month	**$ 1,526,000**

Black Hills Nebraska Gas, LLC

Lincoln Franchise Fees Paid in 2019

Payment Amount

	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Total	2019 Estimated Payment	Over/(Under)
Residential	$ 175,647.28	$ 174,975.41	$ 174,999.74	$ 175,148.91	$ 174,733.03	$ 174,037.80	$ 173,837.61	$ 173,890.30	$ 173,513.93	$ 173,885.00	$ 174,637.49	$ 175,669.15	$ 2,094,975.65	$ 2,117,293.00	$ (22,317.00)
Commercial / Industrial Firm	$ 54,937.65	$ 56,558.89	$ 56,938.01	$ 56,279.84	$ 56,941.27	$ 56,309.14	$ 56,487.48	$ 56,151.66	$ 56,016.96	$ 56,888.62	$ 55,972.36	$ 57,321.53	$ 676,803.41	$ 682,527.00	$ (5,724.00)
Small Volume Interruptible	$ 3,752.58	$ 3,510.58	$ 1,768.86	$ 2,382.68	$ 1,965.40	$ 1,965.40	$ 1,965.40	$ 1,965.40	$ 1,965.40	$ 1,965.40	$ 2,161.94	$ 2,161.94	$ 27,530.98	$ 28,302.00	$ (771.00)
Large Volume / Transportation	$ 12,989.60	$ 12,680.24	$ 14,071.46	$ 13,087.87	$ 13,766.32	$ 13,766.32	$ 13,289.54	$ 13,766.32	$ 13,766.32	$ 13,176.70	$ 13,766.32	$ 13,766.32	$ 161,893.33	$ 151,044.00	$ 10,849.00
Total	$ 247,327.11	$ 247,725.12	$ 247,778.07	$ 246,899.30	$ 247,406.02	$ 246,078.66	$ 245,580.03	$ 245,773.68	$ 245,262.61	$ 245,915.72	$ 246,538.11	$ 248,918.94	$ 2,961,203.37	$ 2,979,166.00	$ (17,963.00)
(Write Offs) / Recoveries	$ (1,209.29)	$ (276.11)	$ (558.85)	$ (929.29)	$ (1,228.83)	$ (1,549.39)	$ (4,338.10)	$ (1,491.20)	$ (1,325.71)	$ (937.55)	$ (538.78)	$ (1,087.00)	$ (15,470.10)	$ -	$ (15,470.00)
Total - Amount Paid Lincoln	$ 246,117.82	$ 247,449.01	$ 247,219.22	$ 245,970.01	$ 246,177.19	$ 244,529.27	$ 241,241.93	$ 244,282.48	$ 243,936.90	$ 244,978.17	$ 245,999.33	$ 247,831.94	$ 2,945,733.27	$ 2,979,166.00	$ (33,433.00)
Check Total	$246,117.82	$247,449.01	$247,219.22	$245,970.01	$246,177.19	$244,529.27	$241,241.93	$244,282.48	$243,936.90	$244,978.17	$245,999.33	$247,831.94	$2,945,733.27		
Difference	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00		

Schedule A

BLACK HILLS ENERGY
BLACK HILLS NEBRASKA GAS, LLC
CITY OF LINCOLN
COMPUTATION OF 2020 FRANCHISE FEES

ALLOCATION OF LINCOLN FRANCHISE FEES

Customer Group	No. of Customers*	Actual Margins*	Allocation %	Allocated Amount	2020 Monthly Cost** Per Customer	2019 Previous Cost Per Customer
Residential	90,461	$ 27,427,431	70.69%	$ 2,106,973	**$ 1.94**	$ 1.96
Commercial / Industrial Firm (Under 180,000)	8,475	$ 8,877,456	22.88%	$ 681,957	**$ 6.71**	$ 6.74
Small Volume Interruptible ***	12	$ 395,684	1.02%	$ 30,402	**$ 211.13**	$ 196.54
Large Volume (over 360,000)	23	$ 2,098,145	5.41%	$ 161,249	**$ 584.24**	$ 572.14
TOTAL	98,971	$ 38,798,716	100.00%	$ 2,980,581		

Total miles of Distribution mains in Lincoln		**1,315.86**
Statutory rate	per foot	0.429
Amount to be recovered		**$ 2,980,581**

* 12 Months ending November 30, 2019
** Beginning February 1, 2019 (subject to reconciliation adjustment in Jan 2020)