# RMNG (2019-2023) Five Year System Safety and Integrity Rider ("SSIR") Plan

November 1, 2018

Black Hills Energy
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| **Attachment 2** | 2019 SSIR Capital Expenditures – Quarterly Forecast |
| **Attachment 3** | Confidential Transmission Integrity Management Program Plan ("TIMP Plan") - last edited April 1, 2017 |
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# I. OVERVIEW OF SYSTEM SAFETY AND INTEGRITY RIDER ("SSIR") PROGRAMS AND PROJECTS 2019

## A. Introduction

Rocky Mountain Natural Gas LLC's ("RMNG" or the "Company") SSIR provides for the recovery of Eligible SSIR Costs incurred for SSIR Projects that correspond to one of the following integrity management programs defined in the Company's Colo. PUC No. 4 Tariff Sheet Nos. 146-149:

- Transmission Integrity Management Program ("TIMP");
- Storage Integrity Management Program ("SIMP"); and
- Other SSIR Eligible Projects.[1]

RMNG's integrity programs are driven by their respective Transmission Integrity Management Program Plan ("TIMP Plan") and Storage Integrity Management Program Plan ("SIMP Plan"). The TIMP Plan and SIMP Plan were created to proactively improve the integrity and safety of Black Hills Corporation's ("BHC") transmission and storage systems company-wide, while also ensuring an organized approach to complying with applicable federal regulations. The foundation for each of BHC's integrity management programs relies on three key directives:

1. Know your assets;
2. Identify the risks and threats to those assets; and
3. Be proactive in mitigating those threats.

Consistent with these directives, the entire gas industry is transitioning from a historically reactive approach to a much more proactive approach to system integrity management. Federal regulations are steering companies, such as BHC, towards integrating these three directives into formal system integrity management programs. RMNG presents the following attachments which details the pertinent information and supporting data related to the 2019 SSIR Projects and Eligible SSIR Costs including Project description and

[1] RMNG's Colo. PUC No. 4 Tariff Sheet No. 148 defines Other SSIR Projects as, "Projects in accordance with interim and final rules and regulations, advisories or directives of the U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration and other state and federal agencies that have jurisdiction over the Company's pipeline system and underground storage facility safety and integrity. SSIR Projects under this category may only be included in the SSIR with agreement of Commission Staff."

scope, project costs, in-service date, and a five-year SSIR plan of integrity work:

- **Attachment 1:** 2019-2023 Five Year SSIR Plan and Summary
- **Attachment 2:** 2019 SSIR Capital Expenditures – Quarterly Forecast
- **Attachment 3:** Confidential TIMP Plan
- **Attachment 4:** Confidential SIMP Plan
- **Attachment 5:** 2019 SSIR Project Summaries
- **Attachment 6:** Confidential Well #5 Assessment Report
- **Attachment 7:** Confidential Well #9 Assessment Report
- **Attachment 8:** Confidential TIMP Risk Ranking Results
- **Attachment 9:** Confidential SIMP Risk Ranking Results

Table 1 below represents a summary of the forecasted capital spend for 2019 SSIR Projects. The proposed SSIR revenue requirement calculation for these projects and prior year SSIR projects is detailed on Attachment D – 2019 SSIR Revenue Requirement to Advice Letter No. 114.

**Table 1 – Total 2019 SSIR Project Costs**

| TIMP/SIMP Initiative | 2019 SSIR Cost |
|---|---|
| TIMP – In-line Inspection Initiative | $2,010,000 |
| TIMP – Corrosion Mitigation Initiative | $94,500 |
| TIMP – At-Risk Infrastructure Initiative | $7,235,000 |
| SIMP – Well Assessment Initiative | $2,100,000 |
| SIMP – Well Replacement Initiative | $8,625,000 |
| **Total 2019 SSIR Project Costs** | **$20,064,500** |

Furthermore, the format of the 2019-2023 Five Year SSIR Plan reflects the Company's compliance with the SSIR reporting templates filed in compliance with the comprehensive Settlement Agreement that was approved by Decision No. R18-0263 in Proceeding No. 17AL-0654G.

## B. Summary of Integrity Management Program Plans

The Company's integrity management programs for its transmission and storage assets include detailed written plan documents that formalize the Company's strategy for

identifying, prioritizing, and proactively removing risk from its system. The TIMP Plan (Confidential Attachment 3) and SIMP Plan (Confidential Attachment 4) apply to all of BHC's transmission and storage assets across six different states which includes RMNG's transmission and storage assets in Colorado. These plans are reviewed annually and edited as necessary when rules change and as more data is gathered and analyzed both qualitatively and quantitatively. The documents also serve as the formal plans to comply with federal regulations regarding integrity management and are the foundation for RMNG's Five-Year SSIR Plan. The TIMP and SIMP Plans detail the Company's strategy for identifying and then removing the riskiest parts of its system while also providing guidance on processes to maintain existing system integrity through risk prevention and mitigation.

The Company must be proactive and adapt quickly within its integrity management programs as numerous challenges exist. One significant challenge is that the Company's plans must ensure that all federal requirements are met. As an example, the "Mega-Rule" starts rolling out in 2019 and will likely include significant rule changes which will directly impact the requirements of the Company's TIMP and SIMP.[2] The Pipeline and Hazardous Materials Safety Administration ("PHMSA") has broken this rulemaking up into three parts due to its size and complexity.[3] The Company is currently performing a data audit of all Class 3, 4 and High Consequence Area ("HCA") transmission pipelines to help determine potential impacts from the Mega-Rule.

A second major challenge is the timing and prioritization of resources. Resources must be allocated to where they will provide the best value to customers in terms of both safety and cost. This resource allocation, in turn, requires considerable analysis and judgment. It is not cost-effective or practical to complete all the projects in one year. The result is that some projects can be completed within a short period, while others must be completed over many years. For the long-term projects, the Company develops schedules or milestones to ensure that the ultimate goals will be achieved.

A third major challenge is that the plans must be flexible enough to account for uncertainties and new developments. Decisions need to be made on best available information at the time with enough flexibility to adapt to unforeseen changes. This is especially the case for RMNG since the Company is still in "catch-up" mode for system

[2] PHMSA-2011-0023, RIN: 2137-AE72, Safety of Gas Transmission and Gathering Pipelines (March 26-28, 2018).
[3] PHMSA-2011-0023 – Part I will address the expansion of risk assessment and MAOP requirements, Part II will focus on the expansion of integrity management program regulations, and Part III will focus on expanding the regulation of gas gathering lines.

data knowledge since many of RMNG's historical records were destroyed in a tragic propane explosion in 1985. Also, given RMNG's location in the mountainous terrain of the Western Slope of Colorado, a shortened construction season adds an additional constraint to RMNG's integrity planning process.

### 1. Transmission Integrity Management Program Plan ("TIMP Plan")

The BHC TIMP Plan complies with federal regulations that prescribe how operators validate the integrity of their gas transmission assets as defined by Title 49 Code of Federal Regulations ("CFR") Part 192, Subpart O ("TIMP Rule"), with the highest priority given to those located in high HCAs. The Company's TIMP Plan addresses these integrity management requirements in addition to detailing its methods for addressing the nine primary potential threats[4] described by the TIMP Rule. The BHC written TIMP Plan applies only to transmission assets as defined by 49 CFR § 192.3.

These regulations reference elements from the American Society of Mechanical Engineers ("ASME") B31.8S which contains principles and processes for pipeline operators to follow when developing and implementing an effective integrity management program. The Company considers these federal regulations as the minimum standard for developing and implementing the TIMP Plan. It is this guidance, along with the directives within the Company's TIMP Plan to identify, assess, and remove highest priority threats first that help drive the selection of SSIR projects within each year of the Five Year SSIR Plan. The TIMP Plan applies to all BHC utilities across six different states, and it was last edited April 1, 2017. The Company is currently reviewing potential revisions to its TIMP Plan that should be finalized in January of 2019.

RMNG has created three key initiatives based on consideration of the nine primary potential threats addressed in the TIMP Plan.

- In-Line Inspection Initiative
- Corrosion Mitigation Initiative
- At-Risk Infrastructure Initiative

The BHC TIMP Plan is included as "Attachment 3 – Confidential TIMP Plan" and was last edited April 1, 2017.

[4] The nine primary threats described in the TIMP Rule are External Corrosion, Internal Corrosion, Stress Corrosion Cracking, Manufacturing Defects, Welding/Fabrication, Equipment, Third Party/Mechanical Damage, Weather/Outside Force Damage, and Incorrect Operations.

### 2. Storage Integrity Management Program Plan ("SIMP Plan")

On December 19, 2016, PHMSA issued an interim final rule revising federal pipeline safety regulations to address issues concerning safe operation of underground natural gas storage facilities ("Interim Final Storage Rule"). The rule incorporates *American Petroleum Institute (API) Recommended Practice (RP) 1171 (First Edition 2015) - Functional Integrity of Natural Gas Storage in Depleted Hydrocarbon Reservoirs and Aquifer Reservoirs* into the pipeline safety regulations. The Interim Final Storage Rule further states that operators will be required "to assess the operational safety of their underground natural gas storage facilities and document the implementation of identified safety solutions."[5] The Interim Final Storage Rule went into effect on January 18, 2017.

To meet the requirement of the Interim Final Storage Rule, BHC implemented specific procedures related to storage integrity, including an Underground Storage Operations and Maintenance (Procedure No. 30), Underground Storage Design and Construction (Procedure No. 80), and the Storage Integrity Management Plan itself (Procedure No. 133). These documents also include a Storage Risk Model and an Emergency Response process that were written with assistance from third-party storage management experts. The BHC SIMP Plan is included as "Attachment 4 – Confidential SIMP Plan" and was last edited January 18, 2018.

## C. Tenets of System Integrity Programs

As mentioned above, an effective integrity management program complies with three guiding tenets:

- Know your assets;
- Identify the risks and threats to those assets; and
- Be proactive in mitigating those threats.

### 1. Know Your Assets

This tenet includes obtaining knowledge of pipe location, materials, construction techniques, pipe grades, depths, wireline/In-Line Inspection ("ILI") data, manufacturing information, asset health and conditions of the transmission or storage system. This tenet also includes Company validation of the asset records. Once the knowledge is obtained, this tenet also includes formally documenting and analyzing the information to improve the accuracy of the risk model. It is the risk model, along with subject matter expertise,

[5] Federal Register, Vol. 81, No. 243 at 91863.

that drives the decision making process for integrity projects and programs.

RMNG is improving its system knowledge by prioritizing remediation of record gaps identified during the Integrity Verification Process ("IVP") as outlined by PHMSA-2013-0119-0047. A variety of factors are considered in the IVP, including: HCA locations, type of missing documentation, criticality to system, whether health and condition assessments have occurred on the pipeline, and vintage. Remediation options include replacement, de-rate, or pressure test and material validation.

In the absence of verifiable, traceable, and complete records, RMNG must assume a conservative, higher level of risk in its risk algorithm and assessments. System knowledge is a crucial component to the Company's integrity programs, and strategically gathering system data will help fill gaps in RMNG's understanding of the assets. Formally gathering and analyzing system data is now part of every current and future SSIR Project, and this data will help drive future risk results.

## 2. Identifying the Risks and Threats to those Assets

Risks and threats are identified through Company projects and initiatives that collect and integrate existing data that is then entered into the Company's risk model. BHC employs Integrity Solutions' PFIM software, which is discussed later on in the report, to conduct risk assessments, and these risk assessments are used to prioritize baseline and continual assessments. Unknown data also drives risk results and rankings since unknown data provides its own risk. Because of this, giving weight to unknown data inputs can increase the risk percentage of a potential project which is why it is a priority to systematically gather data in an efficient manner. By continuing to gather new data, more risks and threats are identified and eventually mitigated or averted.

## 3. Preventing and Mitigating Threats

The ultimate goal of implementing a system safety and integrity program is successful and accelerated implementation of a process to reduce risk to make the public safer at a reasonable cost. Taking targeted and systematic action against known and unknown threats helps the Company comply with the guidance stated in both the TIMP Rule and Interim Final Storage Rule.

## D. TIMP and SIMP Initiatives Overview

### 1. TIMP Initiatives

In 2019, RMNG will pursue three TIMP initiatives focused on identifying, assessing, and prioritizing the nine primary threats described by the TIMP Rule and in the Company's TIMP Plan. These initiatives also include validating the integrity of gas transmission pipelines, and undertaking mitigation, repairs, or replacements when warranted. The risk-based program is a comprehensive and systematic approach to optimizing resources to provide effective integrity management activities. Based on RMNG's current system data, knowledge, and governing TIMP Plan, RMNG has focused its TIMP on these three key initiatives outlined below.

a) TIMP In-Line Inspection Initiative:

**Table 2 – 2019 In-Line Inspection Initiative**

| 2019 Project No. | 2019 In-Line Inspection Initiative | 2019 SSIR Costs |
|---|---|---|
| No. 03 | Install Launcher and Receiver at Olathe Interconnect 6" | $1,560,000 |
| No. 07 | Telluride Fittings Replacement– Skunk Creek Crossing | $450,000 |
| | **Total 2019 ILI Initiative Costs** | **$2,010,000** |

In-line inspections ("ILIs") on RMNG's system are required in order to comply with regulations requiring operators to assess the integrity of its pipe within each HCA by applying methods suitable to address the threats identified.[6]

This initiative focuses on replacing "unpiggable" fittings and facilities that cannot accommodate the passage of traditional ILI tools. ILI tools, while not perfect, are recognized as the premier method for assessing the integrity of transmission pipelines as they provide the most extensive data. The Company utilizes ILI whenever feasible for assessing the integrity of pipelines subject to time-dependent threats, stable threats, and time-independent threats. ILI tools employed for threat assessments may consist of a standalone or combination of metal loss tools, crack detection tools, deformation tools, and mapping tools. ILI tool selection is

[6] 49 CFR § 192.921.

dependent upon the pipeline operational characteristics and susceptible threats on a segment by segment basis. Ultimately, the assessment method selected must be able to assess all of the threats identified. Threats that are not considered to be presently active are considered secondary to threats that a segment will be assessed for, but are continually monitored for any changes. Currently only 51% of the RMNG system is capable of using ILI technology (*e.g.*, is piggable). In 2019, the Telluride Fittings Replacement – Skunk Creek Crossing will help confirm that section of the pipeline is piggable while also removing an at-risk section of pipe. - RMNG also plans to build one launcher and receiver on its system in 2019 which will allow operations to increase ILI capability by breaking up an extremely difficult to manage 55.26 mile pipeline into two sections.

b) TIMP Corrosion Mitigation Initiative:

**Table 3 – 2019 Corrosion Mitigation Initiative**

| 2019 Project No. | 2019 Corrosion Mitigation Initiative | 2019 SSIR Costs |
|---|---|---|
| No. 01 | Deep Well Anode Replacement – Debeque and Andy's Mesa | $94,500 |
| | **Total 2019 Corrosion Mitigation Initiative Costs** | **$94,500** |

This initiative focuses on replacing aging cathodic protection technology and mitigating areas of corrosion risk on the system as required by current regulation.[7] The current technology will either be replaced with new deep well groundbeds, will receive rectifier enhancements, or will be subject to other actions deemed necessary in order to achieve appropriate corrosion control.

The Deep Well Anode Replacement Program is the only current ongoing program within this initiative. The replacement of aging cathodic protection technology with new deep well beds will allow the Company to maintain required levels of cathodic protection. This program will continue for five years. The specific locations will be determined on a year-by-year basis as then-current data, such as bi-monthly rectifier reads and annual pipe-to-soil potentials, is acquired. If the Deep Well Anode Replacement Program is not completed and a failure occurs, it is likely that a large volume of gas would be released and property damage in the surrounding areas would likely occur.

[7] 49 CFR Part 192, Subpart I – Requirements for Corrosion Control.

c) TIMP At-Risk Infrastructure Initiative:

**Table 4 – 2019 Infrastructure Initiative**

| 2019 Project No. | 2019 At-Risk Infrastructure Initiative | 2019 SSIR Costs |
|---|---|---|
| No. 02 | Span and Exposed Pipe Replacement Program – Young's Creek 8" | $135,000 |
| No. 04 | Mainline Valve Replacement Program – Bible Camp | $1,200,000 |
| No. 05 | Grove Creek Span Replacement | $1,350,000 |
| No. 06 | Cottonwood Pass Replacement | $4,550,000 |
| | **Total 2019 At-Risk Infrastructure Initiative Costs** | **$7,235,000** |

This initiative focuses on the replacement of vintage transmission lines with issues identified in the corrosion prevention coating, construction standards and materials. There are currently no federal requirements that specifically mandate replacement of vintage mains. However, operators are required to identify and implement measures to address risks.[8] Projects undertaken as a result of the At-Risk Infrastructure Replacement Initiative are intended to address the risks associated with these vintage assets. Currently, RMNG has approximately 185.7 miles of pre-1970's vintage transmission pipe on its system.

The Infrastructure Replacement Initiative will prioritize facilities that show a history of leaks, thinning wall thickness, pre-1970's vintage, or have components or attributes that the Company knows to be of concern, such as previously failed welds and areas with sleeves. This SSIR category also includes facilities in at-risk locations such as landslide areas, critical valve locations, exposures, leg-offs, and spans, as well as areas that require changes in class location. For example, if there are new HCAs designated under PHMSA regulations, the pipeline may need to be replaced to meet PHMSA requirements. The types of projects in this category could include, but are not limited to, replacement of pipeline, construction of new town border stations, replacing critical valves, and span or exposed pipe projects. In 2019, RMNG plans the following as part of the Company's At-Risk Infrastructure Initiative:

- Phase I of the multi-year Cottonwood Pass Replacement Project which will replace 5 of the 21 miles in 2019;

[8] 49 CFR §192.1007(d).

- Grove Creek Span Replacement which will bore and bury approximately 200 feet of pipeline that becomes submerged when water flows in the creek;
- Year 1 of the Company's Mainline Valve Replacement Program which will replace the most critical mainline valve location each year with an automated or remote control valve; and
- Year 2 of the Company's Span and Exposed Pipe Replacement Program which will include the replacement of a high-risk span or exposed pipe section.

## 2. SIMP Initiatives

As previously stated, PHMSA's Interim Final Storage Rule went into effect on January 18, 2017 and required operators to assess the operational safety of their underground natural gas storage facilities. In compliance with the requirements under the PHMSA Interim Final Storage Rule, including but not limited to PHMSA requirements on integrity demonstration, verification and monitoring, RMNG implemented an underground storage SSIR well review and remediation program in 2017 as part of its Well Assessment Initiative. The results of the Well Assessment Initiative are what drives the second RMNG SIMP Initiative, which is the Well Replacement Initiative. The forecasted SSIR Costs for 2019 for these initiatives are:

**Table 5 – Total 2019 SIMP SSIR Costs**

| Program/Initiative | 2019 SSIR Cost |
|---|---|
| SIMP – Well Assessment Initiative | $2,100,000 |
| SIMP – Well Replacement Initiative | $8,625,000 |
| **Total 2019 SIMP SSIR Costs** | **$10,725,000** |

a) SIMP Well Assessment Initiative

In 2019, RMNG will continue its now accelerated Well Assessment Initiative at its Wolf Creek Storage Field. This program's original plan started out with RMNG assessing and reworking one to two storage wells per year from 2017-2022. However, once the Company found that at least two of the first four wells tested showed enough concerning damage and corrosion to warrant replacement, RMNG adjusted this plan so that all wells would be assessed and reworked as soon as possible. Now all wells will be assessed and reworked by the end of 2019. This update to the Well

Assessment Initiative was filed as Supplemental Information in Proceeding No. 17AL-0736G on September 10, 2018.

As part of this initiative, RMNG not only inspects the integrity of the well casing and cement bond structure, but the Company also performs some workover of the wells. The workover will include, but not necessarily be limited to, the evaluation and replacement of downhole safety valves, evaluation of the casing, and re-work of wells, as required. Downhole safety valves are the last resort when it comes to stopping the emission of gas in the wells and the Company believes this is an integral component to keeping our customers, local communities and the environment safe.

**Table 6 – 2019 Well Assessment Initiative**

| 2019 Project No. | 2019 Well Assessment Initiative | 2019 SSIR Costs |
|---|---|---|
| No. 08 | Well Nos. #3, #4, #6, and #12 Re-work and Safety Valve Repair | $2,100,000 |
| | **Total 2019 Well Assessment Initiative Costs** | **$2,100,000** |

b) SIMP Well Replacement Initiative:

This initiative currently contains two multi-year projects and is a component of RMNG's SIMP. The Well Replacement Initiative is a direct result of testing performed on Well #5 in 2017, and Well #9 was added to the program as the top priority following its assessment in 2018. Based on the assessments performed, RMNG plugged and abandoned Well #9 in August of 2018 and plans to re-drill its replacement by October of 2019. After Well #9 is replaced, RMNG will plug and abandon Well #5 based on the damage found during its well assessment in 2017. The Company will wait to plug and abandon Well #5 until after it has drilled another well to replace it. Both of these wells were drilled in the 1960's. More detailed information on these projects are found in Section II of this report.

**Table 7 – 2019 Well Replacement Initiative**

| 2019 Project No. | 2019 Well Replacement Initiative | 2019 SSIR Costs |
|---|---|---|
| No. 09 | Wolf Creek Well Integrity – Replace Well #9 | $4,300,000 |
| No. 10 | Wolf Creek Well Integrity – Replace Well #5 | $4,325,000 |
| | **Total 2019 Well Replacement Initiative Costs** | **$8,625,000** |

## II. INTEGRITY MANAGEMENT PLANNING PROCESS AND EVALUATION

### A. Summary of Integrity Management Process (includes cost estimates)

The goal of RMNG's Integrity Management Programs is to protect the public, property and the environment from asset failures. The Company combines our Risk Assessment data, discussed in more detail below, with subject matter expert ("SME") input to determine highest threats and appropriate mitigative measures. RMNG's goal is not reached solely by following federal mandates but by proactively adding to system knowledge and mitigating threats when appropriate.

Additionally, the Company has developed, implemented, and documented a program to manage risk and to integrate that risk management into its annual SSIR Five-Year Plan through the following steps:

- Data collection;
- Identification of potential threats and hazards to the transmission pipe and storage operations;
- Risk analysis including estimation of the likelihood of occurrence and potential severity of the consequences of events related to each threat;
- Pipeline System Integrity and Operations teams meet to validate risk, provide SME input, and develop/define integrity projects for budgeting process;
- Preventive, mitigative, and monitoring processes are implemented to reduce the likelihood of occurrence and severity of consequences; and
- Periodic review and reassessment of the processes.

Data is collected regarding the Company's pipelines in various ways including performance data collected through field history, data collected in the normal course of business through well logs or ILI data, operations and maintenance activities, engineering data, and construction reports. To determine a facility's susceptibility to threat and hazard-related events and assess threat and hazard interaction, the Company's Pipeline System Integrity team reviews the available information comprised of the collected data.

The Pipeline System Integrity Team, with input from SMEs such as the Operations Department, analyzes the risks to the system and begin developing processes to reduce risk. These processes are reviewed and reassessed on an annual basis. The Pipeline System Integrity team meets with Operations personnel to validate the risk results for both HCA and non-HCA segments and utilizes SMEs to develop and define a project list for the budgeting process.

RMNG considers capital spending in five-year planning segments and sometimes longer. Many of the large projects span multiple years and get built into the five-year cycle. The teams also develop cost estimates for each project. With this information, the Pipeline System Integrity and Operations teams develop the written description for each SSIR Project and Initiative. These descriptions are included in the November 1 filing as required by the Tariff. Company representatives meet with Commission Staff prior to October 1 each year to discuss the proposed SSIR Projects for the following year and again on or before July 30th to provide a status update on that year's SSIR Projects. Additionally, the Company meets with Staff on or before April 30th to discuss the Annual SSIR Report. Table 8 provides the estimated costs for the Five Year SSIR Plan by year and initiative.

**Table 8 – Total SSIR Costs**

| Initiative | 2019 | 2020 | 2021 | 2022 | 2023 | After 2023 | Total |
|---|---|---|---|---|---|---|---|
| TIMP – In-line Inspection | $2,010,000 | $-0- | $-0- | $-0- | $-0- | $-0- | $2,010,000 |
| TIMP – Corrosion Mitigation | $94,500 | $94,500 | $94,500 | $94,500 | $94,500 | $-0- | $472,500 |
| TIMP – At-Risk Infrastructure | $7,235,000 | $16,610,000 | $11,735,000 | $15,885,000 | $9,750,000 | $8,500,000 | $69,715,000 |
| SIMP – Well Assessment | $2,100,000 | $-0- | $-0- | $-0- | $-0- | $-0- | $2,100,000 |
| SIMP – Well Replacement | $8,625,000 | $-0- | $-0- | $-0- | $-0- | $-0- | $8,625,000 |
| **Total SSIR Costs** | $20,064,500 | $16,704,500 | $11,829,500 | $15,979,500 | $9,844,500 | $8,500,000 | $82,922,500 |

## B. Summary of Risk Assessment Methodology

BHC currently uses Integrity Solutions risk models on both Transmission and Storage facilities. Integrity Solutions has developed Pipeline & Facility Integrity

Manager ("PFIM") software that utilizes proven risk algorithms designed to meet gas and hazardous liquid integrity management program code requirements.

The purpose of the quantitative risk assessment methodology is to develop a quantitative risk score through a variety of inputs which produce risk percentages, which for TIMP, is based on External Corrosion, Internal Corrosion, Stress Corrosion Cracking, Manufacturing, Construction, Equipment, Third Party Damage, Incorrect Operations, and Weather/Outside Force. Together, these percentages are used to calculate a Likelihood of Failure ("LOF") and Consequence of Failure ("COF"). Finally, it is the LOF and COF that are used to come up with the Max Risk of Failure (ROF) percentage that is used, along with SME input, to guide the risk prioritization for those projects utilizing the quantitative risk assessment. The SIMP risk model uses the following risk categories to arrive at its LOF, COF, and eventually ROF: Subsurface External Corrosion, Atmospheric External Corrosion, Internal Corrosion, Outside Force Damage, Design, Weather and Natural Forces, Operation, and Equipment.

It is important to note that not all projects receive the specific quantitative risk assessment detailed above and instead, rely on SME expertise and other risk assessment tools/data that is more specific to some projects. The SME risk assessment for these types of projects are detailed within the corresponding initiatives below since they vary by type of project. Table 9 below provides for the breakdown of 2019 SSIR projects that utilized the Company's quantitative risk assessment versus the projects that didn't utilize the Company's quantitative risk assessment.

**Table 9 – Risk Assessment and Prioritization**

| TIMP/SIMP | Initiative | Quantitative Risk Assessment Utilized | Risk Prioritization Description |
|---|---|---|---|
| TIMP | In-Line Inspection | No | Section II.C |
| TIMP | Corrosion Mitigation | No | Section II.D |
| TIMP | At-Risk Infrastructure | Yes | Section II.E |
| SIMP | Well Assessment | Yes | Section II.F |
| SIMP | Well Replacement | Yes | Section II.G |

## C. TIMP In-line Inspection ("ILI") Initiative – Planning and Evaluation

The ILI initiative is instrumental in proactively verifying that the system is evaluated for several of the primary potential threats, including internal corrosion, stress corrosion cracking, welding/fabrication errors, third party/mechanical damage, and outside force damage. The initiative helps RMNG comply with 49

CFR § 192.921 which requires operators to assess the integrity of the line pipe within each HCA by applying methods suitable to address the threats identified. ILI tools, while not perfect, are recognized as the premier method for assessing the integrity of transmission pipelines.

RMNG has gained a vast amount of system knowledge through use of ILIs, including the location and extent of corrosion, deformation(s), and pipeline design characteristics, such as bends, tees and abandoned farm taps. As RMNG replaces at-risk pipeline, it reviews the assets with respect to increasing "piggability." The Company also reviews data gaps with its existing system to identify other potential locations for pipe replacement that will significantly improve RMNG's ILI capability and the integrity of its system.

Pigging is the practice of using a Pipeline Inspection Gauge ("PIG") to allow the Company to inspect the pipeline. As described previously, there are various PIGs that record and provide very specific data regarding pipe integrity. The PIG is inserted into a launching station and the pressure-driven flow of the product in the pipeline is used to push the pig down the pipe until it reaches the receiving trap. Planning and running pigs provides the Company with asset information that is critical to risk analysis and planning. However, pipeline that contains butterfly valves, or reduced port ball valves, cannot be pigged. Currently, only 51% of the RMNG system is capable of using ILI technology (e.g., is piggable).

The 2019 SSIR Project No. 03 - Install Launcher and Receiver at Olathe Interconnect 6" will be the installation of a pig launcher and receiver at the Olathe Interconnect in order to allow operations to improve ILI capability by breaking up an extremely difficult to manage 55.26 mile pipeline into two sections for ILI runs.

The 2019 SSIR Project No. 07 – Telluride Fittings Replacement - Skunk Creek Crossing will result in being able to perform ILI tool runs to Telluride. This segment has been covered by hillside erosion and is currently estimated to be approximately 15 to 20 feet deep. The current line has a 1.5-inch diameter fitting in this location which RMNG is unable to verify. Replacement of this section of pipeline will confirm that the line is piggable, and will bring the line back to an acceptable depth to continue supplying safe and reliable natural gas to the Telluride community. This project results in the ability to perform ILI tool runs to Telluride. This SSIR project contributes to the overall operational safety of this

transmission line, as well as the continued provision of safe and reliable service to downstream towns.

## 1. Risk Prioritization Methodology:

**Table 10 – Risk Prioritization – ILI Initiative**

| Risk Prioritization – ILI Initiative | | | |
|---|---|---|---|
| **2019 Project No.** | **2019 ILI Initiative Projects** | **SME Ranking** | **2019 SSIR Costs** |
| No. 07 | Telluride Fittings Project – Skunk Creek Crossing | High* | $1,560,000 |
| No. 03 | Install Launcher and Receiver at Olathe Interconnect 6” | High | $450,000 |

*highest within initiative

Risk prioritization for the ILI initiative in 2019 did not use the quantitative risk assessment. RMNG used SMEs to identify its top priorities for increasing piggability, especially when the increasing of piggability as part of a project can be combined with removing a high-risk section of pipe. SMEs determined that the Telluride Fittings Project – Skunk Creek Crossing is a higher priority within this initiative because it includes replacing at-risk pipe that needed immediate attention following a pigging tool getting stuck in the pipe in 2018, and now this final piece of the project needs to be completed as soon as possible given that system’s winter heating needs requires that this project be completed prior to November. The Olathe interconnect project was chosen to be completed in 2019 because this segment represents one of RMNG’s highest ILI priorities due to it being an extremely long and difficult to manage run.

## 2. Solutions and Challenges

Subject matter expertise and sometimes risk modeling will be used to identify the Company’s highest priorities within this initiative. The Company has either performed or plans to perform some of the following projects within this initiative:

- Performing exploratory excavations to confirm and replace unpiggable fittings and sections of pipe;
- Performing Go-No-Go caliper inspections to verify piggablility;
- Replacing differing diameter sections; and

- Installation of launchers and receivers which facilitate the insertion and removal of ILI tools.

RMNG has found it more difficult than expected to conduct inspections on portions of its system because of past construction practices and missing historical records. Numerous cutouts have been required on bends, dents and transitions prior to successful ILI tool passages. The Company has also encountered situations where unknown factors caused the ILI tool to become lodged in the pipeline, and the ILI tool then had to be removed by physically cutting it from the line. RMNG has also identified numerous sections where diameter changes in pipeline segments or fittings could prevent passage of ILI tools and thus limits inspection tool options. These sections can also cause speed excursions resulting in data inaccuracies.

Other challenges include low flow and seasonal flow segments on the system which could cause an ILI to become lodged within the pipe, or over/under-speed which can result in data inaccuracies.

## D. TIMP Corrosion Mitigation Initiative – Planning and Evaluation

The initiative helps RMNG comply with Section 192.463.[9] The current planned 2019 SSIR projects specifically related to the Corrosion Mitigation Initiative are two anode replacements that are part of the Company's Deep Well Anode Replacement Program. This program provides for the replacement of Company anodes in the existing groundbeds that are depleting and near the end of their useful life. These groundbeds are part of the cathodic protection system to protect Company pipeline assets from External Corrosion which is one of the nine primary threats.

Historically, the Company has installed impressed current cathodic protection systems, otherwise known as a "rectified system" where practicable, which includes a sacrificial anode bed in conjunction with a rectifier connected to an electrical source to mitigate the threat of External Corrosion. Groundbeds at a rectifier location are installed either as a deep well (vertical) or surface bed (horizontal). A deep well installation is typically preferred as they provide

[9] 49 CFR § 192.463. This rule requires an operator to take additional measures beyond those already required by Part 192 to prevent a pipeline failure and to mitigate the consequences of a pipeline failure. In addition, RMNG must maintain a level of cathodic protection that complies with applicable criteria of Appendix D as referenced in Section. 192.463.

optimal current distribution along the pipeline and take up less surface area reducing the likelihood to be dug into by a third party. The purpose of the groundbed is to be the sacrificial anodic structure in the cathodic protection circuit with the pipeline being the protected structure (cathode). The pipeline is protected through an electrochemical process where the anodes are slowly depleted, but at the end of their useful life anodes provide very little protection from external corrosion.

RMNG will have installed seven new deep well anode beds by the end of 2018 with the plan to install two more deep well anode beds during 2019 at Andy's Mesa and the De Beque Compressor. The Company believes this program will be complete by the end of 2023 and has budgeted for the replacement of two additional deep well anode beds in each year for the time period 2020-2023. However, RMNG notes that the actual amount of deep well anode bed replacements could be less than that if the annual location studies show that additional replacements are not necessary.

Table 11 below lists the anode bed replacements that will occur through 2019.

**Table 11 – Deep Well Anode Bed Program**

| In-service Year | 2016-2019 SSIR Projects |
|---|---|
| 2016 | Piceance Station Deep Well Anode Bed |
| 2016 | Jerry Creek Deep Well Anode Bed |
| 2017 | Nicholas Wash Deep Well Anode Bed |
| 2017 | Shire Gulch Deep Well Anode Bed |
| 2018 | Redvale Deep Well Anode Bed |
| 2018 | Brush Creek Deep Well Anode Bed |
| 2018 | Kriti Deep Well Anode Bed |
| 2019 | De Beque Compressor Deep Well Anode Bed |
| 2019 | Andy's Mesa Deep Well Anode Bed |

While other 2019 SSIR Projects include a corrosion mitigation portion to them, no other 2019 SSIR Projects are specifically considered part of RMNG's Corrosion Mitigation Initiative.

RMNG's IR Coupon Test Station Program as part of the Corrosion Mitigation Initiative was completed in 2018 following the installation of 60 IR Coupon Test Stations from 2014-2018. Other Corrosion Mitigation Initiative SSIR projects that were completed prior to 2019 include the recoating of ten miles of pipe

between Read Junction and Olathe, eliminating shorted casings, and conducting CIS surveys.

## 1. Risk Prioritization Methodology:

**Table 12 – Risk Prioritization – Deep Well Anode Bed Replacement Program**

| Risk Prioritization – Deep Well Anode Bed Replacement Program | | |
|---|---|---|
| **Replacement Locations** | **SME Ranking** | **2019 SSIR Costs** |
| De Beque, CO Compressor | Medium* | $47,250 |
| Andy's Mesa | Medium | $47,250 |

*highest within initiative

No quantitative risk score exists for these anode beds specifically, therefore, risk prioritization for the Deep Well Anode Replacement Program is accomplished through subject matter expertise. Specific locations are determined on a year-by-year basis since then-current data, such as bi-monthly rectifier reads and annual pipe-to-soil potentials is required. Both of these sites were initially selected because the existing wells are the oldest wells that RMNG is aware of. Rectifier reads and pipe-to-soil potentials measurements confirmed that these well beds are beginning to increase in resistance. This means that the depletion process will continue to increase with a decline in current output, translating to a decline in protection capabilities. This is the natural course of a deep well and it generally correlates to the age of the deep well. Each of these sites was installed in the 90's, so the expected life is nearing an end.

## 2. Solutions and Challenges:

The following types of projects have been included to reduce External Corrosion as part of 2014-2018 SSIR Projects:

- Installing new rectifiers with remote operating capability which will reduce travel requirements, allow for quick responses to rectifier outages, and remote adjustment;
- Installing new anodes in deep well groundbeds with defined cathodic protection ("CP") zones; and
- Installing additional IR coupon test stations to facilitate more accurate CP readings.

Challenges to implementing this initiative as part of the TIMP process can include the following:

- Outdated rectifier technology which requires additional maintenance and travel times;
- Identifying depleted groundbeds that are in need of new anodes and locations to obtain adequate levels of CP; and
- Identifying CP zones to ensure appropriate coverage considering new groundbeds and pipeline replacements.

## E. TIMP At-Risk Infrastructure Initiative – Planning and Evaluation

The At-Risk Infrastructure Initiative will prioritize facilities that show a history of leaks, thinning wall thickness, pre-1970's vintage, or have components or attributes that the Company knows to be of concern, such as previously failed welds and areas with sleeves. This SSIR category also includes facilities in at-risk locations such as landslide areas, critical mainline valve locations, exposures, leg-offs, and spans, as well as areas that require changes in class location. In 2019 specifically, this initiative includes the first year of a multi-year 21-mile pipe replacement project that is pre-1970's vintage material, replacement of the troublesome Grove Creek Span, the highest risk critical mainline valve location according to SMEs, and the replacement of another exposed pipe segment as part of RMNG's Span and Exposed Pipe Replacement program.

### 1. Risk Prioritization Methodology:

**Table 13 – Risk Prioritization – At Risk Infrastructure Initiative**

| Risk Prioritization – At-Risk Infrastructure Initiative | | | | |
|---|---|---|---|---|
| **2019 Project No.** | **SSIR Project** | **Risk Assessment Score** | **SME Ranking** | **2019 SSIR Costs** |
| No. 06 | Cottonwood Pass Replacement | Tier 1 – 56.4 | High* | $4,550,000 |
| No. 05 | Grove Creek Span Replacement | Tier 3 – 32.5 | High | $1,350,000 |
| No. 04 | Bible Camp Mainline Valve Replacement | Tier 3 – 29.1 | High | $1,200,000 |
| No. 02 | Young's Creek Pipeline Exposure Replacement | Tier 4 – 26.3 | High | $135,000 |

*highest within initiative

Risk prioritization for the At-Risk Infrastructure Initiative is accomplished through a combination of data modeling utilizing Integrity Solutions' PFIM software and SME interviews. PFIM dynamically segments the transmission system and calculates relative overall risk and threat specific scores for each segment. The PFIM TIMP Risk Results for RMNG are attached as Confidential Attachment 9.

Data gaps and inaccuracies can, however, impact PFIM scores. For this reason, subject matter interviews are utilized to validate results and, where necessary, reprioritize segments based on experience and specific knowledge of the system. While actual construction for the Cottonwood Pass Replacement, Grove Creek Span Replacement, and Mainline Valve Replacement at Bible Camp will not start until 2019, these projects were introduced in last year's SSIR filing in Proceeding No. 17AL-0736G due to their being upfront project spend in 2018.

a) Cottonwood Pass Replacement Project

The Cottonwood Pass Replacement Project contributes to pipeline safety through the replacement of aging infrastructure. RMNG included this as an SSIR Project because a significant length of 4-inch pipe (21 miles) is in need of replacement due to a number of pipeline safety factors, including vintage since the pipeline was installed in 1967, thin wall thickness, deteriorating coating, the need for a span replacement and the need for a mainline block valve installation. The spanned casing pipe is located in a drainage area on BLM land near Gypsum, CO that is subject to erosion. The length of the span, which is near a roadway and contains signs of vandalism and corrosion, varies with environmental conditions requiring RMNG to replace and bury the span. Approximately 50 feet is continuously exposed and Operations has observed severe conditions where up to 300 feet has been exposed. The span will be replaced as part of Phase II of this project in 2020. The 2019 construction activity will include the replacement of approximately five miles of pipe, in addition to a mainline block valve installation. The primary threats within the PFIM risk model that will be reduced by replacing this section of the pipeline include:

- Weather Related and Outside Force Damage due to the current condition of this line;
- Manufacturing due to the lack of records on this pipeline; and

- External Corrosion since pipeline is coated with tar, fiberglass and felt wrap coatings, otherwise known as TGF3 or coal tar.[10]

This project contributes to the overall operational safety of this transmission line because it decreases the threat of weather related outside force and external corrosion. Burying the line will also eliminate the need for coating maintenance of the exposed pipeline segment. Additionally, the pipeline between Glenwood Springs and Gypsum, Colorado does not have an isolation valve between the top of Cottonwood Pass and the Gypsum Town Border Station ("TBS"). The area downstream of this segment supplies a highly populated area. As a result, the Company is required to add protection in the event of a gas release in order to mitigate the consequences of a pipeline failure. The isolation valve will provide an additional point of control and isolation in case of a pipeline emergency or an equipment failure upstream.

Because of the size and scope of this project, which was identified as SSIR eligible because of all the various components to the project that help RMNG comply with the TIMP Rule, only certain pieces to the overall project are currently identified as "Tier-1" risk scores through the risk model. For example, the various line segments involved with this project are scored within the Company's risk model as Tier 1, Tier 2, Tier 3, or Tier 4. Some segments of this project are scored as Tier 3 or Tier 4 in the risk model but are still being replaced due to SME input regarding actual risk versus risk model results that contain missing or potentially inaccurate data.

b) Grove Creek Span Replacement Project

The Grove Creek Span Project was identified by SMEs as higher risk and needing to be replaced sooner compared to the other spans on RMNG's system. At this crossing there is a section of 8" pipeline exposed at the bottom of the creek that becomes submerged when water flows. Within the PFIM risk model, this increases the risk for external corrosion, third party damage, and external force damage, which are all part of the nine primary threats described in the TIMP Rule. Each spring after run-off, RMNG personnel must remove debris from 15 feet of 8-inch exposed transmission pipeline that is submerged

[10] Although state-of-the-art at the time of installation, coal tar coatings are highly susceptible to forces from soil stress because of soil swelling when moisture is present. Moreover, as moisture leaves the area, the soil tends to shrink and pull the coal tar coating away from the pipeline, which could lead to disbondment of the coating and essentially create corrosion issues.

in Grove Creek near Collbran, Colorado. RMNG will replace the exposed pipeline in the creek by boring and burying approximately 200 feet of pipeline underground spanning the high-water marks of the creek. This project helps RMNG comply with CFR Title 49, Part 192, Subpart O – TIMP, Section 192.917, which requires an operator to take additional measures beyond those already required by Part 192 to prevent a pipeline failure and to mitigate the consequences of a pipeline failure. In addition, Section 192.935 states that if an operator determines that outside force is a threat to the integrity of a covered segment, the operator must take measures to minimize the consequences to the covered segment from outside force damage.

While the risk model determined a lower risk score for this project, SMEs knew of the immediate need for replacement and have identified this specific span as having much higher actual risk. The risk model results contained some missing or inaccurate data.

If this SSIR Project is not completed and a failure occurs, the consequence is that the Company could lose service of a primary 8-inch transmission line that is a key feed of the system such that a failure in this pipeline segment could result in the loss of service to the towns of Cedaridge, Delta, Olathe, and Montrose, potentially for an extended period of time. In addition to the reasons already stated, RMNG prioritized this as a high-risk gas infrastructure project due to the condition of the line and associated threats.

c) Mainline Valve Replacement Program

As part of this program within the At-Risk Infrastructure Initiative, RMNG will replace its highest-risk critical mainline valve with an Automatic Shut-off Valve ("ASV") or Remote Control Valve ("RCV") each year of the program. This will allow faster shut down in the event of an unplanned gas release.

The Company included this program in its Five Year SSIR Plan as a series of SSIR Projects because the RMNG system is experiencing mixed wall pipe, multiple changes in class locations due to rapid growth in areas, and the encroachment of structures, both residential and commercial, on the pipeline right of way ("ROW"). In addition, the Company is required to have an isolation valve within four miles of a Class 3 location to remain in compliance with 49 CFR § 192.179(a)(2) and take steps to mitigate the consequences of a

pipeline failure in an HCA as described by section 192.935(c). A Class 3 location, as defined by 49 CFR § 192.5(b)(3), is:

> "(i) Any class location unit that has 46 or more buildings intended for human occupancy; or (ii) An area where the pipeline lies within 100 yards (91 meters) of either a building or a small, well-defined outside area (such as a playground, recreation area, outdoor theater, or other place of public assembly) that is occupied by 20 or more persons on at least 5 days a week for 10 weeks in any 12-month period. (The days and weeks need not be consecutive.) A "class location unit" is an onshore area that extends 220 yards (200 meters) on either side of the centerline of any continuous 1-mile (1.6 kilometers) of pipeline."

Within the PFIM risk model, the primary threats specifically considered for the Mainline Valve Replacement Program are Equipment, Incorrect Operations, and Consequence of Failure. The threat of Equipment is due to the need to have adequate facilities for emergency response purposes.
Risk prioritization for the Mainline Valve Replacement Program heavily relies on SME input and review. While all the locations listed within the Mainline Valve Replacement Program have been identified by SME review to be critical locations for valve automation, the Bible Camp location was slated as the first mainline valve replacement in this program due to the remoteness of its location and limited access during the winter months. The valve is located atop the Grand Mesa. The existing valve is an older style gate valve that will not completely seal when closed and is difficult to maintain. This entire segment of the pipeline was scored as a "Tier 3 – 29.1" ROF score through the Company's TIMP risk model. However, the current valve only represents a portion of the risk associated with this segment of pipe which is why it is not appropriate to rely on the risk results alone until the Company's TIMP risk model is fully developed.

d) Span and Exposed Pipe Replacement Program

This program focuses on replacing and rerouting, where possible, existing bridge spans, segments of exposed pipe, and "leg-offs." "Leg-offs" are above ground pipe spans resulting from extremely steep terrain. Outside of the larger Cottonwood Pass Replacement and Grove Creek Span Replacement, RMNG will replace one additional span, leg-off, or exposed pipe section a year as part

of this program. These actions are necessary to comply with 49 CFR, Part 192, Subpart O due to the increased risk of weather and outside force damage, third-party damage, and atmospheric corrosion.

The highest priority span project as part of this program, is the 8" Young's Creek Pipeline Exposure. RMNG will replace this span in 2019. This particular section was identified as higher risk and needing to be replaced sooner by SMEs because there is a section of 8" pipeline exposed at the bottom of the creek that becomes submerged when water flows at this crossing. This increases RMNG's risk of external corrosion, third party damage, and external force damage. RMNG will replace the exposed and aging pipeline crossing Young's Creek with a new buried pipeline. RMNG will hire a pipeline contractor that will require the mobilization of project materials and the use of excavation and welding equipment to bore approximately 200 feet of pipeline under the creek. This section of the pipeline was installed in 1959.

It should be noted that while this program will eventually be better guided by the risk model results in the future when it is better developed, this program's schedule is currently determined mainly by SME input. For example, the "Tier 4 - 26.3%" ROF score represents the entire pipeline segment that contains the Young's Creek exposure; and therefore, the need for the Young's Creek Exposure Replacement cannot be determined based off the current PFIM risk results alone. However, because of the various problems mentioned above with this span in particular, SMEs rated it as a top priority compared to the other known pipeline exposures or spans on RMNG's system.

**2. Solutions and Challenges:**

The goal of the At-Risk Infrastructure Initiative is to identify and prioritize its riskiest sections of the system based on risk modelling and SME review. Larger scale projects within this initiative have many different components to the overall project(s) which results in this initiative helping RMNG reduce five of the nine primary threats: Weather Related and Outside Force, Manufacturing, External Corrosion, Equipment, and Incorrect Operations.

The prioritized projects within this initiative will include the highest risk-ranked and SME ranked projects involving these types of projects:

- Replacing segments of pipe with outdated materials, construction practices, and coating types;
- Replacing the most critical existing mainline valves with an ASV or RCV; and,
- Replacing segments of pipe that are near or beyond their designed expected life and have questions regarding future fitness for safety and service.

The biggest challenges in implementing this initiative as part of the TIMP process is expected to be the following:

- Varying vintage materials, construction practices, and coating types that can reduce pipeline safety and increase risk;
- This initiative generally includes larger scale projects that take multiple years to plan, appropriately scope, secure permits, and eventually construct which adds to the execution risk;
- Projects within this initiative often involve BLM land which adds to the permitting requirements and project schedule; and
- Pipelines and facilities needing repair or replacement for RMNG are often found in difficult to reach areas which creates additional constraints for things like span design, construction equipment, and facilities location.

## F. SIMP Well Assessment Initiative – Planning and Evaluation

Guided by the SIMP program, RMNG began the Well Assessment Initiative at the Wolf Creek storage facility in 2017 which consisted of replacing downhole equipment, running wireline tools to measure the CP, the metal wall loss, the quality of the cement bond to the outside casing, and neutron logs to detect the presence of gas accumulation behind the casing. With this initiative, RMNG is not only improving the storage field by replacing aged equipment, but the Company has been vastly expanding its knowledge base of potential risks as a result of the data acquired. This data collection is required by API RP 1171 Section 9.3.1 which reads:

> "The operator shall evaluate the mechanical integrity of each active well, including each third-party well, that penetrates the storage reservoir

> and buffer zone or areas influenced by storage operations."

The equipment replaced during these workovers consists of the primary barrier, tubing, packer, and Sub-Surface Safety Valve ("SSSV"). This equipment replacement helps RMNG comply with API RP 1171 Section 92.1 which reads:

> "The operator shall maintain functional integrity of storage wells and reservoirs. Storage wells and reservoirs can have different characteristics resulting in unique requirements in approaching integrity demonstration, verification, and monitoring. NOTE Operating and maintenance practices, repair or replacement of defective wellhead, valve, casing, or wellbore components, and/or temporary mitigative actions such as reducing operating pressure are examples of methods used as necessary to maintain functional integrity."

As part of RMNG's original Five Year SSIR Plan filed in Proceeding No. 17AL-0736G, the Company originally planned to complete one to two well assessments per year through 2022. Well assessments started in 2017 for 2017 SSIR Capital Project No.8 and included assessments on Well #5 and Well #14. Well assessments for 2018 originally included Well #71 and Well #9 under 2018 SSIR Capital Project No. 2. However, these assessments in 2017 and 2018 identified significant damage to two of the wells. The well assessment reports for these two wells are attached as Confidential Attachment 6 and Confidential Attachment 7.

As a result of assessment findings, RMNG has accelerated the Well Assessment Initiative to be completed as soon as possible, taking into consideration the weather and terrain constraints of RMNG. The Company made a supplemental filing on September 10, 2018 describing this change of plans in the 2018 SSIR Advice Letter proceeding, Proceeding No. 17AL-0736G.

This acceleration means that two additional well assessments and downhole equipment workovers were performed in 2018 compared to the original plan. The additional two wells assessed and worked over in 2018 were Well #8 and Well #35-1. RMNG recently finished these 2018 assessments, and the next step involves entering the data into the risk model and analyzing it, which will be completed this winter. It is this process which drives the Well Replacement Initiative which addresses those wells needing immediate or a significant amount of attention in order to ensure public safety and system integrity.

The current plan is to complete all remaining well assessments in 2019. This will include assessments on Well #3, Well #4, Well #6, and Well #12. Thus, the overall timeframe for this initiative has been shortened. All well assessments performed during 2017-2019 will be reviewed and analyzed as baseline assessments. Then RMNG will eventually rerun logs to determine corrosion growth rates, and that data will guide RMNG's decision as to how many years the Company can safely go between assessments/equipment re-work. The below table represents the original Well Assessment Initiative forecast presented as part of the 2018 SSIR Advice Letter in Proceeding No. 17AL-0736G compared to the current Well Assessment Initiative as updated within the same proceeding as a "Supplemental Information" filing on September 10, 2018.

**Table 14 – Well Assessment Initiative Changes**

| **Year** | **Original** (11-1-2017) | **Updated (11-1-2018)** |
|---|---|---|
| **2018** | $1,348,000 | $2,390,000 |
| **2019** | $1,389,100 | $2,100,000 |
| **2020** | $1,389,100 | $0 |
| **2021** | $1,389,100 | $0 |
| **2022** | $1,389,100 | $0 |
| **Total** | **$6,904,400** | **$4,490,000** |

## 1. Risk Prioritization Methodology:

**Table 15 – Risk Prioritization – Well Assessment Initiative**

| Risk Prioritization – Well Assessment Initiative | | | |
|---|---|---|---|
| **Wolf Creek Well #** | **Risk Assessment Score** | **SME Ranking** | **2019 SSIR Costs** |
| #12 | 59.44 – Tier 2 | High* | $525,000 |
| #6 | 53.07 – Tier 4 | High | $525,000 |
| #3 | 52.98 – Tier 4 | High | $525,000 |
| #4 | 52.98 – Tier 4 | High | $525,000 |

*highest within initiative

The risk results for the Wolf Creek Storage Field are shown in Confidential Attachment 9. As mentioned in Proceeding No. 17AL-0654G, which was RMNG's last rate case, this risk model was created in 2018 and will soon be updated with the results of the 2018 SSIR Capital Project No. 2 well assessment data. The Company uses Integrity Solutions PFIM Risk Modeling software, just as it does for RMNG's TIMP risk model, to rank the wells from highest risk to lowest. It takes a list of inputs, as discussed below, and runs them through an algorithm that assigns scores to each well and determines a relative risk ranking. The PFIM Risk Modeling software analyzes gathered data including:

- Well design (age, depth, size, etc.);
- Casing inspection data (cement coverage and quality, log data);
- Well product (solids produced, corrosives, etc.);
- Cathodic protection (existing protection, type, results monitored);
- Well geology (casing depth relative to storage zone, geologic uncertainty, seismic activity level);
- Well environment (ground movement, prior vandalism, surface activity level); and
- Well incidents (history of incidents, response times, corrective action taken and timing).

The results in Confidential Attachment 9 include both known and unknown data. At the time these risk results were run, baseline assessments were only completed for Well #14 and Well #5. However, the 2018 well assessments were very recently completed and the collected data will soon be entered into the model.

To the extent that RMNG does not have complete data or is missing a specific data input, the risk model applies a worst case value as the input. As a result, unknowns receive the highest score. Wells without a baseline assessment would likely have higher values for certain columns due to the data being unknown. Giving greater weight to the unknown data points helps the Company more strategically and programmatically comply with API RP 1171 Section 9.3.1 and further supports the importance of accelerating the Well Assessment Initiative.

An example of how the modeling inputs work is comparing the results of the Internal Corrosion column for both Well #14 and Well #5 compared to the remaining wells. This is because Well #5 and Well #14 have known internal corrosion inputs. The other wells assume a worse case value because, as of the last modeling run, the data had not yet been collected and inserted into the model. Currently, the Company's data acquisition and baseline assessment program is RMNG's largest risk reducing SIMP initiative. The second largest risk reducing SIMP initiative is corrective actions taken based on the results of the assessments.

The lack of variation in Confidential Attachment 9 can mainly be attributed to missing data points, which RMNG is now collecting as work is done on these wells. Since most of these wells haven't been assessed to this degree and/or received workover maintenance to this degree since inception, they have a high level of unknown data inputs within this model. RMNG will continue to update the risk model calculations as it continues to collect data. After data is entered, the risk model calculates each threat's score, and together, the results of each threat's score are used to develop an LOF score. The same data entry process generates a separate calculation that represents a LOC score. The LOF multiplied by the LOC generates a total risk number referred to as a ROF score.

For example the work done in 2017 was on Well #14 and Well #5. Well #14 was found to be in good shape so its score is the lowest in this field. Major concerns were found at Well #5 and as a result, some of the threat calculations were not reduced as much. This risk table, combined with SME input, is how RMNG prioritized its well assessment work for 2017-2019.

**2. Solutions and Challenges:**

The goal of this Initiative is to workover aging equipment while also collecting meaningful data from various well assessments and once analyzed, remove its

riskiest projects first until none remain. Some important ways to gather data and rework the wells include:

- Pressure tests check for casing leaks and, if found, can approximately locate its position in the well.
- Other important tools utilize wireline, which can lower tools in the well to check for casing holes/pits, gas behind casing, and even CP downhole. The collected data allows RMNG to determine the health of the permanent barriers.
- If there are localized issues, repair techniques such as sleeves/patches can be used.

Equipment replacement addresses multiple threats. Replacing aging equipment reduces the chance of equipment failure and eliminates potential corrosion/erosion points in your primary barrier. Additionally standardizing the equipment used reduces the chance of incorrect operations.

The biggest challenges in implementing this initiative as part of the SIMP process thus far has been the following:

- Integrity Assessments acquire data on difficult to reach parts of the well that cannot be pulled out and inspected/replaced.
- These wells are located on BLM land, and special permission is needed to bring the appropriate equipment up to the wells.
- Attaining a complete baseline assessment can depend on well conditions, so sometimes multiple attempts are needed. This is especially the case since little knowledge of downhole equipment is known.
- The coordination and danger involved is extremely high in getting the 100+ ft. tall rigs up the winding terrain to run the assessments and rework.

## G. SIMP Well Replacement Initiative – Planning and Evaluation

As mentioned in the "Overview of SSIR" section above, the Well Replacement Initiative is a direct result of testing performed on Well #5 in 2017 as part of 2017 SSIR Capital Project No. 8 in Proceeding No. 16AL-0842G. Following the 2017 Well #5 testing results which are described below and attached as Confidential Attachment 6, RMNG decided to plug, abandon, and replace Well

#5 in 2019.

Well #9 was subsequently added to the program as the top priority following its assessment in 2018. Shortly after the well assessment on Well #9, RMNG plugged and abandoned the well in August of 2018, and its planned replacement is expected to be completed by the end of October of 2019. Well #5 will be plugged and abandoned in 2019, and its replacement for Well #5 is expected to be complete by December of 2019. Well #9 was drilled in 1967, and Well #5 was drilled in 1966.

**1. Risk Prioritization Methodology:**

**Table 16 – Risk Prioritization – Well Replacement Initiative**

| Risk Prioritization – Well Replacement Initiative | | | |
|---|---|---|---|
| **Wolf Creek Well #** | **Risk Assessment Score** | **SME Ranking** | **2019 SSIR Costs** |
| #9 | 61.27 – Tier 2 | High* | $4,300,000 |
| #5 | 53.80 – Tier 4 | High | $4,325,000 |

*highest within initiative

As described in the "Risk Prioritization Methodology" for the Well Assessment Initiative, the SIMP risk results table attached as Confidential Attachment 9 only include the 2017 assessment results for Well #5 and Well #14. The remaining risk scores are a result of mostly unknown variables which score as higher-risk than most known variables.

Therefore, the risk results cannot be used alone to determine whether or not these wells should be either plugged/abandoned/replaced, repaired, or left alone as part of this initiative. Instead, it was subject matter expertise closely analyzing the well assessment reports attached as Confidential Attachment 6 – Well #5 Assessment Report and Confidential Attachment 7 – Well #9 Assessment Report that ultimately decided the plugging, abandonment, and replacement of these wells was in the public interest.

At a high-level, the Well #5 Assessment Report indicated irregularities, including corrosion and physical damage such as buckled casing. The Well #9 Assessment Report indicated more extensive irregularities such as more extensive corrosion; and therefore, Well #9 was prioritized as first to be replaced due to its more immediate concerns. While the 2017 Well #5 assessment showed enough damage and concern to warrant replacement, the Well #9 assessment in 2018 clearly

indicated a more immediate need for plugging, abandoning, and replacing, which is why SME's chose to prioritize these replacements as such.

A key take away from the risk model is that Well #9 has been scoring as the highest risk well prior to having its 2018 assessment. The actual well assessment results that indicated leaks and general corrosion in multiple places for Well #9 helped verify that the Company's model was risk ranking these unknown variables appropriately.

The consequence of well failure prior to replacement is that gas would be lost out of the formation. If the casing fails on either Well #5 or had it failed on Well #9 before it was plugged and abandoned, the Company could no longer safely operate the well(s), and the failed well(s) would have to be shut-in, plugged and abandoned without a definitive supply replacement. This storage facility is used to maintain gas supply during the winter and the loss of gas will impact the Company's ability to serve. The Company could also be required to purchase spot gas on the market in the event of a cold winter without these wells in operation. From a gas supply perspective, RMNG has determined that plugging and abandoning the replacements for both wells at the same time should be avoided to the best extent possible to ensure adequate supply during peak winter months.

The Company prioritized these high-risk gas infrastructure projects due to the consequences of environmental impacts from the potential release of natural gas, and the economic impact to customers related to gas supply.

**2. Solutions and Challenges:**

Equipment replacement addresses multiple threats. Replacing aging equipment reduces the chance of equipment failure and eliminates potential corrosion/erosion points in your primary barrier. Additionally standardizing the equipment used in a location reduces the chance of incorrect operations.

The biggest challenges in implementing this initiative are shared with the Well Assessment Initiative. These challenges include:

- Integrity Assessments acquire data on difficult to reach parts of the well that cannot be pulled out and inspected/replaced.

- These wells are located on BLM land, and special permission is needed to bring the appropriate equipment up to the wells.
- Advanced tools needed are often limited in numbers which reduces availability.
- The coordination and danger involved is extremely high in getting construction equipment up the mountain.

## III. (2019-2023) FIVE YEAR SSIR PLAN

RMNG's 2019-2023 Five Year SSIR Plan for pipeline and storage system integrity projects and initiatives is outlined below and detailed in Attachment 1. The Company developed this plan using SMEs and risk modeling to identify RMNG's highest system risks. The Company's goal is to remove or reduce the highest priority system risks in an efficient and cost effective manner. The plan also includes certain strategic initiatives to programmatically mitigate risk on the system which not only makes the system safer, but will reduce system integrity costs in the long-term. The plan was developed based on the most current information available and may change as more data is gathered and analyzed.

### A. Summary

#### 1. New Programs/Initiatives Included in (2019-2023) Five Year SSIR Plan

a) Mainline Valve Replacement Program

- This year represents the first year for RMNG's programmatic Mainline Valve Replacement Program. This program includes replacing its highest risk critical mainline valve each year with an ASV or RCV to give the Company better control and segmentation of the flow of gas along the system. While the schedule is subject to change as more data is gathered and analyzed, the current schedule for mainline valve replacements for the next five years is as follows:

**Table 17 – Mainline Valve Replacement Program**

| Year | Mainline Valve Replacement Location |
|---|---|
| **2019** | Bible Camp MLV |
| **2020** | 8" Shire Gulch MLV |
| **2021** | 8" De Beque Station MLV |
| **2022** | 10" Redvale MLV |
| **2023** | 8" Bronco Flats MLV |

## 2. Initiatives to be Completed within (2019-2023) Five Year SSIR Plan

a) Deep Well Anode Replacement Program

- This program began in 2016, and RMNG will have installed seven new deep well anode beds by the end of 2018 with the plan to install two more deep well anode beds during 2019 at Andy's Mesa and the De Beque Compressor Station. The Company projects that this program will be complete by the end of 2023 or sooner and has budgeted for the replacement of two additional deep well anode beds in each year for the time period 2020-2023 in its Five Year SSIR Plan.

b) Well Assessment Initiative

- This initiative began in 2017 and was originally scheduled to be complete in 2022. After finding damage to two of the wells during both the first and second year of well assessments, RMNG determined to test all wells as soon as time allows to confirm whether or not similar risks exist with the other wells. Thus, all well assessments at the Wolf Creek Storage Field will be complete in 2019, and the program will be considered complete.

c) Well Replacement Initiative

- This initiative began as a result of the 2017 well assessment on Well #5 which showed enough damage to the well to warrant replacement, and the replacement of this well was scheduled for 2019. The well assessment on Well #9 in 2018 also showed enough damage to warrant replacement. Well #9 was determined to be the most immediate risk and its replacement is expected to be placed in-service in October of 2019. Well #5's replacement is expected to be placed in-service in December of 2019. No other well replacements are scheduled at this time, and completion of this

program will depend on the risk results after the 2018 well assessment data is entered and after the remaining well assessments in 2019.

**3. Projects to be Completed within (2019-2023) Five Year SSIR Plan**

a) Cottonwood Pass Replacement Project (2019-2022)

RMNG will replace approximately 5 miles of 6" pipe per year due to the condition of the pipeline. The current pipe is 4" so only the cost of 4" of the replacement will be included in the SSIR revenue requirement calculation. This section of the pipeline is 1967 vintage, thin wall pipe with a leak history. The spanned casing pipe is located in a drainage area on BLM land near Gypsum that is subject to erosion. The length of the span, which is near a roadway and contains signs of vandalism and corrosion, varies with environmental conditions requiring RMNG to replace and bury the span. Approximately 50 feet is continuously exposed and Operations has observed severe conditions where up to 300 feet has been exposed. This span replacement was originally submitted as 2017 Capital Project No. 7 and 2018 Capital Project No. 13. This multi-year project is scheduled to continue construction in 2019 and will be complete in 2022.

b) Reroute 6" Pipeline – Telluride Leg-off (2020)

RMNG will replace approximately 1,000 feet of 6" top of ground transmission main. The project consists of design, engineering, and replacement of transmission main within existing ROW.

c) Reroute 8" Pipeline – De Beque Leg-off (2020-2021)

Project will consist of design, engineering and replacement of approximately 1,500 feet of 8" top of ground transmission main. Due to the steep terrain, RMNG will acquire new ROW to relocate the pipeline to a more accessible location.

d) Gypsum to Eagle 3" Replacement (2020-2021)

RMNG will replace the entire 3" line between Gypsum and Eagle due to a history of leaks on the pre-1970's pipe and the limited historical records.

## 4. Initiatives to Continue Beyond (2019-2023) Five Year SSIR Plan

(a) Span and Exposed Pipe Replacement Program

This year represents the second year of RMNG's programmatic Span and Exposed Pipe Replacement Program. While the Company has replaced exposed pipe through its SSIR program in the past and also has two larger span replacements planned as part of the different Infrastructure Replacement Initiative over the next 5 years, this specific program includes replacing one additional span or exposed pipe section of the system each year for at least the next four years. The Company continues to gather data regarding potential future span/exposed pipe replacements, and it is currently unknown when this program will be complete. Based on the most current data, RMNG has prioritized the following span and/or exposed pipe replacements as part of this program through 2022.

**Table 18 – Span or Exposed Pipe Replacement Program**

| Year | Span or Exposed Pipe Replacement Program |
|---|---|
| **2019** | 8" Young's Creek Exposure |
| **2020** | 10" G Rd. Arroyo Pipeline Exposure |
| **2021** | 10" Olathe Arroyo Pipeline Exposure |
| **2022** | Hell's Gulch Pipeline Exposure |

(b) Pipeline Replacement from Collbran to Read (2020-2024)

RMNG will replace approximately 45 miles of vintage 8" transmission main. The project consists of design, engineering, and replacement of transmission main within existing ROW where feasible, and acquisition of new ROW as necessary.

## 5. Projects Completed in Prior Year and no Longer Included in (2019-2023) Five Year SSIR Plan

(a) CRMS Station Piping Replacement and Block Valve Installation (2018)

This 2018 Capital Project No. 06has been completed and no longer needs to be included as part of the 2019-2023 Five Year SSIR Plan. As described in the supplemental filing filed September 10, 2018, an ILI run showed no need to replace the CRMS Station piping. RMNG completed the block valve installation portion of this project in 2018 which results in

this project being removed from the Five Year SSIR Plan now that it is complete.

(b) IR Test Coupon Station Program (2016-2018)

This program was part of the Company's Corrosion Mitigation Initiative and was completed in 2018 as part of 2018 Capital Project Nos.03 and 09. This program resulted in the installation of 60 IR Coupon Test Stations from 2014-2018. These coupon stations will enhance the Company's ability to monitor its CP systems, will allow the Company to make more precise decisions regarding repairs and replacements, and will permit the Company to evaluate whether certain problematic pipeline segments need additional corrosion mitigation or monitoring.

**6. Projects Being Completed this Year and no Longer Included in (2019-2023) Five Year SSIR Plan (Previously called Major SSIR Projects)**

(a) Install Launcher and Receiver at Olathe Interconnect 6" (2019)

RMNG will install a launcher and receiver at the Olathe Interconnect in order to improve ILI capability from Reed Junction to Olathe and from Olathe to Naturita Compressor Station, a total of approximately 55 miles of pipe. This project will be completed in 2019.

(b) Grove Creek Span Replacement (2019)

Replace the span that crosses Grove Creek near Collbran, Colorado. The pipe is submerged but visible. Each year after spring run-off, RMNG staff pulls debris off of the pipeline. RMNG will bore the pipe so that it is underground. The 8" span is 200 feet long. This was previously designated as 2018 Capital Project No. 12.

(c) Telluride Fittings - Skunk Creek Crossing (2019)

Project includes replacement of approximately 200 feet of 6" steel transmission line which is currently covered by hillside erosion and estimated to be 15-20 feet deep. Replacement of this section will confirm that the line is piggable and at an acceptable depth.

## B. TIMP – Five-Year SSIR Plan Summary

The Company's TIMP complies with federal TIMP regulations that prescribe how operators validate the integrity of their gas transmission assets, with the highest priority given to those located in HCAs. The scope and timeline for several of the TIMP projects may be altered based on the dynamic collection of data used to assign risk score rankings to individual projects as more relevant data becomes available.

Attachment 5 includes a listing of initiated TIMP projects proposed to go into service in 2019, each of which is categorized by a TIMP initiative as defined in Section II.

### 1. ILI Initiative

Summary and Estimated Cumulative Cost:

- This Initiative performs health and condition assessments of transmission pipelines under 49 CFR Part 192, Subpart O, "Gas Transmission Pipeline Integrity Management." The federal regulation requires assessment of transmission pipelines using limited approved methods including ILIs.

The Company has selected ILI as its primary assessment methodology, as this methodology yields the most comprehensive information necessary to address the threats on the transmission system.

The Company has identified locations throughout the transmission system that are not piggable, thus ILI runs cannot be completed, leading to data gaps in which the Company cannot assess the health and condition of the transmission lines in the specified locations. In some locations, there are no pig launcher/receiver facilities set up on the transmission lines, while in other locations the transmission lines have contours the pig is unable to navigate, which results in the pig getting stuck. To remediate this, RMNG is committed to installing pig launcher/receiver facilities in necessary locations, or replacing lines that are impassable by the pig due to unusual contours. The Company also performs ILI runs in passable sections of its pipeline to gather additional data about its system, and addresses the ILI run results on a case by case basis.

**Table 19 – ILI Initiative – SSIR Projects**

| ILI Initiative – SSIR Project | 2019 | 2020 | 2021 | 2022 | 2023 | Total |
|---|---|---|---|---|---|---|
| Install Launcher and Receiver at Olathe Interconnect 6" | $1,560,000 | - | - | - | - | $1,560,000 |
| Telluride Fittings Replacement – Skunk Creek Crossing | $450,000 | - | - | - | - | $450,000 |
| **Total ILI Initiative** | **$2,010,000** | **$0** | **$0** | **$0** | **$0** | **$2,010,000** |

a) 2019 Scope:

RMNG will install a new tool launcher and receiver at the Olathe interconnect site. RMNG will install a launcher and receiver at the Olathe Interconnect in order to improve ILI capability from Reed Junction to Olathe and from Olathe to Naturita Compressor Station, approximately 55 miles of pipe. This project will be completed in 2019.

For the Telluride Fittings Replacement Project at Skunk Creek Crossing, the project includes replacement of approximately 200 feet of 6-inch steel transmission line. This segment has been covered by hillside erosion and is currently estimated to be 15 to 20 feet deep. The current line has a 1.5-inch diameter fitting in this location which RMNG is unable to verify. Replacement of this section of pipeline will confirm that the line is piggable and will bring it back to an acceptable depth to continue supplying safe and reliable natural gas to the Telluride community. This SSIR project contributes to the overall operational safety of this transmission line, as well as the continued provision of safe and reliable service to downstream towns.

b) Overall Status and Timeline:

The ILI Initiative was initiated in 2017 as a result of data gaps identified along multiple sections of RMNG transmission lines. The installation of the launcher and receiver at the Olathe interconnect site will be complete in June of 2019. The other ILI project planned as part of the 2019-2023 Five Year SSIR Plan, the Telluride Fittings Project at Skunk Creek Crossing, is expected to be complete in October of 2019.

c) Key Changes since Prior November Filing:

2018 Capital Project No. 5 – "Roaring Fork III Project - 8-inch/10-inch

Anomaly Repair" was cancelled after the information from the 2017 ILI run was evaluated and no anomalies were found. Because no anomalies were found, no prove-up digs were required, and the project was cancelled as described in the Supplemental Information filing made on September 10, 2018 in Proceeding No. 17AL-0736G.

d) Five Year Planned Activities:

**2019:** Installation of launcher and receiver at the Olathe interconnect site. Telluride Fittings Project at Skunk Creek Crossing.

**2020**: Future years will be determined as part of the on-going risk evaluation activities outlined in the In-line Inspection Initiative Summary above.

**2021:** Future years will be determined as part of the on-going risk evaluation activities outlined in the In-line Inspection Initiative Summary above.

**2022:** Future years will be determined as part of the on-going risk evaluation activities outlined in the In-line Inspection Initiative Summary above.

**2023:** Future years will be determined as part of the on-going risk evaluation activities outlined in the In-line Inspection Initiative Summary above.

- **Risk Ranking:**

**Table 20 – Risk Prioritization – ILI Initiative**

| Risk Prioritization – ILI Initiative | | |
|---|---|---|
| **2019 Project No.** | **2019 ILI Initiative Projects** | **SME Ranking** |
| No. 07 | Telluride Fittings Project – Skunk Creek Crossing | High* |
| No. 03 | Install Launcher and Receiver at Olathe Interconnect 6" | High |

*highest within initiative

- **Code References:** CFR Title 49, Part 192, Subpart O - TIMP, Section 192.921

- **Changes in Pipeline Capacity:** None.

- **Changes in ROW:** None.

- **Individual Project Cost Estimates:**

**Table 21 – Total 2019 ILI Initiative Costs**

| 2019 Project No. | 2019 In-Line Inspection Initiative | 2019 SSIR Costs |
|---|---|---|
| No. 03 | Install Launcher and Receiver at Olathe Interconnect 6" | $1,560,000 |
| No. 07 | Telluride Fittings Project – Skunk Creek Crossing | $450,000 |
| | **Total 2019 ILI Initiative Costs** | **$2,010,000** |

- **Individual Project Timelines:** See Attachment 2 and Attachment 5 for additional details.

## 2. Corrosion Mitigation Initiative

- **Summary and Estimated Cumulative Cost:** This Initiative is intended to replace aging CP technology and mitigate areas of corrosion risk on the Company's system. The Company will perform external corrosion surveys on newly installed pipelines and will install equipment to monitor for, and mitigate, the presence of potentially deleterious contaminants that may enter the pipeline and subject it to a risk of internal corrosion.

**Table 22 – 2019-2023 Corrosion Mitigation Initiative Costs**

| Corrosion Mitigation Initiative – SSIR Project | 2019 | 2020 | 2021 | 2022 | 2023 | Total |
|---|---|---|---|---|---|---|
| Deep Well Anode Replacement Program | $94,500 | $94,500 | $94,500 | $94,500 | $94,500 | $472,500 |
| **Total ILI Initiative** | **$94,500** | **$94,500** | **$94,500** | **$94,500** | **$94,500** | **$472,500** |

- **Scope:** The Company will replace two deep well anode beds each year as part of the Corrosion Mitigation Initiative. Specific locations will be determined on a year-by-year basis since then-current data, such as bi-monthly rectifier reads and annual pipe-to-soil potential is required.

- **Overall Status and Timeline:** The Deep Well Anode Replacement Program, a program to replace deteriorated deep well anode beds, was initiated in 2017 in response to corrosion mitigation issues throughout the system. The Company intends to replace two additional anode beds each year of the 2019-2023 Five Year SSIR Plan. RMNG expects these to be placed in-service in September of 2019.

- **Code References:** CFR Title 49, Part 192, Subpart O - TIMP, Section 192.935; CFR Title 49, Part 192, Subpart I - Requirements for Corrosion Control, Section 192.463

- **Key Changes since Prior November Filing:** No changes.

- **Five Year Planned Activities:**

**2019:** The Company plans to replace the deep well anode bed at 2 different locations in the De Beque, CO area with an estimated total budget $94,500.

**2020:** The Company will identify two new locations for replacement each year based on then-current data, and estimates a total budget of $94,500.

**2021:** The Company will identify two new locations for replacement each year based on then-current data, and estimates a total budget of $94,500.

**2022:** The Company will identify two new locations for replacement each year based on then-current data, and estimates a total budget of $94,500.

**2023:** The Company will identify two new locations for replacement each year based on then-current data, and estimates a total budget of $94,500.

- **Risk Ranking:**
  Deep Well Anode Bed Replacement Program: **SME Ranking -** Medium

- **Changes in Pipeline Capacity:** None

- **Changes in ROW:** None

- **Individual Project Cost Estimates:**

**Table 23 – Deep Well Anode Bed Replacement Program**

| Deep Well Anode Bed Replacement Program | |
|---|---|
| **Replacement Locations** | **2019 SSIR Costs** |
| De Beque, CO Compressor | $47,250 |
| Andy's Mesa | $47,250 |

- **Individual Project Timelines:** See Attachment 2 and Attachment 5 for additional details.

### 3. Infrastructure Replacement Initiative

- **Summary and Estimated Cumulative Cost:** The Initiative will prioritize facilities that show a history of leaks, thinning wall thickness, pre-1970's vintage, or have components or attributes that the Company knows to be of concern, such as previously failed welds and areas with sleeves. This SSIR initiative also includes facilities in at-risk locations such as landslide areas, critical valve locations, exposures, leg-offs, and spans, as well as areas that require changes in class locations that need to comply with new PHMSA regulations. Projects could include replacement of pipeline or construction of new town border stations.

**Table 24 – 2019-2023 At-Risk Infrastructure Costs**

| At-Risk Infrastructure Initiative | 2019 | 2020 | 2021 | 2022 | 2023 | After 2023 | Total |
|---|---|---|---|---|---|---|---|
| Cottonwood Pass Replacement | $4,550,000 | $5,000,000 | $5,500,000 | $5,000,000 | $-0- | $-0- | $20,050,000 |
| Grove Creek Span Replacement | $1,350,000 | $-0- | $-0- | $-0- | $-0- | $-0- | $1,350,000 |
| Span Replacement Program | $135,000 | $135,000 | $135,000 | $135,000 | $-0- | $-0- | $540,000 |
| Mainline Valve Replacement Program | $1,200,000 | $1,250,000 | $1,250,000 | $1,250,000 | $1,250,000 | $-0- | $6,200,000 |
| Gypsum to Eagle 3" Replacement | $-0- | $2,950,000 | $4,750,000 | $-0- | $-0- | $-0- | $7,700,000 |
| Reroute 8" Pipeline – De Beque Leg-off | $-0- | $6,500,000 | $100,000 | $-0- | $-0- | $-0- | $6,600,000 |
| Reroute 6" Pipeline – Telluride Leg-off | $-0- | $775,000 | $-0- | $-0- | $-0- | $-0- | $775,000 |
| Pipeline Replacement from Collbran to Read | $-0- | $-0- | $-0- | $9,500,000 | $8,500,000 | $8,500,000 | $26,500,000 |
| **Total SSIR Costs** | $7,235,000 | $16,610,000 | $11,735,000 | $15,885,000 | $9,750,000 | $8,500,000 | $69,715,000 |

- **Scope:** The Infrastructure Replacement Initiative will prioritize replacing the highest priority spans, exposures, leg-offs, and critical valve locations. The initiative contains many large multi-year pipe replacement projects, the Mainline Valve Replacement Program which replaces its highest priority mainline valve with an automated or remote control mainline valve each year, and the Company's Span Replacement Program which removes its highest priority span that is not already included in the Five Year SSIR Plan.

- **Five Year Planned Activities:** See Attachment 1 and Attachment 5 for details.

- **Overall Status and Timeline:** See Attachment 1, Attachment 2, and Attachment 5 for details.

- **Code References:** CFR Title 49, Part 192, Subpart O - TIMP, Section 192.917; CFR Title 49, Part 192, Subpart O - TIMP, Section 192.935

- **Key Changes since Prior November Filing:** No changes.

- **Risk Ranking:**

**Table 25 – Risk Prioritization for At-Risk Infrastructure Initiative**

| Risk Prioritization – At-Risk Infrastructure Initiative | | | |
|---|---|---|---|
| **Project Year(s).** | **SSIR Project** | **Risk Assessment Score** | **SME Ranking** |
| 2019-2022 | Cottonwood Pass Replacement | Tier 1 – 56.4 | High |
| 2019 | Grove Creek Span Replacement | Tier 3 – 32.5 | High |
| 2019 | Bible Camp Mainline Valve Replacement | Tier 3 – 29.1 | High |
| 2019 | Young's Creek Pipeline Exposure Replacement | Tier 4 – 26.3 | High |
| 2020-2021 | Gypsum to Eagle 3" Replacement | | High |
| 2020-2021 | Reroute 8" Pipeline – De Beque Leg-off | | High |
| 2020-2024 | Pipeline Replacement from Collbran to Read | | High |
| 2020 | Reroute 6" Pipeline – Telluride Leg-off | | High |

- **Changes in Pipeline Capacity:** Cottonwood Pass Replacement – 4 in. to 6 in. pipeline and Gypsum to Eagle 3" Replacement – 3 in. to 6 in. pipeline. Only the portion of the like kind replacement will be included in the SSIR.

- **Changes in ROW:** Grove Creek Span Replacement (2019), Gypsum to Eagle 3 in. Replacement (2020-2021), Cottonwood Pass Replacement (2019-2022), Reroute 8" Pipeline De Beque Leg-off (2020-2021), Pipeline Replacement from Collbran to Read (2022-2024)

- **Individual Project Timelines:** See Attachment 1, Attachment 2, and Attachment 5 for additional details.

## C. SIMP

After a series of large scale natural gas disasters related to failing storage infrastructure, PHMSA issued an advisory bulletin to all owners and operators of underground storage facilities urging them to consider the overall integrity of the facilities to ensure the safety of the public and operating personnel and to protect the environment. Operators were to review their operations to identify the potential of facility leaks and failures caused by corrosion, chemical damage, mechanical damage, or other material deficiencies in piping, casing, valves and associated facilities and the importance of reviewing the location and operations of shut-off and isolation systems.

As described in the RMNG rate case, the Company was required by PHMSA to develop a SIMP Plan. The scope and timeline for several of the SIMP projects may be altered based on the dynamic collection of data used to assign risk score rankings to individual projects as more relevant data becomes available.

### 1. Well Assessment Initiative

- **Summary and Estimated Cumulative Cost:** Operators are responsible for undertaking well integrity evaluation programs, prioritizing integrity tests that provide hard data on well performance and deployment of continuous well monitoring for wells and critical gas handling infrastructure, and development and implementation of underground storage risk management plans. Due to issues found in other well assessments and the risks associated with those assessments, all remaining well assessments were accelerated so that they can be completed in 2019.

- **Table 26 –2019-2023 Well Assessment Initiative Costs**

| Well Assessment Initiative – SSIR Project | 2019 | 2020 | 2021 | 2022 | 2023 | Total |
|---|---|---|---|---|---|---|
| Well Assessments and Rework #3, #4, #6, and #12 | $2,100,000 | $0 | $0 | $0 | $0 | $2,100,000 |
| **Total ILI Initiative** | **$2,100,000** | **$0** | **$0** | **$0** | **$0** | **$2,100,000** |

- **Scope:** RMNG originally planned to complete one to two well assessments per year through 2022, however as discussed above, due to issues found in well assessments in 2017 and 2018 capital projects, all remaining well assessments have been accelerated so that they may be completed in 2019. The 2019 portion of the project includes the re-work of Well #3, Well #4, Well #6, and Well #12. The work will include, but not necessarily limited to, evaluation and replacement of downhole safety valves, evaluation of the casing and re-work of the wells, as required. Downhole safety valves are the last resort when it comes to stopping the emission of gas in the wells and the Company believes this is an integral component to keeping customers, local communities and the environment safe. In addition, wireline logs (casing thickness, Gamma/Neutron, and Cement Bond) will be conducted to assess the integrity of the well's casing and cement bond.

- **Overall Status and Timeline:** The Well Assessment Initiative was a multi-year initiative that began in 2017. As discussed above, the Initiative was planned to extend until 2022, however due to issues found in well assessments in previous years, the Initiative was accelerated to complete all assessments by 2019.

- **Code References:** Interim Storage Rule - *API Recommended Practice 1171*

- **Key Changes since Prior November Filing:** In the November 2017 SSIR filing, the Well Assessment Initiative proposed the assessments of Well #71 and Well #9 in 2018. Following the assessment findings for Well #9 in 2018 and Well #5 in 2017, RMNG accelerated this initiative to be completed as soon as possible. Well #8 and Well #35-1 were subsequently moved up so they could also be assessed in 2018 as part of the accelerated Well Assessment Initiative. The remaining planned Well Assessments for 2020-2022 were all moved up and will be completed in 2019.

**Table 27 – Well Assessment Initiative Changes**

| Year | Original (11-1-2017) | Updated (11-1-2018) |
|---|---|---|
| **2018** | $1,348,000 | $2,390,000 |
| **2019** | $1,389,100 | $2,100,000 |
| **2020** | $1,389,100 | $0 |
| **2021** | $1,389,100 | $0 |
| **2022** | $1,389,100 | $0 |
| **Total** | **$6,904,400** | **$4,490,000** |

- **Five Year Planned Activities:** As discussed above, all Well Assessments will be completed by the end of 2019.

- **Risk Ranking:**

**Table 28 – Well Assessment Initiative Risk Rankings**

| Risk Prioritization – Well Assessment Initiative | | |
|---|---|---|
| **Wolf Creek Well #** | **Risk Assessment Score** | **SME Ranking** |
| #12 | 59.44 – Tier 2 | High |
| #6 | 53.07 – Tier 4 | High |
| #3 | 52.98 – Tier 4 | High |
| #4 | 52.98 – Tier 4 | High |

- **Summary of Documentation:** None

- **Changes in Pipeline Capacity:** None

- **Changes in ROW:** None

- **Individual Project Timelines:** See Attachment 2 and Attachment 5 for additional details.

## 2. Well Replacement Initiative

- **Summary and Estimated Cumulative Cost:** As a result of the Well Assessment Initiative, there have been irregularities found on some of the Wolf Creek wells including corrosion and physical damage. Based on the assessments

performed, RMNG will plug and abandon various wells after it has drilled other wells to replace the faulty storage wells.

**Table 29 – Well Replacement Initiative 2019-2023**

| Well Replacement Initiative – SSIR Project | 2019 | 2020 | 2021 | 2022 | 2023 | Total |
|---|---|---|---|---|---|---|
| Wolf Creek Well Integrity - Replace #5 | $4,325,000 | - | - | - | - | $4,325,000 |
| Wolf Creek Well Integrity – Replace #9 | $4,300,000 | - | - | - | - | $4,300,000 |
| **Total Well Replacement Initiative** | **$8,625,000** | **$0** | **$0** | **$0** | **$0** | **$8,625,000** |

- **Scope:** These projects, the replacements of Well #5 and Well #9, are a direct result of testing performed in 2017 and 2018, respectively, which showed excessive casing corrosion to both wells and buckled casing for Well #5. Based on the assessments performed, RMNG plans to abandon each respective well and drill another well to replace it. A new well replacement for each will be drilled, stimulated, and completed in 2019. Remediation, well pad rehabilitation, and surface construction on the projects will likely not be performed until 2020 due to the projects finishing too late into the 2019 winter season.

- **Overall Status and Timeline:** The Well Replacement Initiative was initiated in 2018 as a result of failures in Well Assessments performed in 2017. While the Well Replacements of Well #5 and Well #9 began in 2018, the projects were not included in the revenue requirement until 2019 as 2018 work was engineering, ROW and permitting. The remediation, well pad rehabilitation, and surface construction on these wells will be completed in 2020, but these costs are not included in the 2020 SSIR forecast.

- **Code References:** Interim Storage Rule - *API Recommended Practice 1171*

- **Key Changes since Prior November Filing:** Replacement of Well #9 was added to the initiative as the highest priority after RMNG's November 2017 SSIR filing. The addition into this initiative immediately followed its 2018 well assessment and rework as part of 2018 SSIR Capital Project No. 2.

- **Five Year Planned Activities:** Well replacement for Well #5 and Well #9 will be completed in 2019, with remediation, well pad rehabilitation, and surface construction on the projects to be completed in 2020 as discussed in "Overall Status and Timeline" above. There are no other projects planned related to the Well Replacement Initiative from 2021-2023.

- **Risk Ranking:**

**Table 30 – Well Replacement Initiative Risk Rankings**

| Risk Prioritization – Well Replacement Initiative | | |
|---|---|---|
| **Wolf Creek Well #** | **Risk Assessment Score** | **SME Ranking** |
| #9 | 61.27 – Tier 2 | High* |
| #5 | 53.80 – Tier 4 | High |

*highest within initiative

- **Summary of Documentation:** See Attachment 6 – Confidential Well #5 Assessment Report and Attachment 7 – Confidential Well #9 Assessment Report.

- **Changes in Capacity:** Potential change in capacity and deliverability but not known until after the wells are drilled.

- **Changes in ROW:** None.

- **Individual Project Timelines:**

  See Attachment 2 and Attachment 5 for additional details.