BEFORE THE STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS

IN THE MATTER OF THE APPLICATION	)	Docket No.
OF ATMOS ENERGY CORPORATION	)	
FOR REVIEW AND ADJUSTMENT OF ITS	)	
NATURAL GAS RATES	)	19-ATMG-525-RTS

DIRECT TESTIMONY OF BARTON W. ARMSTRONG

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Q. PLEASE STATE YOUR NAME AND ADDRESS.

A. My name is Barton (Bart) W. Armstrong, and my business address is 25090 W. 110th Terrace, Olathe, Kansas 66061.

I. EXECUTIVE SUMMARY

Atmos Energy continuously strives to improve the safety and reliability of its pipeline system. Proactively identifying assets where the risk of leaks developing is high and then designing and implementing a plan to mitigate those risks are vital steps in that process. The goal of the regulation of pipeline safety in the natural gas industry is to set operational standards that advance the safe transportation and delivery of natural gas to each utility's customers. The Pipeline and Hazardous Materials Safety Administration ("PHMSA") has carefully developed a rigorous set of such standards, which are codified in Title 49 CFR Parts 191-199. The Kansas Corporation Commission is the agency authorized to enforce these standards in Kansas. Through this regulatory framework, Atmos Energy receives guidance and accountability to adhere to best practices of the industry and to operate and maintain its system as safely as possible. Atmos Energy diligently works to meet and surpass the requirements of these regulations through its own proactive efforts as well as through its cooperation with the Commission in ensuring compliance. In this way, we can build upon the standards set forth by our regulatory bodies to remain steadfast in our commitment to the safety of our customers, and the oversight of our regulators continuously confirms that we are meeting these standards for a safe natural gas transmission and distribution system. This level of commitment requires substantial investment.

Today, Atmos Energy's Kansas system has approximately 821 miles of bare steel pipe in the ground, most of which has been in place since before the 1960s. In addition, of the early generation plastic pipeline in Atmos Energy's Kansas system, there are approximately 109 miles of polyvinyl chloride ("PVC") and 707 miles of Aldyl-A and Century pipe. The natural gas industry has determined that these materials are inappropriate for use in the construction of natural gas distribution systems. Bare steel and early generation plastic pipes deteriorate with age and are prone to leaks and potential failure, which impacts both the safety and reliability of the pipeline system. In order to most effectively promote the safety of natural gas systems (and ultimately the safety of the communities served by those systems), a variety of factors must be taken into account to maximize the benefit of integrity management programs, including these obsolete types of material. The mitigation of these threats is paramount to Atmos Energy's continued system safety and reliability.

At the current pace, replacing all the relative high-risk assets in Atmos Energy's Kansas system, which would encompass all industry-identified obsolete materials, including the entire bare steel and early generation plastic pipe infrastructure, would take more than 80 years. Accelerated replacement of this aging pipeline infrastructure is necessary to maintain the safety and reliability of the system, given the increasing risk posed by this pipe. Such accelerated replacement of high-risk pipe is a very capital-intensive undertaking. Atmos Energy has diligently worked with each of its regulators to strike the right balance to determine the pace of this investment, and we seek to continue to work closer toward that goal in this case. The Company believes that its proposed System Integrity Program ("SIP") mechanism is an appropriate means to

manage and fund the necessary investments to update Atmos Energy's gas distribution system and to help ensure the system remains safe and reliable for customers over the long term. The operation of the SIP mechanism is explained in the direct testimony of Company witness Gary Smith.

Utilizing the SIP mechanism, Atmos Energy is proposing to prioritize and complete replacement projects using a Project Risk Prioritization Tool whereby it can analyze, rank and sequence the accelerated replacement based on the most crucial factors that impact customers and the community. Atmos Energy is also proposing to establish a process whereby the Commission is able to have full transparency to review and approve proposed projects before they begin and be fully informed of final results.

While the safety and reliability of our system is a paramount goal for Atmos Energy, the Company understands the Commission's obligation to balance safety and cost. Atmos Energy believes that proactive replacement through projects reviewed and approved by the Commission at a flexible spending level that is deemed appropriate will strike the right balance between increased safety for the community, our customers and property and ensuring rates continue to be reasonable for customers.

II. INTRODUCTION AND PURPOSE OF TESTIMONY

Q. PLEASE DESCRIBE YOUR EDUCATION AND PROFESSIONAL BACKGROUND.

A. I received a Bachelor of Science degree from Texas Tech University, Lubbock, Texas, in 1991. I have been employed in the natural gas distribution business for 28 years, during which time I have worked in various capacities in operations and marketing. I began work in 1990 for Atmos Energy (formerly Energas) in Lubbock, Texas as a

utility worker in the service department. From 1993 to 2006, I worked in the Marketing department in various roles including Sales Representative, Industrial and Large Volume Sales Manager and Marketing Manager for the West Texas Division. In this role I was responsible for all business development, gas transportation revenues, sales revenues, customer growth and operations of an intrastate pipeline that supplied natural gas to over 200,000 customers in West Texas. In 2007, I was promoted to Operations Manager in Lubbock and responsible for 89 employees, 6,000 miles of pipe, all daily field operations, maintenance and capital projects. In 2008 I was promoted to Vice President of Marketing for the Colorado Kansas Division and relocated to Olathe, Kansas. In this role I was responsible for coordinating growth activity, business development, and customer service for both Colorado and Kansas. In 2009 I was named to my current position in Kansas.

Q. WHAT ARE YOUR DUTIES IN YOUR CURRENT ROLE?

A. In my position as Operations Vice President, I have responsibility over all employee safety, public safety, system safety and reliability in Kansas. Oversee all maintenance, construction, compliance and customer service activities for our operations in Kansas. In my role, I report directly to Gary Gregory, President of our Colorado Kansas Division. My role includes planning, organizing, coordinating and directing Kansas natural gas distribution operation activities. Develops, recommends, implements and monitors short and long-term strategic plans and initiatives in order to meet forecasted growth while maintaining safe and reliable natural gas service.

Q. HAVE YOU EVER SUBMITTED TESTIMONY BEFORE THE KANSAS CORPORATION COMMISSION ("COMMISSION")?

A. Yes. I filed testimony with this Commission in Atmos Energy's previous Gas System Reliability Surcharge ("GSRS") filings and in Atmos Energy's 2010 and 2012 rate cases, Docket Nos.10-ATMG-495-RTS ("495 Docket") and 12-ATMG-564-RTS ("564 Docket").

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony in this proceeding is to describe Atmos Energy's present actions to replace relatively higher-risk piping in the Kansas distribution system and the Company's plans to accelerate the replacement of this infrastructure. These relatively higher-risk assets, which include non-standard and obsolete piping, pose a long-term threat to the safety and reliability of Atmos Energy's Kansas distribution system and the current pace of replacement is not optimal to replace this pipe within a reasonable timeframe. In support of the Company's efforts to expedite the replacement of this pipe, I will provide information regarding our current Kansas distribution system and the steps necessary to economically and effectively remove and replace this pipe within a reasonable period. My testimony also supports the need for the SIP mechanism in order to allow for adequate recovery of the costs associated with our pipeline replacement efforts while reducing the need for frequent general rate cases.

III. ATMOS ENERGY'S SYSTEM INTEGRITY PROGRAM

Q. COULD YOU PLEASE DESCRIBE THE IMPORTANCE OF SAFETY TO ATMOS ENERGY IN THE OPERATION OF ITS KANSAS DISTRIBUTION SYSTEM?

A. The safety of Atmos Energy's customers, community and employees is Atmos Energy's highest priority in every jurisdiction in which it operates. Pipeline safety is

an integral element of that mission. From the Company's perspective, there is no higher priority in our operations than safety. The SIP mechanism proposed by the Company in this docket is designed to serve that priority and enhance our ability to provide safe and reliable natural gas service to the public in the face of some significant pipeline replacement requirements.

Q. WHY IS SAFETY AND RELIABILITY ATMOS ENERGY'S HIGHEST GOAL?

A. Atmos Energy is deeply committed to the safety of our customers, communities and employees; it is our highest priority. Our commitment to safety and reliability is threaded throughout our corporate culture. We have worked and continue to work with regulators, industry associations, and other stake holders to take proactive measures to strengthen safety in Kansas and our industry.

Additionally, against the backdrop of recurring natural gas incidents, Atmos Energy must continually seek and assess opportunities to improve upon the safety of our operations in an effort to reduce, wherever feasible, the potential for system integrity threats.

Q. WHY IS THE SIP MECHANISM CRITICAL TO ATMOS ENERGY'S REPLACEMENT PROGRAM?

A. Atmos Energy's proposed SIP is critical to the Company's ability to comply with federal pipeline safety regulations and maintain an effective pipe replacement program. Under the regulatory requirements discussed in more detail below, Atmos Energy must regularly inspect its system and proactively identify risks. Part of this proactive identification of risks involves acknowledging and investigating the known risks

identified by the gas utility industry, not merely those identified through inspections of the Company's system. Once those risks are identified, Atmos Energy must implement and fund a systematic program designed to mitigate or, where possible, eliminate those risks. The SIP mechanism provides the funding necessary to work toward optimizing our safety program. Specifically, the SIP is intended to timely recover system safety and integrity costs associated with gas utility capital investments.

Q. WHY IS COMMISSION APPROVAL OF THE SIP IMPORTANT?

A. Atmos Energy does not restrict capital to address known safety risks in its system. However, Commission approval of recovery mechanisms such as the SIP facilitates a regulatory environment where the demands of system safety are balanced with the economic impacts of meeting those demands in a rational and reasonable manner. As discussed in more detail below, this regulatory environment is necessary to allow the utility to make reasonable and necessary capital investments to mitigate risks while eliminating the frequent or annual rate case filings that would otherwise be required to recover that investment.

Q. HAVE OTHER JURISDICTIONS IN WHICH ATMOS ENERGY OPERATES ALSO CREATED SUCH A REGULATORY ENVIRONMENT?

A. Yes. For example, Texas has a mandate to replace a certain percentage of high relative risk assets on an annual basis and a cost recovery method that enables that mandate to be successful. Additionally, Louisiana and Kentucky have also enacted similar standards to mitigate risks. The direct testimony of Atmos Energy witness Gary Smith contains a discussion of the cost recovery that each of the states in which the Company operates uses to support the success of the safety regulatory framework.

Q. HAS ATMOS ENERGY HISTORICALLY REPLACED PIPE?

A. The assessment, rehabilitation and replacement of aging pipelines has been a normal part of the utility business; however, it has become more of a significant focus as we implement a safety regulatory framework that changes the way we respond to and mitigate risk.

The new federal regulations and directives make the systematic and proactive assessment and replacement of pipelines essential. In turn, this systematic and proactive approach requires the long-term commitment of capital at significantly higher levels than previously included in our rate structure. This is a nationwide phenomenon and is not limited to either Atmos Energy or the State of Kansas.

IV. ATMOS ENERGY'S PROPOSED SIP IS IN THE PUBLIC INTEREST

Q. IS ATMOS ENERGY'S PROPOSED SIP IN THE PUBLIC INTEREST?

A. Yes. Inherent in the federal regulations, the integrity rules, and the associated directives, is the requirement that pipeline operators do what is reasonably necessary for the public good. The assessment, rehabilitation and proactive replacement of aging infrastructure are essential to enhancing the safety and integrity of the system. In light of the changes in the approach to federal and state safety regulation and industry standards, the replacement projects are essential and reasonable to ensure the continued safe and reliable operation of our system.

It is in the public interest to promote safety and investment in the integrity of our system in a systematic manner that enables diligent regulatory oversight in the areas of both safety regulation and rate regulation. In addition, implementing and funding a safety and reliability program in a manner consistent with the federal requirements and

directives will afford our customers and the public the continued security and benefits associated with a safe and reliable natural gas distribution system.

Q. DO FEDERAL REGULATORS AGREE THAT ALTERNATE RATE RECOVERY MECHANISMS LIKE THE PROPOSED SIP ARE IN THE PUBLIC INTEREST?

A. Yes. In December of 2011, in connection with the introduction of a White Paper on State Pipeline Infrastructure Replacement Programs sponsored by the PHMSA, the PHMSA Administrator promoted the public's interest in infrastructure replacement programs in a letter to the President of the National Association of Regulatory Utility Commissioners ("NARUC"), stating:

> "[Pipeline infrastructure replacement] programs play a vital role in protecting the public by ensuring the prompt rehabilitation, repair, or replacement of high-risk gas distribution infrastructure."

Q. HAS THE FEDERAL ENERGY REGULATORY COMMISSION (FERC) ADDRESSED THIS ISSUE?

A. Yes. On April 16, 2015, FERC issued a Policy Statement addressing cost recovery mechanisms for modernization of interstate natural gas facilities in FERC Docket No. PL15-1-000. The Policy Statement states that FERC has established a policy allowing interstate natural gas pipelines to seek recovery of certain capital expenditures made to replace infrastructure through a surcharge mechanism. On page 1 of its Policy Statement, FERC stated that its intent is to "provide greater certainty regarding the ability of interstate natural gas pipelines to recover the costs of modernizing their facilities and infrastructure to enhance the efficient and safe operations of their systems."

The FERC's Policy Statement outlined the standards that FERC will require interstate pipelines (whose rates are regulated by FERC rather than state commissions) to satisfy to establish alternate ratemaking mechanisms such as surcharges or trackers to allow them to recover the costs of replacing obsolete infrastructure and thereby enhance the efficient and safe operations of their pipeline systems.

Q. DID FERC'S POLICY STATEMENT ADDRESS THE ISSUE OF SAFETY AS A DRIVER FOR THE NEED TO REPLACE AGING INFRASTRUCTURE?

A. Yes. In Paragraph 26 of the Policy Statement, FERC stated:

> With regard to safety and reliability . . . recent pipeline accidents, including the September 2010 pipeline rupture in San Bruno, California, demonstrate the potential consequence of aging pipeline facilities that are not properly repaired, rehabilitated or replaced. OPS states that 59% of existing natural gas pipelines were built before 1970 and 69% of existing natural gas pipelines were built before 1980. DOE notes that more than half of the country's natural gas and gathering infrastructure is over 40 years old. As OPS points out, while aging pipelines are not inherently risky, older facilities have been exposed to more threats and were likely constructed without the benefit of today's safety standards or quality materials.

Q. HAS NARUC RECOGNIZED THIS NEED FOR ACCELERATED INVESTMENT IN GAS INFRASTRUCTURE?

A. Yes. In response to PHMSA's letter, NARUC issued a resolution on July 24, 2013 encouraging state commissions to "consider adopting alternative rate recovery mechanisms as necessary to accelerate the modernization, replacement and expansion of the nation's natural gas pipeline systems."

Q. IS APPROVAL OF ATMOS ENERGY'S PROPOSED SIP MECHANISM APPROPRIATE?

A. Yes. Natural gas pipeline safety and reliability are issues of state-wide concern, and Kansas residents, regardless of where they reside, deserve to have natural gas systems

that are safe and reliable now and for generations to come. As described in more detail below, Atmos Energy is assessing its system and updating its Geographical Information System ("GIS") mapping, which is another fundamental capital investment to protect the integrity of our system.

In addition to the integrity risks associated with aging infrastructure and continued degradation of pipeline materials, many of our distribution systems traverse areas with greater populations than existed when the pipes were constructed, potentially resulting in an increased risk of injury and property damage if there is an incident. These issues and concerns are some of the factors that are used to prioritize accelerated replacement projects and directly result in a significant increase in the capital investment and O&M needed to comply with federal requirements.

V. PIPELINE SAFETY REGULATIONS

Q. IN YOUR POSITION, ARE YOU FAMILIAR WITH FEDERAL AND STATE REGULATIONS REGARDING PIPELINE SAFETY AND INTEGRITY?

A. Yes.

Q. IS ATMOS ENERGY SUBJECT TO THE PHMSA'S RULES AND REGULATIONS REGARDING GAS DISTRIBUTION PIPELINE SAFETY?

A. Yes. Atmos Energy is subject to the PHMSA rules and regulations as those are promulgated by the U.S. Department of Transportation ("DOT") and adopted by the Commission for Kansas natural gas local distribution companies.

Q. DO PIPELINE SAFETY REGULATIONS SPECIFY THE FULL EXTENT OF ACTIONS A PRUDENT OPERATOR IS EXPECTED TO UTILIZE WHEN OPERATING THEIR SYSTEM?

A. No. A major challenge of developing uniform ways to address safety of natural gas pipelines is that the majority of this critical infrastructure is underground, making threats not easily observable or known. As a result, it is impossible for regulations in this area to be completely prescriptive. The pipeline safety regulations, or code (including the federal code and complementary codes adopted by the states), must therefore provide the minimum that should be done to construct, operate, and maintain a natural gas system, which serves as a framework in which operators must use their discretion to implement those standards in a manner that maximizes safety on its system given the constraints inherent in the process. Because of this, though an operator may not be able to point to a specific regulatory requirement to complete a project, it is still an operator's job to identify projects that will potentially address the highest risks and work with state regulators to strike a balance of the appropriate pace of undertaking those investments.

Q. PLEASE PROVIDE AN EXAMPLE OF HOW PHMSA REGULATIONS DIRECT OPERATORS TO USE THEIR DISCRETION IN MAKING SAFETY DECISIONS.

A. An illustrative example is 49 C.F.R. Part 192 subpart P, "Gas Distribution Pipeline Integrity Management." Each operator is required to develop and implement its own unique Distribution Integrity Management Plan ("DIMP") to mitigate risks on its system. While this subpart sets up a framework of general requirements, it leaves to the operator the duty of designing its own plan that is specific to its system that will calculate and address risk. For example, Part 192.1007(c) requires the operator to evaluate and rank risk: "An operator must evaluate the risks associated with its

distribution pipeline. In this evaluation, the operator must determine the relative importance of each threat and estimate and rank the risks posed to its pipeline. This evaluation must consider each applicable current and potential threat, the likelihood of failure associated with each threat, and the potential consequences of such a failure." In this way, the regulation leaves to the operator the decisions of the factors and methodology that should be used to identify and address risk and the pace at which such identified risks should be addressed.

Q. PLEASE FURTHER DESCRIBE A DIMP.

A. A DIMP specifies how the utility will identify, assess, prioritize, and evaluate risks to the integrity of distribution lines and the manner in which those risks will be mitigated or eliminated. Atmos Energy is subject to the DIMP regulations, and required to have a DIMP in place. Additionally, Atmos Energy submits annual reports to the Commission, as further required by the PHMSA and Commission's rules.

Q. WHEN THE PHMSA PIPELINE SAFETY RULEMAKING PROCESS WAS INITIATED, DID IT PROVIDE ANY INSIGHT INTO THE STATES' ROLES IN DISTRIBUTION PIPELINE SAFETY MEASURES?

A. Yes. PHMSA emphasized the importance of oversight performed directly by the States. PHMSA stated specifically:

> States must implement the minimum standards established by PHMSA but have a variety of ways in which they can oversee distribution pipeline safety. They can simply mirror the Federal pipeline safety program; they can impose additional requirements, beyond the Federal minimum; they can engage in special oversight programs with individual operators or groups of operators; or finally, they can provide incentives for safety improvements, often through their rate-setting authority. (emphasis added)

> It is appropriate that the principal actions for regulating distribution pipeline safety rest with the States. States need to balance safety and affordability. They need to ensure that the particular needs of their citizenry are fulfilled....[1]

Q. HAVE THE FEDERAL AND STATE PIPELINE SAFETY CHANGES DISCUSSED PREVIOUSLY IMPACTED THE WAY THAT NATURAL GAS COMPANIES MONITOR AND MANAGE THE SAFETY OF THEIR DISTRIBUTION SYSTEMS?

A. Absolutely. The federal changes and the Call to Action have resulted in an increasingly proactive approach to pipeline safety.

Q. HOW HAVE THE CHANGES IMPACTED ATMOS ENERGY?

A. Atmos Energy is also implementing a more proactive approach to pipeline safety. Atmos Energy's intention is not only to repair identified leaks but also to proactively identify pipes where the risks of leaks developing are unacceptably high and to then design and implement a plan to mitigate those risks. As a result, Atmos Energy is investing capital into our system at a much higher annual rate than we have historically done to address safety and integrity issues identified through the risk assessment process.

As I have noted, the previously accepted approach to integrity management is no longer sufficient. Prudent integrity management now requires operators to more proactively identify and invest in risk control measures beyond minimum requirements. Atmos Energy's proposed accelerated pipeline replacement program is an example of such a proactive measure. Through its accelerated pipeline replacement program,

[1] Notice of Proposed Rulemaking, 73 Fed. Reg. 36015 at 36017.

Atmos Energy would be better able to identify and mitigate system risks rather than simply reacting once an accident has occurred.

Q. IS THERE ANY REASON FOR ATMOS ENERGY TO CONTINUE REPLACING PIPE IN KANSAS?

A. Absolutely. Going forward, we must focus on maintaining and improving our safety and reliability record in a manner consistent with the approach to pipeline safety which demands our industry to be even more proactive in identifying and mitigating risks, in the collective interest of improving safety and reliability. There is no room for complacency or error. In that vein, Atmos Energy's SIP mechanism is an example of reasonable actions taken to avoid future accidents.

VI. NECESSITY TO REPLACE RELATIVELY HIGHER-RISK ASSETS

Q. HAS THE COMMISSION RECOGNIZED THE NEED FOR ACCELERATED PIPELINE REPLACEMENT IN KANSAS?

A. Yes. The Commission has been examining and considering the necessity of increased safety-related infrastructure investment for many years now. In its Order in Docket No. 15-GIMG-343-GIG (the "343 Docket"), the Commission concluded that accelerated pipeline replacement is in the public interest. Specifically, the Commission focused on "the accelerated, programmatic replacement of bare steel mains, bare steel service/yard lines, and cast iron mains" and found that such replacement "is in the public interest and necessary." The Commission thus "direct[ed] the Gas Utilities to develop a plan for the accelerated systematic replacement of all of their bare steel service/yard lines, cast iron mains, and all bare steel mains that are within a Class 3 location [which the utilities have interpreted as urban areas in their service territories]."

Atmos Energy's comprehensive risk-based prioritization to identify projects will accomplish these goals, as these two factors weigh heavily in favor of replacement in the analysis.

Q. PLEASE DESCRIBE THE VARIOUS PIPE MATERIALS THAT ARE UTILIZED IN ATMOS ENERGY'S KANSAS GAS DISTRIBUTION SYSTEM.

A. The U.S. Department of Transportation ("DOT") uses the following categories to classify main and service line materials: steel, ductile iron, copper/wrought iron, plastic PVC, plastic polyethylene ("PE"), plastic ABS[2], plastic other and other. Steel pipe has been used in the natural gas industry since the 1800s and the use of plastic pipes began in the 1960s. As improved materials are developed, older materials are discontinued or phased out by the industry. As a result, the Company has many miles of pipe in our distribution system in Kansas that are made of materials that are no longer used by Atmos Energy in new natural gas pipeline construction.

Steel pipe is categorized as bare steel or coated steel. In addition, each of those categories can be further broken down as cathodically protected or unprotected. The gas industry installed bare steel pipe until the mid-1950s. As technology advanced, the gas industry began to use cathodically protected steel pipe, and since 1970, cathodically protected coated steel pipe is the only steel material approved for the new installations by the DOT.[3] All of the bare steel pipe in Atmos Energy's Kansas system was installed before Atmos Energy acquired those systems from Greeley Gas Company ("Greeley

[2] Acrylonitrile butadiene styrene.

[3] 49 C.F.R. § 192.461

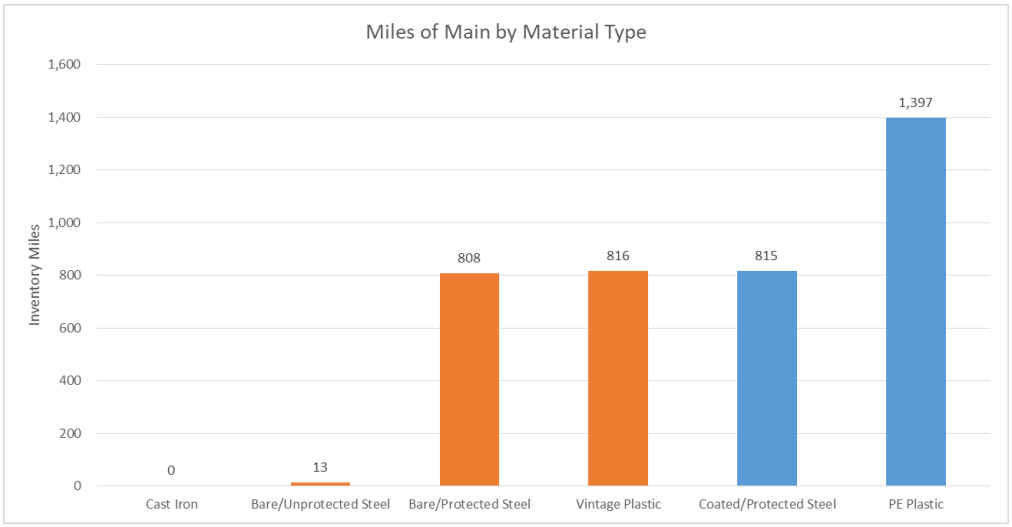
Gas") in 1993 and United Cities Gas Company ("United Cities") in 1997. Bare steel pipe is the oldest pipe in Atmos Energy's Kansas system. Currently there are approximately 821 miles of bare steel mains in Atmos Energy's Kansas system, approximately 13 miles of which is not cathodically protected. In addition, there are approximately 28,149 bare steel service lines.

Similar to steel pipe, plastic pipe has undergone significant technological advancements over the past several decades. In Atmos Energy's Kansas system, the early generation plastic categories consist of PVC, Aldyl-A and Century pipe.

PVC pipe is an early generation of plastic pipe installed by the gas industry in the 1960s and 1970s that is no longer approved for use in the construction of natural gas mains and services. Aldyl-A and Century pipe are early generation PE pipes installed by the natural gas industry from the 1960s through the early 1980s. Technological advancements led the natural gas industry to discontinue the use of Aldyl-A and Century pipe in the 1980s and adopt the current generation of PE pipe. Like the bare steel pipe, all of the PVC, Aldyl-A and Century pipe in Atmos Energy's Kansas system today was installed prior to Atmos Energy's acquisition of the assets that make up that system. Currently, there are approximately 109 miles of PVC main and 707 miles of Aldyl-A and Century main in service in Atmos Energy's Kansas gas distribution system. There are also approximately 33,171 Aldyl-A and Century service lines.

Atmos Energy's Kansas pipeline and service line inventories by material are shown on Table BWA-1 below.

Table BWA-1 – Atmos Energy Kansas Pipeline Inventory by Material



Q. WHAT IS THE SIP THAT ATMOS ENERGY IS PROPOSING IN THIS CASE?

A. In this case, Atmos Energy is requesting authority to implement a program to replace or retire highest relative risk assets on a systematic basis. The projects identified are expected to include all bare steel, PVC, Aldyl-A, and Century pipe ranked by the relative risk assigned to these assets over a period determined to be prudent through the implementation of Atmos Energy's approved DIMP. In order to recover the costs of these investments between rate cases and reduce the need for frequent general rate case filings, Atmos Energy is requesting authority to implement a SIP mechanism as further described in the direct testimony of Company witness Gary Smith. The SIP, if approved, will facilitate the complete retirement or replacement of assets posing an increased risk to safety and reliability based upon an assessment of the likelihood and consequences of failure. The assessment of the likelihood of failure includes information regarding materials that are prone to failure over time from the threat of corrosion (for bare steel), brittle cracking (for PVC, Aldyl-A and Century), and glued

coupling failure (for PVC). Atmos Energy believes these assets should be replaced on a more accelerated basis than the pace currently in place with a long-term view in mind of the safety and reliability of the Company's gas distribution system.

Q. DOES ATMOS ENERGY HAVE CONCERNS REGARDING MATERIALS OTHER THAN BARE STEEL, PVC, ALDYL-A OR CENTURY POLYETHYLENE THAT SHOULD BE ADDRESSED ON AN ACCELERATED BASIS?

A. Not at this time. The Pipeline and Hazardous Materials Safety Administration ("PHMSA") issued an advisory bulletin in 2012 regarding the potential degradation of Driscopipe 8000. Atmos Energy has hundreds of miles of this type of pipe in service but has not identified any pipe segments that have experienced the degradation described in the advisory bulletin. Additionally, Atmos Energy will continue to monitor and comply with PHMSA's Distribution Integrity Management Program rules. If Atmos Energy develops concerns about other materials, Atmos Energy will inform the Commission and include the potential threats posed by those materials in its risk prioritization model.

Q. WHAT HAS BEEN THE FOCUS OF THE COMMISSION'S DISCUSSION OF RISK IN PRIOR ORDERS IN YOUR OPINION?

A. In my reading of the Commission's orders in other dockets, including the 343 Docket, the Commission has shown great interest in the types of materials in existing assets that are considered by the industry to pose the highest relative risk.

Q. CAN YOU PROVIDE ADDITIONAL DETAIL ABOUT THE RISK ASSOCIATED WITH THESE TYPES OF MATERIALS?

A. Yes. Material type is a major factor considered in Atmos Energy's risk prioritization tool and the ultimate risk ranking of projects. Below I describe various material types and why they pose a risk in our Kansas system. However, I continue to emphasize that we consider this information in a broader context of critical factors used to evaluate risk.

A. BARE STEEL PIPELINE REPLACEMENT

Q. WHAT ARE THE MAIN CAUSES OF LEAKS ON BARE STEEL PIPE?

A. The most frequent cause of leaks on bare steel pipe is corrosion. Excluding excavation damage, approximately 42% of all below ground leaks repaired on Atmos Energy's Kansas system over the past four years were caused by corrosion.

Q. CAN CORROSION ON BARE STEEL PIPE BE EXPECTED TO CONTINUE IN THE FUTURE?

A. Yes. Once the corrosion process has started on bare steel pipe, it will continue until the pipe fails or is replaced.

Q. DOES CATHODIC PROTECTION ELIMINATE THE DETERIORATION OF BARE STEEL PIPE?

A. No. Cathodic protection is a technique used to control the corrosion rate of a metal surface. Properly applied cathodic protection reduces the rate of corrosion, but does not eliminate corrosion from occurring.

Q. WHY IS THAT A CONCERN?

A. The majority of the 821 miles of Atmos Energy's bare steel pipe has been in the ground since before the 1960s. As the 821 miles of bare steel pipe continues to age, it

deteriorates and develops leaks. Allowing bare steel pipe to remain in the ground increases the risk to public safety and the reliability of our system.

Q. DO THE EVIDENCE AND THE COMMISSION'S ORDER IN THE 343 DOCKET SUPPORT THE NEED TO REPLACE ATMOS ENERGY'S BARE STEEL PIPE IN KANSAS?

A. Yes. In its Order in Docket No. 15-GIMG-343-GIG (the "343 Docket"), the Commission concluded that accelerated pipeline replacement is in the public interest. Specifically, the Commission focused on "the accelerated, programmatic replacement of bare steel mains, bare steel service/yard lines, and cast iron mains" and found that such replacement "is in the public interest and necessary." There is extensive evidence presented by the parties in that docket to support this conclusion, as well as the conclusion for the need to accelerate replacement of all industry-identified obsolete infrastructure.

Q. WHAT TYPES OF MATERIALS IS ATMOS ENERGY USING TO REPLACE THE BARE STEEL PIPE?

A. Depending on the system maximum allowable operating pressure, Atmos Energy is replacing bare steel pipe with either PE or coated steel pipe.

B. PVC, ALDYL-A AND CENTURY PIPE REPLACEMENT

Q. PLEASE PROVIDE ADDITIONAL DETAIL ABOUT ATMOS ENERGY'S PVC, ALDYL-A AND CENTURY PIPE.

A. Atmos Energy's Kansas gas distribution system still contains approximately 109 miles of PVC pipe and 707 miles of Aldyl-A and Century pipe. While these pipes are not generally as old as the bare steel pipe in Atmos Energy's Kansas distribution system,

they are nonetheless made of materials that are considered obsolete and no longer used in the natural gas industry.

Q. WHAT ARE THE MAIN CAUSES OF LEAKS ON PVC, ALDYL-A AND CENTURY PIPE?

A. As these materials age, the structure of the pipe weakens, becomes brittle and eventually cracks, in addition to the workmanship, equipment and joining practices at the time. Also, the glue used in the couplings that hold the joints of PVC together stiffens as it ages, which can result in the pipe separating from the coupling.

Q. IS REPLACEMENT OF THIS PIPE THE ONLY POSSIBLE REMEDY?

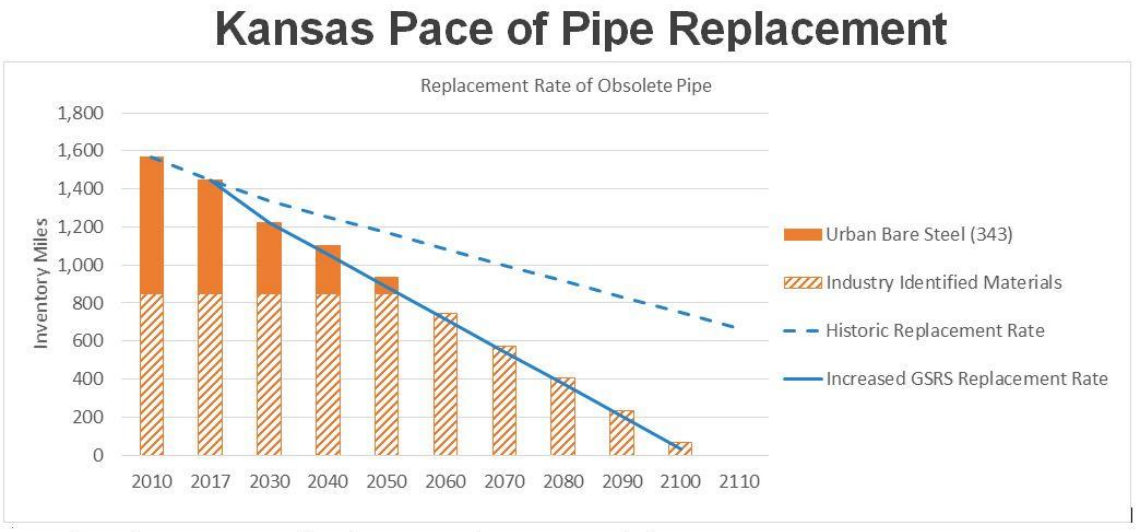
A. Yes, replacement is the only remedy for these pipes. As stated above, PVC, Aldyl-A and Century pipe are no longer materials that are used for new installations. There is no remedial action that will reverse the brittleness or cracking of this early generation plastic pipe.

C. THE BENEFITS OF ACCELERATED PIPELINE REPLACEMENT

Q. BASED ON HISTORICAL SPENDING TRENDS, HOW LONG WILL IT TAKE TO REPLACE ALL OF THE BARE STEEL, PVC, ALDYL-A AND CENTURY PIPE IN KANSAS IF THE REPLACEMENT IS NOT ACCELERATED?

A. Based on the replacement rate the Company would achieve through the expanded GSRS, it take over 80 years to replace the infrastructure with the highest relative risk, which would include all bare steel (not just bare steel in Class 3 locations), PVC, Aldyl-A, and Century services, yard lines, and mains in Kansas if the replacement process is not accelerated. See Table BWA-2.

Table BWA-2



Q. WHY IS THE ACCELERATED REPLACEMENT OF THESE PIPELINES APPROPRIATE?

A. It is both reasonable and prudent for the Company to pursue the accelerated replacement of pipe comprised of materials with known and documented risks. Replacement of these pipes allows Atmos Energy to mitigate the risk of incidents that can result in death, injury, or significant property damage. It would be in the public interest to allow Atmos Energy to utilize the SIP to accelerate the replacement of its infrastructure that poses the highest relative risk to the communities we serve.

Q. ULTIMATELY, WHAT ARE THE BENEFITS TO CUSTOMERS OF THE ACCELERATED REPLACEMENT OF THIS INFRASTRUCTURE?

A. Accelerated replacement will improve system safety and reliability. Importantly, the new infrastructure will have the accurate, verifiable, and complete records required by federal regulation in order to perform more thorough risk assessments of the Kansas

distribution system in the future. Certain technical records for parts of the Kansas distribution systems are unusable or unavailable today because they were of poor quality or nonexistent during the time that the systems were operated by the predecessor companies. Part 192 regulations[4] require that data be gathered during new pipe installations and when existing facilities are exposed during routine maintenance in order to enhance our knowledge and analyses of our systems. Therefore, an ancillary benefit of the SIP mechanism is establishing accurate pipe and component data during pipe replacement activities and then storing that information in the GIS and asset management databases to enable better risk assessments in the future.

The proposed accelerated replacement program will also reduce the inconvenience to the public by taking a proactive approach to project identification and execution rather than a reactive approach. Historically, many projects are identified and executed to eliminate an immediate hazardous threat to public safety and customer reliability. Since our concern is typically a single immediate threat, we often narrowly define the project scope to quickly eliminate only that threat. This narrow approach necessitated by the immediate hazardous threat approach can lead to missed opportunities for efficiency by expanding the scope of a retirement or replacement project to include adjacent facilities that do not yet pose an immediate threat but nevertheless pose risks to the system. The SIP mechanism will facilitate Atmos Energy's replacement of bare steel, PVC, Aldyl-A and Century pipe in an area prior to

[4] 49 C.F.R. Part 192.

the detection of an immediate hazardous threat so each project can be more efficient in both size and scope.

Q. YOU MENTION GIS ABOVE. WHAT IS ATMOS ENERGY'S GIS?

A. Atmos Energy's GIS is an electronic database that visually shows and maps the Atmos Energy infrastructure including critical information about that infrastructure. The GIS allows the Company to more efficiently satisfy compliance and reporting requirements and plan and implement construction and repair activities. When fully populated, the GIS allows users to click on any part of Atmos Energy's pipeline system to reveal additional information regarding the selected component. For example, for a segment of pipe shown on the map in the GIS (*e.g.,* a specific distribution main), the GIS can include information regarding the material, size, date of installation, pressure test information, and maximum allowable operating pressure ("MAOP").

Q. HOW DOES THE COMPANY USE THE GIS?

A. In general, the GIS helps to easily contain and organize information about our assets in a way that is queryable and searchable. Once the GIS is fully populated, rather than searching through paper records, the GIS will allow multiple personnel to access the same information from multiple locations and without having to be in the location where each paper record is kept. As a result, information can be accessed in seconds or minutes using the GIS, rather than in hours or days if we relied exclusively on the paper records. The GIS thus enables the Company to be more efficient and effective and supports safety and reliability.

Q. IS THE GIS INVESTMENT CONSIDERED CAPITAL INVESTMENT ASSOCIATED WITH THE ASSETS THAT ARE MAPPED?

A. Yes. The Company's GIS includes critical information about the Company's pipes and, as such, is a long-lived asset like the pipes themselves. The Company's GIS is inextricably linked to the pipeline system that the GIS describes. Therefore, if a new piece of pipe with a 40-year life is put into service, then I would expect that the GIS information relating to that piece of pipe would be used over the remaining life of that piece of pipe. Since this GIS improvement project will result in legacy pipeline information becoming more accessible, knowable, and useful to the Company, it is appropriate to capitalize the costs of this GIS improvement project. By capitalizing the costs and recovering those costs over the current life of mains and services we can ensure that the future generations of customers that will continue to benefit from the information are also contributing to the Company's recovery of the cost of creating that information, rather than our current customers bearing the full cost of this investment should it be treated as O&M expense.

VII. ATMOS ENERGY'S PROPOSED PIPE ANALYSIS AND PRIORITIZATION SYSTEM

Q. HOW HAS ATMOS ENERGY HISTORICALLY PRIORITIZED THE WORK THAT MUST BE COMPLETED ON ITS SYSTEM?

A. Historically, highest priority has been given to reactive projects necessary to eliminate an immediate hazardous threat to public safety and customer reliability. An example of this is a Grade 1 leak, as defined by the American Gas Association's Gas Piping Technology Committee. A Grade 1 leak is a leak that represents an existing or probable hazard to persons or property that requires immediate repair or continuous action until

the conditions are no longer hazardous. Projects that are required to comply with federal, state, and local, regulations and Atmos Energy procedures are the second highest priority. An example is a repair project for a Grade 2 leak within the time limits specified by the Commission. A Grade 2 leak is a leak that is recognized as non-hazardous at the time of detection but is scheduled for repair based on probable future hazard.

The third level of priority has been the reliance on feedback from Company Subject Matter Experts ("SMEs") to determine the scope and priority of infrastructure projects. Within the Company, SMEs include Operations, Engineering, and Compliance personnel who have broad, in-depth knowledge of our systems, design and operating practices and the regulations that are applicable to our facilities and work activities. Historically, system integrity projects that are not included in the categories described above were prioritized based on information obtained through routine operating and maintenance activities. Some of these activities included inspecting services, yard lines, and mains when they are exposed, cathodic protection and pressure monitoring, and pipeline patrols.

But, in this proceeding Atmos Energy is proposing a more proactive approach to system safety and integrity investments going forward consistent with new Federal pipeline safety and integrity regulations.

Q. PLEASE DESCRIBE THE PROACTIVE PROCESS UNDER WHICH ATMOS ENERGY DETERMINES THE SELECTION AND PRIORITIZATION OF PIPE REPLACEMENT PROJECTS IN KANSAS.

A. Atmos Energy uses a risk ranking model to help determine the order in which to replace distribution facilities. The model considers many factors to determine the likelihood of failure and the consequence of failure. Using these factors, the Company calculates a risk ranking of all its distribution facilities in defined geographic areas across 79 cities and their environs. The risk ranking methodology creates a score for each of the defined areas using factors that assess likelihood of failure and consequence of failure. Atmos Energy has had discussions with the Staff regarding our risk ranking in order to provide further insight into the details and mechanics of the risk prioritization model. Based on feedback received we will add additional risk considerations such as the existence of low pressure systems, difficult to locate facilities, and accessibility of facilities to future risk prioritization within the defined geographic areas. We look forward to a continuing dialogue with Staff regarding how to best evaluate and address distribution system risk in order to improve the safety of our system.

Currently, the model used in Kansas is overlaid by a materials-based approach prioritizing bare steel pipe in Class 3 locations, based on the Commission's guidance in the 343 Order. While these projects are expected to remain paramount, our proposal in this case is to have the flexibility to use our more comprehensive, risk-based approach that does not restrict projects based on material type.

Q. PLEASE DESCRIBE THE BENEFITS OF UTILIZING A COMPREHENSIVE RISK-BASED REPLACEMENT APPROACH.

A. This approach will allow Atmos Energy to objectively prioritize replacement projects based on a common set of factors. It will also allow Atmos Energy to ensure that the Company completes projects with the largest impact on improving the overall condition

of its distribution system first. We will be able to see the influence each year as the average combined score for all projects declines. Finally, this methodology provides the Commission and other parties with the ability to audit Atmos Energy's performance under the accelerated replacement program to ensure the projects are being appropriately prioritized and completed.

Q. HOW DOES ATMOS ENERGY MANAGE PIPE REPLACEMENT PROJECTS TO ENSURE THAT THE COSTS ULTIMATELY PAID BY CUSTOMERS ARE REASONABLE?

A. Atmos Energy prioritizes potential pipeline projects using the risk assessment approach explained above, issues a request for proposal ("RFP") for prospective bidders and then retains the appropriate contractor to construct the project. Atmos Energy manages the budget and project appropriately and provides construction inspection services to ensure that the facilities are installed according to plan and in compliance with all applicable standards, laws and regulations. Upon completion of the project, Atmos Energy reviews the project documentation to confirm that it adequately supports federal, state and Company reporting requirements.

Q. WILL ATMOS ENERGY'S PROPOSED SIP ALLOW THE COMMISSION THE OPPORTUNITY TO REVIEW THOSE COSTS FOR PRUDENCY?

A. Yes. Our proposal is to submit proposed projects for Staff's review before they are undertaken, and the actual costs associated with those projects would be reviewed on a historical, quarterly basis and included in rates only when those projects are in service and being used by our customers.

VIII. CONCLUSION

Q. WHY IS ATMOS ENERGY ASKING THE COMMISSION TO APPROVE THE SIP AT THIS TIME?

A. Integrity programs were intended to drive pipeline operators to better understand the threats to and the condition of their assets in order to repair or replace the pipeline proactively. In that regard, where Atmos Energy determines increased risks on our system, we must be able to carefully monitor the issues, devote additional resources, and accelerate work when needed. This includes the removal of materials prone to leaks and potential failure. These steps are necessary to allow Atmos Energy to monitor and inspect its system and renew pipe when needed, rather than doing so in a crisis mode.

The natural gas industry has been undergoing dramatic changes in the way we approach safety and reliability and reexamining the way we evaluate what is the appropriate balance of safety and cost. Today our customers are reaping the benefits of low-cost and plentiful natural gas. At the same time, we must face the reality that our infrastructure is aging and expectations about safety and reliability are being raised in light of recent tragic incidents that have led to fatalities, injuries, and property damage. Given these factors, this rate case provides the Commission with an excellent opportunity to approve a new mechanism designed to implement and fund our investment in the safety and reliability of our natural gas infrastructure.

Q. DOES THAT CONCLUDE YOUR TESTIMONY?

A. Yes, it does.

VERIFICATION

STATE OF KANSAS)
)
COUNTY OF JOHNSON)

Bart W. Armstrong, being duly sworn upon his oath, deposes and states that he is Vice President of Operations of Atmos Energy Corporation's Colorado-Kansas Division; that he has read and is familiar with the foregoing Direct Testimony filed herewith; and that the statements made therein are true to the best of his knowledge, information and belief.

Bart W. Armstrong

Subscribed and sworn before me this 21st day of June, 2019.

Notary Public

My appointment expires: 1/7/22

KEVIN D. JONES
Notary Public
State of Kansas
My Appt. Expires 1/7/22