Exhibit No:	
Issue:	**Safety Basis for Replacement Programs**
Witness:	**Craig R. Hoeferlin**
Type of Exhibit:	**Direct Testimony**
Sponsoring Party:	**Spire Missouri Inc.**
Case Nos.:	**GO-2019-0356, GO-2019-0357**
Date Prepared:	**July 15, 2019**

SPIRE MISSOURI INC.

File Nos. GO-2019-0356, GO-2019-0357

DIRECT TESTIMONY

OF

CRAIG R. HOEFERLIN

July 2019

TABLE OF CONTENTS

DIRECT TESTIMONY OF CRAIG R. HOEFERLIN

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Craig R. Hoeferlin, and my business address is 700 Market Street, St. Louis, Missouri, 63101.

Q. WHAT IS YOUR PRESENT POSITION?

A. I am presently employed by Spire Missouri ("Spire Missouri" or "Company") as Vice President – Operations Services.

Q. PLEASE STATE HOW LONG YOU HAVE HELD YOUR POSITION AND BRIEFLY DESCRIBE YOUR RESPONSIBILITIES.

A. I was appointed to my current position on April 1, 2012. In this capacity, I oversee various operational functions for the Company, including engineering, pipeline safety and replacement programs, environmental compliance, operations training, GIS and system planning, damage prevention, right of way, standards and testing, and employee safety departments.

Q. PLEASE DESCRIBE YOUR EXPERIENCE WITH SPIRE MISSOURI PRIOR TO ASSUMING YOUR CURRENT POSITION.

A. I have been continuously employed by Spire Missouri since June 1984. Prior to my current position, I held a variety of positions in the Engineering, Gas Supply and Control, and Construction and Maintenance Departments.

Q. WHAT OTHER EXPERIENCE DO YOU HAVE WITH REGARDS TO PIPELINE OPERATIONS AND SAFETY?

A. I am a past chair and current member of the Operating Section Managing Committee for the American Gas Association. In this capacity, I interact with the Federal Pipeline and

Hazardous Materials Administration (PHMSA) as well as the staff of the National Transportation Safety Board. I am also a board member of the Common Ground Alliance (CGA) representing the natural gas distribution industry. The CGA is a national organization committed to preventing damage to underground infrastructure. Finally, I am a past president and current member of the Missouri One Call System's (MOCS) Board of Directors,

Q. WHAT IS YOUR EDUCATIONAL BACKGROUND?

A. I received a Bachelor of Science Degree in Chemical Engineering in 1984 from the University of Missouri-Columbia.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS COMMISSION?

A. Yes, I have. I previously submitted testimony in Case Nos. GR-98-374, GR-99-315, GR-2001-629, GR-2013-0171, GO-2016-0332, GO-2016-0333, GO-2017-0201, GO-2017-0202, GM-2017-0018, GO-2018-0309, and GO-2018-0310.

I. PURPOSE OF TESTIMONY

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

A. The purpose of my direct testimony is to address and support certain findings of fact contained in the Commission's Report and Order in Case Nos. GO-2019-0115 and GO-2019-0116 ("2019 cases") as they pertain to this filing regarding the replacement of bare steel and cast-iron infrastructure. I will also continue to expand on information provided by the Company in prior ISRS cases on the requirements established and positions taken by national and state regulators related to pipeline safety, specifically the replacement of bare steel and cast-iron infrastructure.

II. COMMISSION ORDER IN THE 2019 CASES

Q. HAVE YOU REVIEWED THE COMMISSION'S REPORT AND ORDER IN THE 2019 SPIRE MISSOURI ISRS CASES?

A. Yes, I have.

Q. DID THE COMMISSION'S REPORT AND ORDER CONTAIN DESCRIPTIONS OF THE TYPE OF RISKS ASSOCIATED WITH BARE STEEL AND CAST IRON INFRASTRUCTURE?

A. Yes. The Commission stated in its Report and Order at Findings of Fact 24 And 25 that "cast iron pipes are unsafe to use because they tend to graphitize, making the pipe brittle and subject to cracking and leaking." The Commission also acknowledged that the cast iron pipes that are being replaced are sixty to one-hundred years old. Regarding steel infrastructure, the Commission found that steel "that is not cathodically protected corrodes relatively quickly and needs to be replaced" as the "corrosion diminishes wall thickness which causes the possibility of leaks."

Q. AFTER CONSIDERING THESE RISKS, WHAT DID THE COMMISSION CONCLUDE REGARDING BARE STEEL AND CAST IRON PIPES?

A. The Commission determined at Finding of Fact 26 of its Report and Order that the cast iron and bare steel pipe being replaced as part of Spire's replacement programs is in a "worn out or deteriorated state."

Q. HAS THE COMMISSION MADE SIMILAR STATEMENTS IN PRIOR SPIRE ISRS CASES?

A. Yes. In its September 20, 2018 Report and Order in Case Nos. GO-2018-0309 and GO-2018-0310, the Commission stated at p. 13 that "the Commission concludes that the cast iron and steel pipes were replaced to comply with state or federal safety requirements and were worn out or deteriorated, so they are eligible for cost recovery under ISRS." The Commission also described the risks associated with these types of pipe in terms similar to its language in the 2019 cases, including cracking, leaking, and corrosion.

Q. IN THE 2019 CASES, SPIRE MISSOURI WITNESS ROB C. ATKINSON TESTIFIED AT HEARING THAT HE HAD NEVER ENCOUNTERED A CAST IRON OR BARE STEEL PIPE DUG UP THAT WAS NOT IN SOME SORT OF DETERIORATED STATE. DO YOU SHARE THIS OPINION?

A. Yes. Based on my decades of experience, I would fully endorse and affirm the comments made by Mr. Atkinson during the 2019 cases.

Q. DOES THE NATURAL GAS INDUSTRY AND THE SCIENTIFIC COMMUNITY SHARE YOURS' AND MR. ATKINSON'S OPINION ON CAST IRON AND BARE STEEL PIPE?

A. Yes. It has been widely accepted by leading industry experts and organizations, as well as, the scientific community that there are significant risks associated with cast iron and bare steel infrastructure and that there is an acute need to implement aggressive programs to remove this pipe from service.

Q. ARE YOU SPONSORING ANY ADDITIONAL EVIDENCE ON THE RISKS OF CAST IRON AND BARE STEEL PIPE?

A. Yes. Attached to my testimony as Schedule CRH-5 are a sample of photographs illustrating the types of pipe the Company is targeting and taking out of service with its

replacement programs. These images clearly demonstrate the worn out and deteriorated condition of Spire Missouri's cast iron and bare steel pipe and the need for this pipe to be removed from service.

Q. **HAVE THE PROBLEMATIC CHARACTERISTICS OF CAST IRON AND BARE STEEL PIPE BEEN RECOGNIZED FOR SOME TIME?**

A. Yes, while there has certainly been an increased focus in more recent years on eliminating cast iron and bare steel pipe given some of the very serious incidents that have occurred involving such facilities, it is important to recognize that the problematic characteristics of these facilities, as outlined by the PSC in recent Orders, has been known for some time. In fact, Spire Missouri's predecessor, Laclede Gas Company, began replacing certain cast iron and bare steel pipes in the 1950's because of the concerns that existed even then over these characteristics. Clearly, the fact that such facilities pose special risks is not a new or recently discovered phenomenon.

III. FEDERAL AND STATE REQUIREMENTS FOR BARE STEEL AND CAST IRON

Federal Requirements

Q. PLEASE EXPLAIN THE FEDERAL REGULATIONS SPIRE MISSOURI IS SUBJECT TO REGARDING ITS DISTRIBUTION INFRASTRUCTURE.

A. The Natural Gas Pipeline Safety Act of 1968 authorized the Federal Department of Transportation ("DOT") to implement regulations that established pipeline safety requirements for pipeline operators that transport natural gas and other fuels. The DOT rules found at 49 Code of Federal Regulations Part 192 ("Part 192") became effective in

1971 and established minimum safety requirements for pipeline operators that operate natural gas transmission or distribution systems. These regulations established a variety of requirements related to pipeline system components. As part of the 2002 Pipeline Safety Improvement Act, Part 192 was updated to include new requirements related to gas transmission pipelines. The 2006 Pipeline Inspection, Protection, Enforcement, and Safety Act resulted in additional changes to Part 192, including the requirement of the Company to develop and implement a Distribution Integrity Management Program ("DIMP"). Consistent with this mandate, which has been incorporated in the Commission's own safety rule, Spire Missouri's DIMP Plan identifies and prioritizes the risks to the Company's pipeline system. Cast iron and bare steel consistently rank among the highest risks identified in the plan, outside of third party damage, due to the high likelihood of leaks and breaks associated with these types of pipe material. The Commission's Gas Safety Staff is responsible for enforcing these regulations.

Q. **HAVE THESE FEDERAL SAFETY OFFICIALS ACTIVELY ENCOURAGED GAS UTILITIES LIKE SPIRE MISSOURI TO REPLACE CAST IRON AND BARE STEEL FACILITIES?**

A. Yes, they have. Following several tragic incidents in 2010 and 2011, the Secretary of the Department of Transportation, Ray LaHood. sent letters to Governors of each state inviting them and others to a DOT Pipeline Safety Forum at DOT's Washington headquarters to address these issues. A copy of these letters is attached to my testimony as Schedule CRH-1. I attended and participated in this forum. Similarly, a letter was sent to utility commissioners urging them to review their State's replacement plans (for cast iron and

bare steel specifically) and "consider what would be necessary to accelerate these plans." (March 31, 2011 letter from Cynthia Quarterman, DOT Administrator). The stated goal of the DOT's April 2011 Pipeline Safety Forum was "accelerating the rehabilitation, repair, and replacement of critical pipeline infrastructure with known integrity risks."

In December 2011, PHMSA issued a White Paper that reviewed the programs available in various states "to support efforts to accelerate the repair, rehabilitation and replacement of high-risk infrastructure in pipeline systems…" PHMSA looked favorably upon Missouri's ISRS Statute as one of the programs available to protect the public "by ensuring the prompt rehabilitation, repair, or replacement of high-risk gas distribution infrastructure." PHMSA further urged State commissions to "accelerate the repair, rehabilitation, and replacement of high-risk pipeline infrastructure." (PHMSA White Paper, p. 17). A copy of this white paper is attached to my testimony as Schedule CRH-2. In March 2012, PHMSA issued an Advisory Bulletin to gas operators and state pipeline safety representatives on Cast Iron Pipe. The Bulletin urged pipeline operators, like Spire Missouri, to conduct a comprehensive review of their cast iron distribution pipelines and replacement programs, and accelerate the pipeline repair, rehabilitation, and replacement of high risk pipelines. The Bulletin also requested that agencies consider enhancements to cast iron replacement plans and programs. A copy of the March 2012 PHMSA Advisory Bulletin is attached as Schedule CRH-3.

Missouri Requirements

Q. HAS THE MISSOURI COMMISSION ESTABLISHED RULES REGARDING THE REPLACEMENT OF CAST IRON AND STEEL PIPES?

A. Yes. The Commission has determined that public safety requires replacement programs for certain facilities, most notably programs for the replacement of cast iron and unprotected steel facilities – the very programs whose costs are included in the Company's request in these proceedings. The requirement for Spire Missouri to develop and implement such replacement programs can be found at 4 CSR 240-40.030(15)(D)&(E) of the Commission's gas safety rules – provisions that were implemented by the Commission following a number of fatal natural gas explosions that occurred in Missouri in the late 80's.

Q. PLEASE EXPLAIN ANY ADDITIONAL REQUIREMENTS REFLECTED IN THE COMMISSION'S GAS SAFETY RULES.

A. Additional Missouri requirements are reflected at 4 CSR 240-40.030(17), which require that natural gas facility operators like Spire Missouri develop and implement system integrity plans. In addition to mandating that operators develop processes for assessing the risks from leaks and other failures on their system, the rules also require that they "[i]dentify and implement measures to address [such] risks" and [d]etermine and implement measures designed to reduce the risks from failure of its gas distribution pipeline." 4 CSR 240-40.030(17)(D).4

Q. HAS THE COMMISSION PREVIOUSLY ISSUED STATEMENTS REGARDING THE REPLACEMENT OF CAST IRON AND BARE STEEL INFRASTRUCTURE?

A. Yes. In April 2011, the Commission issued a Pipeline Safety Program Report which stated the following:

> "Review of the integrity of older cast iron and steel natural gas pipeline facilities needs to be completed with the possible goal of initiating specific long-term

replacement programs to eliminate significant mileage each year. Currently, there are cast iron natural gas pipelines in service in Missouri that were installed well over 100 years ago. Two Missouri natural gas operators have a combined total of over 1,200 miles of cast iron in their distribution systems. The recommendation is for Staff to have meetings with the utilities that have these facilities and discuss the issue of systematic replacement of the aging infrastructure and the impact on rates. There are integrity issues, maintenance issues, service reliability issues and rate issues involved. The issues are related to safety, but there is also a policy decision that needs to be evaluated to determine the implications of continuing to have cast iron piping in distribution systems 30 years or 40 years from now. There should also be a discussion as to how much it will cost to initiate replacement programs for a specified number of years, and the rate implications of such programs. If the current annual replacement rate for cast iron pipelines (the average over the last three calendar years has been approximately 15 miles annually) continues, it would take over 80 years to replace the cast iron pipelines in Missouri, which could result in cast iron piping that is over 200 years old carrying natural gas. Also, older steel pipelines have been involved in the two recent incidents in Missouri. The age of the steel pipeline, by itself, may not be a determining factor. The age, as well as other integrity factors would need to be included in the review. (Page 26)

A copy of the Commission's Pipeline Safety Program Report is attached as Schedule CRH-4.

Q. HAS THE MISSOURI PUBLIC SERVICE COMMISSION GAS SAFETY STAFF MADE ANY RECOMMENDATIONS ON SPIRE MISSOURIS REPLACEMENT PROGRAMS?

A. The Commission's Gas Safety Staff is continually aware of the ongoing pipe replacement work being performed by Spire Missouri. To my knowledge, the Commission's Gas Safety Staff has never raised any concerns with the pace or nature of this work.

<u>Compliance</u>

Q. HOW DOES THE COMPANY COMPLY WITH THE APPLICABLE FEDERAL AND STATE SAFETY REQUIREMENTS?

A. The Company has always had a statutory duty to provide safe and adequate services and facilities, and it views its replacement programs as providing a cost-effective way of complying with this fundamental requirement.

Q. DO THE COMPANY'S REPLACEMENT PROGRAMS, AS CURRENTLY CONDUCTED, PERMIT THE COMPANY TO COMPLY WITH THE ABOVE-MENTIONED SAFETY REQUIREMENTS IN A COST-EFFECTIVE WAY?

A. Absolutely. Our systematic replacement programs are a critical component of our compliance with these requirements to identify and implement measures to reduce the risks resulting from leaks and other potential failures of Spire Missouri's gas distribution facilities. The Company cites these programs as measures that have been taken to comply with these requirements. An evaluation of leaks and other data shows that they have been very effective in reducing the number of leaks experienced by the Company. In short, the Company's implementation of its replacement programs has permitted it to comply more effectively with the safety requirements that are designed to protect the health and welfare of the Company's customers and the public generally and help prevent horrific incidents like those experienced in 2011.

IV. REGULATORY OVERSIGHT OF PROGRAMS

Q. DO YOU BELIEVE THAT THE STAFF OF THIS COMMISSION HAS EXERCISED AN ADEQUATE LEVEL OF REGULATORY OVERSIGHT REGARDING THE COMPANY'S REPLACEMENT PROGRAMS AND HOW THEY ARE CURRENTLY CONDUCTED?

A. Without question I do. I know from personal experience that the Commission's Safety Staff is actively and routinely involved in assessing the Company's compliance with

various safety requirements, including those relating to the structure and nature of its replacement programs. Among other things, these activities include field audits, the review of annual reports prepared and submitted by the Company and, where appropriate, the submission of data requests or other requests for information. The Safety Staff is also familiar with every major incident involving the Company's facilities and will propose various measures for preventing such incidents in the future. As previously mentioned, I have never heard any member of the Commission's Safety Staff express any reservations about the pace or structure of the Company's replacement programs. In fact, the Staff continues to express strong support for how the Company has carried out these programs.

Q. IN ADDITION TO THE COMMISSION'S SAFETY STAFF HAS THE COMMISSION ITSELF ALSO PROVIDED REGULATORY OVERSIGHT OF THE COMPANY'S REPLACEMENT PROGRAMS?

A. Yes. In September 2012, I represented the Company in presenting details regarding the nature, pace and structure of its replacement programs directly to the Commission at its agenda meeting. In acquiring Missouri Gas Energy ("MGE") in 2013, the Company also advised the Commission, Staff, OPC and other parties of its intent to accelerate the replacement programs of MGE as it recently had for Laclede Gas. The Company's follow-through on that commitment was also prominently addressed by its main policy witness in Spire Missouri's most recent rate proceedings, Case Nos. GR-2017-0215 and 0216. Although I am aware that an extraordinary number of issues were tried in that proceeding, I am unaware of any stakeholder who expressed any concerns or made any recommendations that the Company should change the pace of these replacement programs. In addition, since 2014, the Company has given annual presentations to the

Staff and OPC regarding Spire Missouri's 1 and 3-year plans for carrying out these programs.

Q. ARE THERE OTHER VENUES WHERE THE COMMISSION ITSELF HAS EXERCISED REGULATORY OVERSIGHT?

A. Yes. Every time the Company makes a filing to increase its ISRS charges, filings which frequently occur twice a year, it provides detailed data regarding the cost, progress and results of its various safety programs. Among other key data, this includes the footage of mains and services replaced or retired, the footage of newly installed facilities, and the costs incurred to carry out such activities. The Company also provides a specific identification of the safety rules, mandated public improvement requirements or other circumstances that make these costs eligible for ISRS recovery. The Commission Staff audits each of the Company's ISRS filings, requests additional data, and issues a recommendation. Other parties, like OPC, have also participated in these cases and made their own recommendations. In the end, the Commission considers all this information, conducts any necessary hearings, and issues a Report and Order approving the Company's ISRS charges, with any adjustments the Commission believes are appropriate. The prudence of the Company's replacement programs and associated costs is also subject to review in subsequent rate case proceedings. As noted, there have been no disputes as to the prudence of these costs – just whether there should be an adjustment for the replacement of plastic facilities. Given this level of regulatory involvement, I strongly believe that the pace, scope and nature of the Company's replacement programs has been subject to a degree of regulatory oversight that far exceeds any replacement programs previously undertaken by the Company.

Q. **DOES THIS COMPLETE YOUR DIRECT TESTIMONY?**

A. Yes.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Application of Spire Missouri Inc. to Change its Infrastructure System Replacement Surcharge in its Spire Missouri East Service Territory	))))	**File No. GO-2019-0356**

AFFIDAVIT

STATE OF MISSOURI	)	
	)	SS.
CITY OF ST. LOUIS	)	

Craig R. Hoeferlin, of lawful age, being first duly sworn, deposes and states:

1. My name is Craig R. Hoeferlin. I am Vice President – Operations Services for Spire Missouri Inc. My business address is 700 Market St., St Louis, Missouri, 63101.

2. Attached hereto and made a part hereof for all purposes is my direct testimony on behalf of Spire Missouri Inc.

3. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and correct to the best of my knowledge and belief.

Craig R. Hoeferlin

Subscribed and sworn to before me this 15 day of July 2019.

Notary Public

LANA K SCHNEIDER
Notary Public - Notary Seal
STATE OF MISSOURI
Commissioned for Saint Louis City
My Commission Expires: October 29, 2022
Commission # 18005093