EXHIBIT

Exhibit No.:	
Issue(s):	Cost Recovery Mechanism
Witness/Type of Exhibit:	Robinett/Direct
Sponsoring Party:	Public Counsel
Case No.:	GO-2019-0115 GO-2019-0116

DIRECT TESTIMONY

OF

JOHN A. ROBINETT

Submitted on Behalf of the Office of the Public Counsel

SPIRE MISSOURI INC.
SPIRE MISSOURI EAST SERVICE TERRITORY
SPIRE MISSOURI WEST SERVICE TERRITORY

CASE NO. GO-2019-0115
CASE NO. GO-2019-0116

March 29, 2019

OPC Exhibit No. 200
Date 4-3-19 Reporter TLT
File No. GO-2019-0015 &
GO-2019-0016

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-2019-0115
In the Matter of the Application of Spire Missouri Inc. to Change its Infrastructure System Replacement Surcharge in its Spire Missouri West Service Territory	)))))	File No. GO-2019-0116

AFFIDAVIT OF JOHN A. ROBINETT

STATE OF MISSOURI)
) **ss**
COUNTY OF COLE)

John A. Robinett, of lawful age and being first duly sworn, deposes and states:

1. My name is John A. Robinett. I am a Utility Engineering Specialist for the Office of the Public Counsel.

2. Attached hereto and made a part hereof for all purposes is my direct testimony.

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

John A. Robinett
Utility Engineering Specialist

Subscribed and sworn to me this 29th day of March 2019.

NOTARY PUBLIC NOTARY SEAL STATE OF MISSOURI

JERENE A. BUCKMAN
My Commission Expires
August 23, 2021
Cole County
Commission #13764037

Jerene A. Buckman
Notary Public

My Commission expires August 23, 2021.

TABLE OF CONTENTS

DIRECT TESTIMONY
OF
JOHN A. ROBINETT
SPIRE MISSOURI EAST
SPIRE MISSOURI WEST
CASE Nos. GO-2019-0115 and GO-2019-0116

Q. What is your name and what is your business address?

A. John A. Robinett, P.O. Box 2230, Jefferson City, Missouri 65102.

Q. By whom are you employed and in what capacity?

A. I am employed by the Missouri Office of the Public Counsel ("OPC") as a Utility Engineering Specialist.

Q. Have you previously provided testimony before the Missouri Public Service Commission?

A. Yes. Please see Schedule JAR-D-1.

Q. What is your work and educational background?

A. A copy of my work and educational experience is attached to this testimony as Schedule JAR-D-1.

Q. What is the purpose of your direct testimony?

A. The purpose of this direct testimony is to address Spire's Infrastructure System Replacement Surcharge ("ISRS") applications in Case Nos. GO-2019-0115 and GO-2019-0116. In this testimony I will first address Spire's lack of evidence to show the cast iron and bare steel mains and services it replaced as part of this ISRS request were worn out or deteriorated. Next, I will discuss how the service renewals in Spire East are not ISRS eligible as the primary driver behind those renewals is the movement of meters from inside of residences to outside. Next, I will address the error with Spire's claim that the plastic components it replaced are ISRS eligible just because Spire can provide evidence that it was more cost effective to

replace, rather than reuse, the existing plastic infrastructure. I will also discuss my opinion of Spire's efficiency metric. Finally, I will discuss how the inclusion of large portions of overhead expenses, which are being charged to each ISRS project, demonstrates a high potential for double recovery.

Q. Does your testimony maintain that all of the costs that Spire seeks to recover in these cases are not ISRS eligible?

A. No. After reviewing Spire's application and associated work papers, I have come to the conclusion that, for purposes of this case, there is no reason to conclude that the joint encapsulation projects and relocations Spire performed are not ISRS eligible due to Spire providing sufficient documentation to support these projects. This includes, for example, the various letters Spire received from entities with the power of eminent domain showing the need for relocations due to construction. I also do not challenge recovery of costs for replacements found in the blanket work orders to the extent that those replacements were done for the purpose of repairing leaks.

Eligibility of Cast Iron and Bare Steel Replacements

Q. Has Spire provided any evidence that the cast iron and bare steel mains and services, which it replaced and for which it is seeking recovery in this petition, are worn out or deteriorated?

A. No. Spire's verified application includes a chart that lists every work order for which Spire is seeking ISRS recovery and identifies what portion of the ISRS statue Spire is relying on to demonstrate eligibility for each work order. The vast majority of these work orders cite to

section 393.1009(5)(a) RSMo, which allows ISRS recovery for "mains, valves, service lines, regulator stations, vaults and other pipeline system components installed to comply with state or federal safety requirements as replacements for existing facilities that have worn out or are in deteriorated condition," as the basis for ISRS eligibility. However, Spire has failed to provide any tangible evidence that any of the pipes replaced under the work orders that rely on this section actually meet the definition of "worn out or in a deteriorated condition."

Q. What evidence could Spire have provided to demonstrate that the cast iron and bare steel mains and services that it replaced and is seeking recovery for as part of this petition are worn out or deteriorated?

A. Spire could have tested/provided analysis on the condition of the pipes that it abandoned through a number of different means and provided the results of those processes or procedures to the parties. Spire could also have provided leak history analysis or leak reporting related to each of the work orders or projects similar to the kind of information provided by the Missouri American Water Company as part of its last ISRS case.

Q. Has Spire provided any evidence of testing performed on replaced cast iron and bare steel mains and services?

A. No. I sent Spire several data requests ("DR") related to the subject of testing. One such request asked "For each project please provide evidence of physical testing Spire used to determine mains and services were in worn out and/or deteriorated condition." See DR 8529 in Schedule JAR-D-2. Spire responded by citing its answer to a previous request, wherein it clearly indicated that it had performed no testing because it believes "any effort to perform 'tests' on service lines that cannot be economically or operationally reused would serve no purpose,…."

I also directly requested that Spire "provide copies of any and all testing or other analysis related to interior diameter and outer diameter of any pipe that was retired," to which Spire responded that it "does not perform testing on the interior or outer diameters of pipe." See response to DR 8514 in Schedule JAR-D-3.

Q. Has Spire provided any evidence concerning leak history analysis or leak reporting regarding the cast iron and bare steel mains and services it replaced?

A. No. I sent Spire a data request seeking "all leak analysis or history on a project by project basis for all projects that are classified as strategic replacement." See OPC DR 8535 in Schedule JAR-D-2. Spire responded by stating that it "has generally plotted leak locations for MO East since approx. 2013 and for MO West since approx. 2015; however, the Company does not identify which specific main or service the leak is tied to." See response to OPC DR8535 in Schedule JAR-D-2. This response clearly indicates that Spire is either unable or unwilling to provide locations where previous leaks occurred in a manner that correlates to the projects in the current ISRS applications. In addition, I also requested that Spire "identify, by work order number, each and every work order undertaken for the purpose of repairing leaks that were not designated as a blanket work order." See OPC DR 8537 in Schedule JAR-D-3. Spire responded to this by stating that "as discussed in the Company's application, such leak repairs would be customarily charged to a blanket work order so the Company has not accumulated information for leak repairs not charged to a blanket work order and does not believe that there would be any material level of such repairs." See response to OPC DR 8537 in Schedule JAR-D-3. Therefore, Spire has fully admitted that none of replacements made outside of the blanket work orders were done on the basis of leak repair.

Q. Did Spire provide any indication as to why it was not performing any testing or leak analysis on the pipes it was replacing?

A. Yes. In response to numerous data requests (such as DR 8502 and DR 8503), Spire stated (in reference to the state or federal safety requirements mandating replacement) that "pipes subject to these mandates are by definition worn out or in deteriorated condition." See response to OPC DRs 8502 and 8503 in Schedule JAR-D-3. Therefore, Spire appears to be operating under the assumption that any pipe it replaces as part of a mandated replacement program is "by definition" worn out or deteriorated and that Spire, therefore, does not need to perform any testing or leak analysis to verify that fact.

Q. Is there any reason that Spire should be performing testing or leak analysis on its lines regardless of the definitional argument it makes?

A. Yes. In preparing for this case, I reviewed the "Commission Approved Replacement Plans" that Spire provided in response to my data request 8522. The case file numbers for the plans are GO-2002-50 for Spire West and GO-91-275 for Spire East. Both of these replacement plans included requirements for testing or leak analysis/reporting that Spire is supposed to be performing.

Q. What did the replacement plans that you reviewed say with regard to testing and leak analysis/reporting requirements?

A. The Spire West replacement plan (attached as Schedule JAR-D-4) filed July 30, 2001, in Case No. GO-2002-50 at page 4 paragraph 10 B, discusses how Spire West's predecessor Missouri Gas Energy was to collect a coupon (small sample of pipe) of every cast iron main break and then analyze it for graphitization/corrosion. Paragraph 10J and K also discuss annual leak

surveys for cast iron main 4-inch diameter and smaller, and semi-annual leak surveys on cast iron in business districts respectively. Paragraph 12 on page 8 of the application further discusses a protected bare-steel-replacement program designated as 5-5-3, which means that it triggers replacement of a minimum of 5 miles of pipes if 5 leaks within 500 feet are reported over a three-year period. Additionally, this approved plan included yearly reporting to Commission Gas Safety Staff as well as OPC. However, I am personally unaware of any such report having been developed for the duration of my employment with the OPC.

The Spire East "Commission Approved Replacement Plan" (attached as Schedule JAR-D-5) is found in Case No. GO-91-275 and was filed June 18, 1993. It discusses how Spire, (then Laclede Gas Company) had implemented annual flame-ionization mobile leak survey of all its cast iron mains with additional special surveys conducted when weather/ground conditions warranted.

Q. Are there any other factors that show Spire is seeking recovery for the replacement of pipes that are not worn out or deteriorated?

A. Yes. The service renewals being performed in the Spire East territory are not ISRS eligible.

Q. What is a service renewal?

A. As Spire itself stated in response to a data request I sent, a service renewal occurs when an existing service line is replaced in its entirety with a new service line. See response to OPC DR 8530 attached in Schedule JAR-D-2

Q. Why are these service renewals not ISRS eligible?

A. Based on conversations that I have had with Spire representatives, it is my understanding that these renewals are being performed in Spire East primarily in order to move meters from the

inside of private residences to the outside. This was clarified by the response Spire gave to my DR 8532, which asked if "Spire included as part of this ISRS application any costs associated with the moving of meters from inside of a residence to outside of a residence?" Spire responded, in part, by acknowledging that its "strategic replacement program typically involves the installation of smaller mains and an increase in system pressure, which in turn results in fewer regulator stations and more outside meters." See response to OPC DR 8532 in Schedule JAR-D-2. However, the fact that the service renewals are being done primarily because Spire is moving meters creates a problem for the renewal's eligibility under an ISRS as the current service lines are clearly not worn or deteriorated.

Q. Are there any other types of service line work that may not be ISRS eligible?

A. Yes. It is questionable whether the service transfers that Spire has performed are eligible for recovery under an ISRS.

Q. What is a service transfer?

A. A service transfer is the reconnection of a ratepayer's existing service line to a new main. It requires either the extension or retirement of part of the current service line depending on the location of the new main.

Q. Why might service transfers not be ISRS eligible?

A. While any reconnection will result in a small portion of the existing pipe being replaced, that does not mean that all of the pipe that was added to or subtracted from the existing service line would be a "replacement." Therefore, at least some portions of these service transfers would not be eligible under section 393.1009(5)(a), which, again, is the portion of the ISRS statute that Spire is relying on to establish ISRS eligibility for these projects.

Q. Are there any other considerations that need to be addressed regarding the eligibility of recovery under an ISRS for cast iron and bare steel mains and service replacements?

A. Yes, Spire has previously attempted to rely on the age of the pipes being replaced as a basis for claiming that they are worn out or deteriorated. However, age alone is insufficient to prove that any given segment of pipe is worn out or deteriorated, let alone sufficient to support an entire ISRS application.

Q. Is the statement that age alone is insufficient to prove pipes are worn out or deteriorated consistent with the position taken by the Commission Staff?

A. Yes, Staff's Safety Engineering Manager, Ms. Kathleen McNelis, PE, produced a memorandum that was filed in a Liberty Midstates Gas case (File No. GO-2019-0091) stating at one point that "age of . . . pipe does not meet the criteria used in Staff's evaluation because the age of pipe is not necessarily a safety concern; provided that the pipe is in good condition." While that case dealt specifically with PVC pipes, the logic of Ms. McNelis' conclusion should hold true with absolutely any material.

Q. Is there any other evidence that demonstrates why age alone is not a sufficient factor for determining whether pipes are worn out or deteriorated?

A. In the regulatory context, age of infrastructure is most commonly associated with the concept of depreciation.

> Depreciation as applied to depreciable utility plant, means the loss in service value not restored by current maintenance, incurred in connection with the consumption or perspective retirement of utility plant in the course of service from causes which are known to be in current operation and against which the utility is not protected by insurance. Among these causes to be given consideration are wear and tear, decay, action of the elements, inadequacy,

obsolescence, changes in art, changes in demand, and requirements of public authorities.[1]

The Public Utilities Depreciation Practices published by National Association of Regulatory Utility Commissioners, a publication on which utility depreciation experts commonly rely, define the factors that depreciation accounts for on pages 11 through 18. These pages are attached as Schedule JAR-D-6.

Q. Are there any other depreciation resources that discuss the factors of depreciation?

A. Yes. For example, those factors are discussed on Pages 70 through 73 of Depreciation Systems written by Frank K. Wolf and W. Chester Fitch published by the Iowa State University Press in 1994. Specifically, the authors discuss issues with the use of physical condition as a measure of depreciation. The first issue is that wear and tear do not account for all retirements. The second issue discussed is the difficulty of measuring physical condition. The paragraph ends with the following statement: "Though it is possible to measure directly the wear of railroad track and the corrosion of cast iron pipe, easily measurable wear is not characteristic of most industrial property." These specific pages are attached as Schedule JAR-D-7.

Another depreciation resource that references depreciation factors is the Introduction To Depreciation For Public Utilities and Other Industries published by Edison Electric Institute and American Gas Association in April 2013. The section I rely on in this text discusses the average service life of assets. Attached as Schedule JAR-D-8 is page 59. It

[1] Public Utility Depreciation Practices published by National Association of Regulatory Utility Commissioners, August 1996 page. 13. This definition is footnoted in previous document as sourced from Uniform System of Accounts for Class A and Class B Electric Utilities, 1958, rev.,1962.

defines service life of a unit of property as the number of years elapsing from the time a unit of property is placed into service until it is removed or abandoned. Additionally it defines average service life of an account as the average of the lives of all such units within a plant account.

Q. Why is average service life important?

A. The average service life is used for determining the depreciation rate for a particular account. As a depreciation expert, I expect approximately half of assets to be retired before the average service and half of them to exceed the average service life.

Q. What are the average service lives for Spire East and West for Mains and Services?

A. Attached as Schedule JAR-D-9 are the depreciation rates approved by the Commission in Case Nos. GR-2017-0215 and GR-2017-0216. The average service lives for Spire West are 50 years for mains and 40 years for services. Spire West currently does not have different average service lives by material type for its mains and services unlike Spire East. The average service lives for Spire East for Cast iron main is 80 years, steel mains is 80 years, and plastic mains is 70 years. Spire East's average service lives for steel, plastic, and copper services is 44 years.

Q. What conclusions do you draw from all of this information regarding depreciation and average service lives in relation to Spire's application?

A. All of the resources cited clearly reinforce the statement that age alone is insufficient to prove that any given segment of pipe is worn out or deteriorated. Therefore, the fact that a particular segment of pipe may be older than the average service life for that type of material does not mean that the pipe is in need of replacement.

Q. Does the retirement of plastic that was not worn out and deteriorated raise any other concerns regarding depreciation?

A. Over time the retirements of these portions and segments of plastic mains and services that are being retired that are not in a worn out and deteriorated will eventually affect the useful life of the main or service of plastic when added up over time. In other words, Spire's continued retirement of pipe that is not worn out or deteriorated will result in an inaccurate measure of the useful life of that plant.

Q. Is there anything that the Commission can do to remedy this potential issue from occurring?

A. Yes. For purposes of depreciation records, the Commission could order Spire to record all plastic main and services retired as part of ISRS projects as outlier retirements which are removed from the depreciation data when a future depreciation study is performed.

Q. Finally, did the recommendation filed by Staff in this case address the question of whether the cast iron and bare steel mains and services that Spire replaced were ISRS eligible?

A. No. Staff's recommendation did not cite to any evidence demonstrating that the cast iron and bare steel mains and services that Spire replaced were ISRS eligible. In fact, I separately issued data requests to Staff that specifically asked what evidence Staff relied on to determine that the cast iron and bare steel mains and services that Spire replaced were ISRS eligible, and Staff responded by simply citing to the company's work papers and avoided cost studies, none of which remotely address the question of ISRS eligibility for the cast iron and bare steel mains and services.

Spire's Attempt to Recover ISRS Ineligible Plastic

Q. Are both Spire Missouri East and Spire Missouri West seeking recovery of the cost of replacement of plastic mains and service lines that were not worn out or deteriorated from its customers?

A. Yes. In direct contradiction to the Missouri Court of Appeals Western Districts' ("Western District") mandate, Spire is seeking recovery of replacement costs for plastic that was not worn out or deteriorated as part of this ISRS filing for both its Missouri East and West territories.

Q. Why is Spire seeking to recover costs for the replacement of plastic that the Western District has held is not eligible?

A. Spire has presented numerous avoided cost studies that it argues show that it was more cost effective for it to replace, as opposed to reuse, the existing plastic pipes in many of the work projects that it undertook. Spire appears to be operating under the assumption that this fact alone makes these replacements ISRS eligible based on the Commission *Report and Order* issued in GO-2018-0309 and GO-2018-0310.

Q. Do you agree with Spire's assessment?

A. No. Due to the press of business and the limitations of our office, I have been unable to independently verify the accuracy of Spire's avoided cost studies. However, even assuming for the sake of argument that Spire's avoided cost studies are correct, such avoided costs would not make these plastic component replacements ISRS eligible. All that the avoided cost studies show is that it would have been *imprudent* for Spire to have reused as opposed to have replaced the plastic in those work orders for which it was cheaper to replace than to reuse.

The problem for Spire, though, is that ISRS eligibility does not turn on the question of prudence. In fact, Spire, as a regulated utility, is always required to perform its services in a prudent manner for its rate payers. Therefore, the fact that Spire chooses to act prudently as opposed to imprudently does not cure the lack of ISRS eligibility. Moreover, it should be pointed out that, to the best of my knowledge, the OPC did not challenge the operations or practices of Spire relating to the replacement of the plastic portions of mains as Spire stated it was a safety related issue because less connections equals a safer system. In other words, the OPC is not arguing that Spire should have reused existing plastic as opposed to replacing it. Instead, the OPC is challenging only Spire's ability to recover the costs associated with these replacements through an ISRS, based solely on the fact that they are not ISRS eligible because the plastic mains and services were not in a worn out or deteriorated condition, a point Spire has never denied.

Q. In your opinion, should Spire be allowed to recover any portion of the costs related to the replacement of plastic mains and services that were not worn out or in a deteriorated condition?

A. No. Counsel has advised that the Missouri Courts have spoken on this point and spoken clearly. Spire may not collect costs associated with the replacement of plastic components that are not worn out or in a deteriorated condition. As for Spire's claim that there are no costs associated with the replacement of plastic components, it is important to acknowledge that there will always be a cost under any method that is used for ineligible main replacement. For example, even if there is less pipe going into the ground, due to a modification of Spire's gas distribution system brought on by a change in pressure, that does not mean that it did not cost

something to replace that portion of main. Similarly, just because it is cheaper to replace the entire main rather than reuse an existing portion does not mean there were no costs associated with the replacement of that portion of main.

Q. Is it possible to calculate a specific disallowance for just the replacement of plastic mains and services?

A. In my opinion, the Commission should disallow cost recovery related to all the replacements Spire claims as ISRS eligible based on Spire's failure to show that those replacements were of infrastructure that was truly worn out or deteriorated. However, it is possible to calculate a disallowance for just the replacement of plastic infrastructure using the same methodology employed by Staff and ordered by the Commission in the GO-2018-0309 and GO-2018-0310 cases. Unfortunately, I have not been able to personally perform this calculation do to the press of business and the limitations of our office. Any such calculation would therefore have to be performed during a reconciliation as ordered by this Commission.

Problems Concerning Spire's Overhead Costs

Q. What issue do you take with the amount of overhead being charged to the ISRS projects for Spire East and West?

A. On many of the projects in this ISRS petition for both Spire East and West a large percentage of the projects costs are for overhead. In fact overhead makes up on average 55% and 45% of the total cost of each project performed in Spire East and West respectively. See Schedule JAR-D-10.

Q. Are these costs already being collected from ratepayers as part of rates set in Case GR-2017-0215 and GR-2017-0216?

A. More than likely yes. The Company has not been able to provide any evidence that these costs are not already being recovered from customers. Attached as Schedule JAR-D-11 is the data request seeking evidence that these expenses were not covered by rates currently being collected from rate payers. The Company responded to OPC data request number 1(c) by stating:

> Projects are flagged as ISRS eligible or non-ISRS eligible. Those projects that are deemed ISRS eligible are all projects that meet the requirements within the ISRS statute including the requirement that all projects "were not included in the gas corporation's rate base in its most recent general rate case." Therefore, overheads for projects that are deemed ISRS eligible are incremental to any overheads associated with projects that are included in the rate base used in the Company's current base rate revenue requirement....

See JAR-D-12.

However, this is not a satisfactory answer as explained in the direct testimony of Robert E. Schallenberg.

Q. What is your recommendation for overhead costs?

A. Overhead expenses sought to be recovered through these ISRS petitions should be disallowed for two reasons. First, it is evident they are imprudent, based on their size alone, given that they average to approximately 45 percent and 55 percent of all expenses in each project for Spire West and East respectively. Second, Spire has been unable or unwilling to provide information that would prove that these costs are not already being collected from rate payers as described in OPC witness Schallenberg's testimony. This reduction of overhead would significantly reduce the size of Spire's request in these ISRS petitions. In the event the

Commission chooses not to disallow these costs, then I would recommend opening an investigatory docket as described by OPC witness Schallenberg.

Conclusion

Q. Can you please summarize your testimony for the Commission?

A. The Commission should disallow recovery for the replacement of any cast iron, bare steel, or plastic mains or service lines that are not worn out or in a deteriorated condition and should further disallow the overhead costs that Spire has booked to any of its ISRS work orders since Spire has been unable to prove that they are not already collecting overhead expenses/charges for these ISRS projects in base rates.

Q. Is OPC recommending that Spire should receive no recovery for the projects subject to this ISRS petition?

A. No. First OPC is accepting, for purposes of this case, ISRS eligibility of any joint encapsulation projects and relocations due, in part, to Spire providing documentation from entities with the power of eminent domain that verify the need for such relocations. OPC is also not challenging the blanket work orders to the extent that they include any replacements which relate to the repair of leaks, as such leaks are themselves evidence that the pipes being replaced are worn out or in a deteriorated condition. More importantly OPC is not recommending that Spire never be allowed to recover costs associated with the remaining portions of these projects. OPC is simply stating that these costs are just not eligible for expedited recovery through ISRS. Spire may still file a general rate proceeding

to request that any capital additions that are not deemed eligible for recovery under the ISRS statue be included in new rates.

Q. Does this conclude your direct testimony?

A. Yes, it does.

John A. Robinett

I am employed as a Utility Engineering Specialist for The Missouri Office of the Public Counsel (OPC). I began employment with OPC in August of 2016. In May of 2008, I graduated from the University of Missouri-Rolla (now Missouri University of Science and Technology) with a Bachelor of Science degree in Mechanical Engineering.

During my time as an undergraduate, I was employed as an engineering intern for the Missouri Department of Transportation (MoDOT) in their Central Laboratory located in Jefferson City, Missouri for three consecutive summers. During my time with MoDOT, I performed various qualification tests on materials for the Soil, Aggregate, and General Materials sections. A list of duties and tests performed are below:

- Compressive strength testing of 4" and 6" concrete cylinders and fracture analysis
- Graduations of soil, aggregate, and reflective glass beads
- Sample preparations of soil, aggregate, concrete, and steel
- Flat and elongated testing of aggregate
- Micro-deval and LA testing of aggregate
- Bend testing of welded wire and rebar
- Tensile testing of welded, braided cable, and rebar
- Hardness testing of fasteners (plain black and galvanized washers, nuts, and bolts)
- Proof loading and tensile testing of bolts
- Sample collection from active road constructions sites
- Set up and performed the initial testing on a new piece of equipment called a Linear Traverse / Image Analysis
- Wrote operators manual for the Linear Traverse / Image Analysis Machine
- Trained a fulltime employee on how to operate the machine prior to my return to school
- Assisted in batching concrete mixes for testing, mixing the concrete, slump cone testing, percent air testing, and specimen molding of cylinders and beams

Upon graduation, I accepted a position as an Engineer I in the Product Evaluation Group for Hughes Christensen Company, a division of Baker Hughes, Inc. (Baker), an oil field service company. During my employment with Baker, I performed failure analysis on oil field drill bits as well as composed findings reports which were forwarded to the field engineers in order for them to report to the company the conclusions of the failure causes.

I previously was employed as a Utility Engineering Specialist I, II, III for the Missouri Public Service Commission (Commission). My employment with the Commission spanned from April of 2010 to August of 2016. My duties involved analyzing deprecation rates and studies for utility companies and presenting expert testimony in rate cases before the Commission.

JOHN A. ROBINETT
SUMMARY OF CASE PARTICIPATION

Listed below are the cases in which I have supplied testimony, comments, and/or depreciation rates accompanied by a signed affidavit.

Company	Case Number	Issue	Party
Empire District Electric Company	EA-2019-0010	Rebuttal and Surrebuttal Testimony CCN Application	Office of the Public Counsel (OPC)
Kansas City Power & Light Company Greater Missouri Operations	EU-2019-0197 EC-2019-0200	Affidavit for an Accounting Order for plant retirement	OPC
Ameren Missouri	EA-2018-0202	Surrebuttal Testimony Depreciation Life	OPC
Spire Missouri East Spire Missouri West	GO-2018-0309 GO-2018-0310	Direct and Live Rebuttal Testimony ISRS	OPC
Kansas City Power & Light Company	ER-2018-0145	Direct and Rebuttal, Surrebuttal, and True-up direct Testimony, Depreciation and O&M expense related to retired generation units, ONE CIS Allocation	OPC
Kansas City Power & Light Company Greater Missouri Operations	ER-2018-0146	Direct and Rebuttal, Surrebuttal, and True-up direct Testimony, Depreciation and O&M expense related to retired generation units, ONE CIS Allocation, Removal of Additional Amortization	OPC
Empire District Electric Company	EO-2018-0092	Rebuttal, Surrebuttal, Affidavit in Opposition, additional Affidavit and Live Testimony	OPC
Liberty Utilities (Midstates Natural Gas) Corp. d/b/a Liberty Utilities	GR-2018-0013	Rebuttal and Surrebuttal Testimony depreciation, general plant amortization	OPC

JOHN A. ROBINETT
SUMMARY OF CASE PARTICIPATION

Company	Case Number	Issue	Party
Laclede Gas Company Missouri Gas Energy Spire Missouri East Spire Missouri West	GO-2016-0332 GO-2016-0333 GO-2017-0201 GO-2017-0202 GR-2017-0215 GR-2017-0216	ISRS Over collection of depreciation expense and ROE based on Western District Opinion Docket No. WD80544	OPC
Gascony Water Company, Inc.	WR-2017-0343	Rebuttal, Surrebuttal, and Live Testimony rate base, depreciation NARUC USoA Class designation	OPC
Missouri American Water Company	WR-2017-0285	Direct, Rebuttal, Surrebuttal, and Live Testimony depreciation, ami, negative reserve, Lead Line	OPC
Indian Hills Utility Operating Company, Inc.	WR-2017-0259	Direct, Rebuttal, Surrebuttal, and Live Testimony Rate Base (extension of electric service, leak repairs)	OPC
Laclede Gas Company Missouri Gas Energy	GR-2017-0215 GR-2017-0216	Direct, Rebuttal, Surrebuttal, True-up Rebuttal, and Live Testimony depreciation, retirement work in progress, combined heat and power, ISRS	OPC
Empire District Electric Company	EO-2018-0048	IRP Special issues	OPC
Kansas City Power & Light Company	EO-2018-0046	IRP Special issues	OPC
Kansas City Power & Light Company Greater Missouri Operations	EO-2018-0045	IRP Special issues	OPC
Kansas City Power & Light Company Greater Missouri Operations	EO-2017-0230	2017 IRP annual update comments	OPC

JOHN A. ROBINETT
SUMMARY OF CASE PARTICIPATION

Company	Case Number	Issue	Party
Empire District Electric Company	EO-2017-0065	Direct, Rebuttal, Surrebuttal, and Live Testimony FAC Prudence Review Heat Rate	OPC
Ameren Missouri	ER-2016-0179	Direct, Rebuttal, Testimony Heat Rate Testing &Depreciation	OPC
Kansas City Power & Light Company	ER-2016-0285	Direct, Rebuttal, Surrebuttal, and Live Testimony Heat Rate Testing &Depreciation	OPC
Empire District Electric Company Merger with Liberty	EM-2016-0213	Rebuttal Testimony	Missouri Public Service Commission (MOPSC)
Empire District Electric Company	ER-2016-0023	Depreciation Study, Direct, Rebuttal, and Surrebuttal Testimony	MOPSC
Hillcrest Utility Operating Company, Inc.	SR-2016-0065	Depreciation Review	MOPSC
Hillcrest Utility Operating Company, Inc.	WR-2016-0064	Depreciation Review	MOPSC
Missouri American Water Company	WR-2015-0301	Depreciation Study, Direct, Rebuttal, and Surrebuttal Testimony	MOPSC
Bilyeu Ridge Water Company, LLC Midland Water Company, Inc. Moore Bend Water Utility, LLC Riverfork Water Company Taney County Water, LLC Valley Woods Utility, LLC(Water) Valley Woods Utility, LLC(Sewer) Consolidated into Ozark International, Inc.	WR-2015-0192 WR-2015-0193 WR-2015-0194 WR-2015-0195 WR-2015-0196 WR-2015-0197 SR-2015-0198 Consolidated into WR-2015-0192	Depreciation Review *filed depreciation rates not accompanied by signed affidavit	MOPSC
I. H. Utilities, Inc. sale to Indian Hills Utility Operating Company, Inc.	WO-2016-0045	Depreciation Rate Adoption CCN	MOPSC

JOHN A. ROBINETT
SUMMARY OF CASE PARTICIPATION

Company	Case Number	Issue	Party
Missouri American Water Company CCN City of Arnold	SA-2015-0150	Depreciation Rate Adoption CCN	MOPSC
Empire District Electric Company	ER-2014-0351	Direct, Rebuttal, and Surrebuttal Testimony	MOPSC
West 16th Street Sewer Company, W.P.C. Sewer Company, Village Water and Sewer Company, Inc. and Raccoon Creek Utility Operating Company, Inc.	SM-2015-0014	Depreciation Rate Adoption	MOPSC
Brandco Investments LLC and Hillcrest Utility Operating Company, Inc.	WO-2014-0340	Depreciation Rate Adoption, Rebuttal Testimony	MOPSC
Liberty Utilities (Midstates Natural Gas) Corp. d/b/a Liberty Utilities	GR-2014-0152	Direct, Rebuttal, Surrebuttal and Live Testimony	MOPSC
Summit Natural Gas of Missouri, Inc	GR-2014-0086	Depreciation Study, Direct and Rebuttal Testimony	MOPSC
P.C.B., Inc.	SR-2014-0068	Depreciation Review	MOPSC
M.P.B., Inc.	SR-2014-0067	Depreciation Review	MOPSC
Roy-L Utilities	WR-2013-0543	Depreciation Review	MOPSC
Roy-L Utilities	SR-2013-0544	Depreciation Review	MOPSC
Missouri Gas Energy Division of Laclede Gas Company	GR-2014-0007	Depreciation Study, Direct and Rebuttal Testimony	MOPSC
Central Rivers Wastewater Utility, Inc.	SA-2014-00005	Depreciation Rate Adoption	MOPSC
Empire District Electric Company	ER-2012-0345	Depreciation Study, Direct, Rebuttal, and Surrebuttal Testimony	MOPSC
Empire District Electric Company	WR-2012-0300	Depreciation Review	MOPSC
Laclede Gas Company	GO-2012-0363	Depreciation Authority Order Rebuttal, Surrebuttal and Live Testimony	MOPSC
Moore Bend Water Company, Inc. sale to Moore Bend Water Utility, LLC (Water)	WM-2012-0335	Depreciation Rate Adoption	MOPSC
Oakbrier Water Company, Inc.	WR-2012-0267	Depreciation Review	MOPSC
Lakeland Heights Water Co., Inc.	WR-2012-0266	Depreciation Review	MOPSC

JOHN A. ROBINETT
SUMMARY OF CASE PARTICIPATION

Company	Case Number	Issue	Party
R.D. Sewer Co., L.L.C.	SR-2012-0263	Depreciation Review	MOPSC
Canyon Treatment Facility, LLC	SA-2010-0219	Depreciation Rate Adoption- CCN	MOPSC
Taney County Water, LLC	WR-2012-0163	Depreciation Review	MOPSC
Sale of Saddlebrooke Water and Sewer Infrastructure, LLC to Missouri American Water Company (Sewer)	SA-2012-0067	Rebuttal Testimony	MOPSC
Sale of Saddlebrooke Water and Sewer Infrastructure, LLC to Missouri American Water Company (Water)	WA-2012-0066	Rebuttal Testimony	MOPSC
Midland Water Company, Inc.	WR-2012-0031	Depreciation Review	MOPSC
Sale of KMB Utility Corporation to Algonquin Water Resources of Missouri, LLC, d/b/a Liberty Water (Sewer)	SO-2011-0351	Depreciation Rate Adoption	MOPSC
Sale of KMB Utility Corporation to Algonquin Water Resources of Missouri, LLC, d/b/a Liberty Water (Water)	WO-2011-0350	Depreciation Rate Adoption	MOPSC
Sale of Noel Water Company, Inc. to Algonquin Water Resources of Missouri, LLC, d/b/a Liberty Water (Water)	WO-2011-0328	Depreciation Rate Adoption	MOPSC
Sale of Taney County Utilities Corporation to Taney County Water, LLC (Water)	WM-2011-0143	Depreciation Rate Adoption	MOPSC
Empire District Electric Company	ER-2011-0004	Depreciation Study, Direct, Rebuttal, and Surrebuttal Testimony	MOPSC
Rex Deffenderfer Enterprises, Inc.	WR-2011-0056	Depreciation Review	MOPSC
Tri-States Utility, Inc	WR-2011-0037	Depreciation Review	MOPSC
Southern Missouri Gas Company, L.P.	GE-2011-0096	Depreciation Study Waiver	MOPSC
Southern Missouri Gas Company, L.P.	GR-2010-0347	Depreciation Review	MOPSC
KMB Utility Corporation (Sewer)	SR-2010-0346	Depreciation Review	MOPSC
KMB Utility Corporation (Water)	WR-2010-0345	Depreciation Review	MOPSC
Middlefork Water Company	WR-2010-0309	Depreciation Review	MOPSC

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	)	File Nos. GO-2019-0115
Surcharge in its Spire Missouri East	)	GO-2019-0116
Service Territory	)	

RESPONSES OF SPIRE MISSOURI, INC. TO PUBLIC COUNSEL DATA REQUEST NOS. 8523 – 8537

Present below are the Responses of Spire Missouri, Inc. ("Spire" or "Company") Data Request Nos 8523-8537 as submitted by the Office of the Public Counsel on February 26, 2019.

These responses were prepared by or under the supervision of Wes Selinger.

DATA REQUEST/RESPONSE.

8523. Please provide all documentation that defines how overhead is determined and charged for each project claimed as ISRS eligible.

Response: The Company is unclear of how to respond to this request because the definition of "overhead" is vague. There are a variety of types of overheads, including department clearings, mechanical equipment clearings, vehicle hours, pension and group insurance, and other indirect charges etc. This request needs to be more narrowly defined in order for the Company to answer in a meaningful way.

8524. Please provide a narrative response as to why overhead costs on the projects claimed as ISRS eligible range between 50 to 60 percent of total project cost. Include a description of what, if any, safeguards Spire has put in place or are otherwise operational to detect and safeguard that overhead included in base rates is not being charged under ISRS rates.

Response: The calculation of overheads allocated to capital projects is performed according to the Company's accounting practices. To the extent that such overheads are capitalized, the capitalized portion is excluded from the O&M expense that is otherwise used to set rates in a rate case thereby ensuring there is no "double counting" of such costs.

8525. Please provide a narrative response describing Spire's "strategic replacement program" and setting forth the purpose for the replacements of mains as part of that strategic replacement program?

Response: The word "strategic" is simply used to define a program where replacement

work mandated by safety requirements is performed in the most orderly and efficient manner so that customers are charged less for the work performed and the utility services that it will enable the Company to provide. Please also see the testimony presented by the Company in August and September 2018 in several ISRS cases, including Case Nos. GO-2018-0309 and GO-2018-0310.

8526. Does the strategic replacement program result in an increased pressure system?

Response: It may or may not facilitate such a result depending on what facilities are being replaced, the existing pressure capabilities of the facilities being replaced, and other factors. It is typical that pressure is increased to allow for the use of smaller main, fewer regulator stations, and outside meters, all of which benefit the customer due to lower installation and operating costs.

8527. Please provide the plant in service and reserve balances separately for the cast iron mains, steel mains, and plastic mains for year end balances beginning with December 31, 2003 when the ISRS statute was passed through December 31, 2018.

Response: See the table below with the requested information for periods covered by the Company's current ISRS filings.

Cast Iron Main - Plant and Reserve Balances

Company	Plant Account	End Date	Plant Balance	Reserve Balance
Missouri East	376200-Mains - Cast Iron	12/31/2017	$ 22,637,731.68	$ 1,362,636.12
Missouri East	376200-Mains - Cast Iron	12/31/2018	$ 25,389,658.63	$ (920,285.63)
Missouri West	376.20 - Mains - Cast Iron	12/31/2017	$ 36,504,559.96	$ 9,013,629.82
Missouri West	376.20 - Mains - Cast Iron	12/31/2018	$ 36,559,010.24	$ 7,627,215.96

Steel Iron Main - Plant and Reserve Balances

Company	Plant Account	End Date	Plant Balance	Reserve Balance
Missouri East	376100-Mains - Steel	12/31/2017	$ 237,714,137.00	$ 140,021,977.68
Missouri East	376100-Mains - Steel	12/31/2018	$ 237,514,163.87	$ 140,154,562.04
Missouri West	376100-Mains - Steel	12/31/2017	$ 235,536,551.58	$ 106,426,963.22
Missouri West	376100-Mains - Steel	12/31/2018	$ 235,446,129.69	$ 104,420,483.46

Plastic Main - Plant and Reserve Balances				
Company	Plant Account	End Date	Plant Balance	Reserve Balance
Missouri East	376300-Mains - Plastic	12/31/2017	$ 505,192,356.98	$ 82,707,524.78
Missouri East	376300-Mains - Plastic	12/31/2018	$ 564,354,114.30	$ 86,389,474.42
Missouri West	376300-Mains - Plastic	12/31/2017	$ 348,908,261.24	$ 78,928,926.35
Missouri West	376300-Mains - Plastic	12/31/2018	$ 456,716,558.39	$ 83,194,534.16

8528. Please provide the plant in service and reserve balances separately for the cast iron service lines, steel service lines, copper service lines, and plastic service lines for year end balances beginning with December 31, 2003 when the ISRS statute was passed to December 31, 2018.

Response: Please see the table below with the requested information for periods covered by the Company's current ISRS filings.

Company	Plant Account	Retirement Unit	End Date	Plant Balance	Reserve Balance
Missouri East	380100-Services - Steel	Services - Steel	12/31/2017	$ 39,035,497.59	$ 36,682,552.05
Missouri East	380200-Services - Plastic & Copper	Services - Plastic	12/31/2017	$ 668,233,454.33	$ 246,575,432.48
Missouri East	380200-Services - Plastic & Copper	Services - Copper	12/31/2017	$ 9,113,387.22	$ 10,510,673.35
				$ 716,382,339.14	$ 293,768,657.88
Missouri East	380100-Services - Steel	Services - Steel	12/31/2018	$ 39,189,716.83	$ 36,333,748.94
Missouri East	380200-Services - Plastic & Copper	Services - Plastic	12/31/2018	$ 701,649,399.62	$ 253,830,369.97
Missouri East	380200-Services - Plastic & Copper	Services - Copper	12/31/2018	$ 8,415,951.05	$ 9,729,795.71
				$ 749,255,067.50	$ 299,893,914.62
Missouri West	380100-Services - Steel	Services - Steel	12/31/2017	$ 7,227,631.00	$ 5,141,249.00
Missouri West	380200-Services - Plastic & Copper	Services - Plastic	12/31/2017	$ 414,769,703.65	$ 217,468,288.43
Missouri West	380200-Services - Plastic & Copper	Services - Copper	12/31/2017	$ -	$ -
				$ 421,997,334.65	$ 222,609,537.43
Missouri West	380100-Services - Steel	Services - Steel	12/31/2018	$ 7,090,114.69	$ 4,632,875.20
Missouri West	380200-Services - Plastic & Copper	Services - Plastic	12/31/2018	$ 439,085,067.74	$ 219,149,209.78
Missouri West	380200-Services - Plastic & Copper	Services - Copper	12/31/2018	$ -	$ -
				$ 446,175,182.43	$ 223,782,084.98

8529. For each project please provide evidence of physical testing Spire used to determine mains and services were in worn out and/or deteriorated condition. If no testing was performed, please describe the process Spire used to determine that the mains or services being replaced were worn out and/or deteriorated?

Response: Please see the Company's response to OPC DR 8519 in this proceeding.

8530. Please provide a narrative description of what a service renewal is?

Response: Generally speaking, a service renewal occurs when an existing service line is replaced with a new service line.

8531. Please provide a narrative description of what a service transfer is?

Response: Generally speaking, a service transfer occurs when an existing service line is "transferred" onto to a newly installed main.

8532. Has Spire included as part of this ISRS application any costs associated with the moving of meters from inside of a residence to outside of a residence? If yes, please explain what is the nature of the costs included and please quantify their value.

Response: As noted in the Company's response to DR 8526, the strategic replacement program typically involves the installation of smaller mains and an increase in system pressure, which in turn results in fewer regulator stations and more outside meters. The costs of these actions are taken into account in determining the net cost of replacing cast iron and unprotected steel mains under the Company's strategic replacement program. Of course, moving inside meters to the outside of the customer's premises has the added benefit of permitting meter inspections related to safety, billing or operational considerations to be undertaken without obtaining access to the premises. In the future, this will naturally result in lower costs and less inconvenience to customers. However, these indisputable future savings have not been included in the computation of the net cost to replace the cast iron and bare steel mains under the mandatory safety replacement programs

8533. As part of this ISRS filing has Spire included costs for the installation of regulators at residences? If yes, please provide Spire's authority for inclusion under this ISRS request.

Response: The costs of the actual regulators are not included in the ISRS; however, the costs associated with reconnecting customers' service lines will be included.

8534. Please provide an average cost to run a new service line, install a new meter, and install a regulator at an individual residence.

Response: The cost to renew a service and upgrade a meter can vary based on a wide variety of factors and assumptions; therefore, an average cost, such as that requested in this DR, cannot be calculated in any meaningful way without more specificity regarding which of the numerous possible configurations resulting from these factors and assumptions are being utilized.

8535. Please provide all leak analysis or history on a project by project basis for all projects that are classified as strategic replacement.

Response: The Company has generally plotted leak locations for MO East since approx. 2013 and for MO West since approx. 2015; however, the Company does not identify which specific main or service the leak is tied to. Please see the link below to the PHMSA annual report data. Follow the instructions to open the Gas Distribution Annual Data ZIP File under Related Links. This annual reporting information contains leak information for the Company. It should also be noted data for 2018 was sent to PHMSA recently and has not

been uploaded.

https://www.phmsa.dot.gov/data-and-statistics/pipeline/gas-distribution-gas-gathering-gas-transmission-hazardous-liquids

8536. Please provide for 10 random projects with individual costs greater than $25,000 in this ISRS request (excluding blanket work orders), all evidence in Spire's possession that the mains and services replaced were in worn out and deteriorated condition.

Response: Other than facilities replaced because of relocations mandated by governmental entities, any replacements of plastic main were performed as part of a Commission mandated replacement programs or because of a leak, defect or other flaw, that was not the result of a third party action, that necessitated immediate replacement. This is precisely the type of work contemplated by the ISRS Statute and such facilities are, by definition, worn out or in a deteriorated condition. Furthermore, the engineering analyses provided by the Company of the various ISRS projects carried out under its replacement programs demonstrate that there is no cost associated with replacing rather than reusing any facilities, such as plastic, that may not be fully worn out or in a deteriorated condition, but instead a cost savings. The Company has provided multiple engineering analysis on all of its ISRS project with costs greater than $25,000 that demonstrate this fact. Also please see the Company's responses to OPC DR's 8514 and 8519 in this proceeding.

8537. Please identify, by work order number, each and every work order undertaken for the purpose of repairing leaks that were not designated as a blanket work order.

Response: As discussed in the Company's application, such leak repairs would be customarily charged to a blanket work order so the Company has not accumulated information for leak repairs not charged to a blanket work order and does not believe that there would be any material level of such repairs.

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-2019-0115

RESPONSES OF SPIRE MISSOURI, INC. TO PUBLIC COUNSEL DATA REQUEST NOS. 8500 – 8522

Present below are the Responses of Spire Missouri, Inc. ("Spire" or "Company") Data Request Nos 8500-8522 as submitted in by the Office of the Public Counsel on February 25, 2019. Please note that such responses are being submitted subject to the Company's March 4, 2019 letter objecting to certain of these data requests. These responses were prepared by or under the supervision of Wes Selinger.

DATA REQUEST/RESPONSE.

8500. Please provide all documents created by Spire East for all work orders and all documents required by the FERC USOA to support costs included in the work orders, for all projects included in this ISRS petition for July 1, 2018 through November 30, 2018 and where the total cost of the project exceeds $75,000 (please note the documents to be produced are work orders, not work order authorization sheets).

Response: The Company is not able to respond to this request as it is not clear what documentation is being requested. The Company is not aware of any documents required by the FERC Uniform System of Accounts to support costs for additions to plant in service.

8501. Please provide all documents created by Spire East for all work orders and all documents required by FERC USOA to support costs included in the work orders, for all projects included in this ISRS petition for December 2018 and January 2019 and where the total cost of the project exceeds $75,000 (please note the documents to be produced are work orders, not work order authorization sheets).

Response: See the response to 8500.

8502. Please identify, by individual work order number, all work orders wherein Spire East's ISRS petition seek to recover any costs associated with replacing steel main segments that are not worn out or in deteriorated condition. For purposes of this request, a segment refers to just

the portion of steel main, and does not include attached portions of cast iron main.

Response: Other than facilities replaced because of relocations mandated by governmental entities, any replacement of steel main segments was performed as part of Commission mandated replacement programs or because of a leak, defect, or other flaw that necessitated immediate replacement. This is precisely the type of work contemplated by the ISRS Statute. Pipes subject to these mandates are by definition worn out or in deteriorated condition.

8503. Please identify, by individual work order number, all work orders wherein Spire East's ISRS petition seek to recover any costs associated with replacing steel service lines or service line segments that are not worn out or in deteriorated condition. For purposes of this request, a segment refers to just the portion of steel service line, and does not include attached portions of plastic or copper service lines.

Response: Other than facilities replaced because of relocations mandated by governmental entities, any replacement of steel service lines was performed as part of a Commission mandated replacement programs or because of a leak, defect or other flaw that necessitated immediate replacement. This is precisely the type of work contemplated by the ISRS Statute. Pipes subject to these mandates are by definition worn out or in deteriorated condition.

8504. Please identify, by individual work order number, all work orders wherein Spire East's ISRS petition seek to recover costs associated with replacing plastic main segments that are not worn out or in deteriorated condition. For purposes of this request, a segment refers to just the portion of plastic main, and does not include attached portions of cast iron main.

Response: Other than facilities replaced because of relocations mandated by governmental entities, any replacements of plastic main were performed as part of a Commission mandated replacement programs or because of a leak, defect or other flaw that necessitated immediate replacement. This is precisely the type of work contemplated by the ISRS Statute. The engineering analyses provided by the Company of the various ISRS projects carried out under its replacement programs demonstrate that there is no cost associated with replacing rather than reusing such plastic, but instead a cost savings. Similarly, the analyses performed by the Company of facility replacements done under a blanket work order because of a leak, defect or other flaw in such facilities that necessitated an immediate replacement demonstrates the ISRS eligibility of such facilities.

8505. Please identify, by individual work order number, all work orders wherein Spire East's ISRS petition seek to recover costs associated with replacing plastic service lines or service line segments that are not worn out or in deteriorated condition. For purposes of this request, a segment refers to just the portion of plastic service line, and does not include attached portions of steel or copper service lines.

Response: Other than facilities replaced because of relocations mandated by

governmental entities, any replacements of plastic services were performed as part of Commission mandated replacement programs or because of a leak, defect or other flaw that necessitated immediate replacement. This is precisely the type of work contemplated by the ISRS Statute. The engineering analyses provided by the Company of the various ISRS projects carried out under its replacement programs demonstrate that there is no cost associated with replacing rather reusing such plastic, but instead a cost savings. Similarly, the analyses performed by the Company of facility replacements done under a blanket work order because of a leak, defect or other flaw in such facilities that necessitated an immediate replacement demonstrates the ISRS eligibility of such facilities.

8506. Regarding all projects Spire East claims are eligible for ISRS recovery for the investments covering the period July 1, 2018 through January 31, 2019 (and which Spire East has included in this case), please provide the following:

a. The total feet of new mains installed.
b. The total feet of new mains installed for each different diameter of main.
c. The total feet of new service lines installed.
d. The total feet of new service lines installed for each different diameter of service line.
e. The total feet of steel mains abandoned.
f. The total feet of cast iron mains abandoned.
g. The total feet of plastic mains abandoned.
h. The total feet of plastic mains abandoned for each diameter of main.
i. The total feet of service lines abandoned.
j. The total feet of service lines abandoned for each diameter of service line.
k. The average cost to install a foot of plastic main.
l. The average cost to install a foot of plastic main for each diameter of main.
m. The average cost to install a foot of service line.
n. The average cost to install a foot of service line for each diameter of service line.
o. Please provide all workpapers associated with (a) through (n) above.

Response: Please see Spire's objection letter dated March 4, 2019.

8507. Please provide the total cost to uprate all mains and all service lines in all work orders Spire East claims are eligible for ISRS for the period July 1, 2018 through January 31, 2019. Please also provide Spire East's work papers to calculate these costs.

Response: These costs are not separately tracked but included in additions.

8508. For all work orders identified in this case that Spire East claims are eligible for ISRS recovery and that include costs incurred to uprate a segment of main or service line, please provide the year the segment of main or service line was installed (vintage) and the date of each test performed to uprate the segment of main or service line. Please also provide all documentation that supports this data.

Response: The Company is not clear what the definition of "uprate" is being used here;

therefore, this needs to be clarified in order to appropriately respond.

8509. For each work order included in this ISRS filing, please provide the name(s) of the Spire East Operations employee(s) who determined that the work and the costs included in the work order qualified for ISRS treatment.

Response: Please see the Company's objection letter dated March 4th, 2019.

8510. For each work order included in this ISRS filing, please provide the name(s) of the Spire East employee(s) or contractor(s) who determined that the work and the costs included in each work order submitted qualified for ISRS treatment. Please state yes or no if this individual(s) / contractor(s) reviewed each ISRS work order included in this Application prior to the filing of this Application. If this individual did not review each and every work order included in this Application, please list the work orders that this individual did not review prior to the Application filing.

Object: Please see the Company's objection letter dated March 4th, 2019.

8511. Please list, describe, and provide a copy of each internal control that Spire East uses to ensure that each and every work order included in an ISRS Application qualifies for ISRS treatment under Section 393.1009(5) "**Gas utility plant projects.**" RSMo and any applicable Commission rules.

Response: All work orders are created by Spire's engineering department and coded ISRS or non-ISRS per a defined list of codes. All work orders undergo a review process by senior regulatory or operational personnel.

8512. Does this Application reflect in the ISRS revenue requirement calculation all of the accumulated deferred income taxes available, as a result of all available bonus depreciation deductions, available to Spire East in the past and currently available to Spire East for its Spire East and Spire West divisions?

Response: Due to changes provided in the Tax Cuts and Jobs Act, Spire no longer claims bonus depreciation on ISRS investments; however, Spire uses the MACRS 20 depreciation schedule which does create deferred taxes. All deferred taxes created by accelerated depreciation are reflected in the ISRS revenue requirement.

8513. For each work order included in this ISRS filing, please provide any and all documentation demonstrating the pipe being replaced is in a worn out or deteriorated condition.

Response: Other than relocations, most of the replacements were performed as part of Commission mandated replacement programs. This is precisely the type of work contemplated by the ISRS Statute. We have long held that the pipes subject to these mandates are by definition worn out or in deteriorated condition

8514. For each work order included in this ISRS filing, Provide copies of any and all testing or

other analysis related to interior diameter and outer diameter of any pipe that was retired.

Response: Spire does not perform testing on the interior or outer diameters of pipe.

8515. Identify how retirement or "renewal units" are identified and selected for retirement? For example is it by area, or type or size of pipe or pipe age, or some other feature?

Response: Retirements are prioritized according to the Company's Distribution Integrity Management Plan. Beyond the DIMP plan, retirements are dictated by other factors such as leaks etc.

8516. Provide a full copy of the Pipe Management Plan for Spire East (electronic is acceptable).

Response: While the company is not clear on what "pipe management plan" is being requested here, attached are PDF maps and slide decks which include information on the Company's plan, and its anticipated 2018-2020 projects. Please note that these documents were provided in Spire's last ISRS filings; Case Nos. GO-2018-0309 and GO-2018-0310.

8517. Provide all documents demonstrating that Spire East is in compliance with all PHMSA requirements/regulations.

Response: Please see the Company's objection letter dated March 4th, 2019.

8518. Identify any information/documentation Spire East ISRS added to the required supporting documentation provided in these filings which shows each project included meets the requirements of Section 393.1009(5) **"Gas utility plant projects."** RSMo.

Response: Please see Appendix A for both Spire East and West. Projects included in ISRS are all coded to reflect which requirement of Section 393.1009 (5) they satisfy.

8519. Did Spire East perform tests on service lines that were retired and replaced under earlier ISRS filings that indicated lines were worn out or in a deteriorated condition? If yes please provide the testing documentation for each project. If no please indicate that no testing was done.

Response: If it is economically and operationally feasible to reconnect a service line to a main that is being installed in connection with the Company's cast iron and bare steel replacement programs, it will be reused. If it is not economically or operationally feasible to reconnect a service line to a newly installed main, a new service line will be installed. As the Company has repeatedly demonstrated, such an approach does not result in any incremental increase in either the Company's ISRS costs and or the resulting ISRS charges but instead reduces them compared to the costs that would be incurred if an attempt was made to reuse service lines that cannot feasibly be economically or operationally reconnected to the main. Any effort to perform "tests" on service lines that cannot be economically or operationally reused would serve no purpose, but instead would be an

unnecessary and imprudent expenditure of resources. Also see the response to DR 8505.

8520. Please provide documentation for Spire East if any sub-section of any/each of the ISRS projects fall under 4 CSR 240-40.030(15)(D)1.

Response: Please see Spire's objection letter dated March 4th, 2019.

8521. Has the Spire East completed all replacements that fall under 4 CSR 240-40.030(15)(D)1 definition of "high priority"? If not, please identify all "high priority" areas that have not been addressed in an expedited manner.

Response: As the Company has stated previously, the Company has addressed all high priority areas in the past, and it continues to prioritize them as they occur.

8522. 4 CSR 240-40.030(15)(D)2. Requires a "long-term, organized replacement program and schedule shall also be established for cast iron pipelines not identified by the operator as being high priority. Has this plan been provided to the Commission's Gas Safety Staff? Please provide this plan and schedule to OPC for Spire East or provide the EFIS item number and File number where these plans and schedules may be found.

Response: Yes, these plans have been provided. They were approved by the Commission in Case Nos. GO-91-275 and GO-2002-50.

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 West Service Territory	)))))	File No. GO-2019-0116

RESPONSES OF SPIRE MISSOURI, INC. TO PUBLIC COUNSEL DATA REQUEST NOS. 8500 – 8522

Present below are the Responses of Spire Missouri, Inc. ("Spire" or "Company") to Data Request Nos 8500-8522 as submitted by the Office of Public Counsel on February 25, 2019. Please note that such responses are being submitted subject to the Company's March 4, 2019 letter objecting to certain of these data requests. These responses were prepared by or under the supervision of Wes Selinger.

DATA REQUEST/RESPONSE

8500. Please provide all documents created by Spire West for all work orders and all documents required by the FERC USOA to support costs included in the work orders, for all projects included in this ISRS petition for July 1, 2018 through November 30, 2018 and where the total cost of the project exceeds $75,000 (please note the documents to be produced are work orders, not work order authorization sheets).

Response: The Company is not able to respond to this request as it is not clear what documentation is being requested. The Company is not aware of any documents required by the FERC Uniform System of Accounts to support costs for additions to plant in service.

8501. Please provide all documents created by Spire West for all work orders and all documents required by FERC USOA to support costs included in the work orders, for all projects included in this ISRS petition for December 2018 and January 2019 and where the total cost of the project exceeds $75,000 (please note the documents to be produced are work orders, not work order authorization sheets).

Response: See the response to 8500.

8502. Please identify, by individual work order number, all work orders wherein Spire West's ISRS petition seek to recover any costs associated with replacing steel main segments that are not worn out or in deteriorated condition. For purposes of this request, a segment refers to just the portion of steel main, and does not include attached portions of cast iron main.

Response: Other than facilities replaced because of relocations mandated by governmental entities, any replacement of steel main segments was performed as part of Commission mandated replacement programs or because of a leak, defect, or other flaw that necessitated immediate replacement. This is precisely the type of work contemplated by the ISRS Statute. Pipes subject to these mandates are by definition worn out or in deteriorated condition.

8503. Please identify, by individual work order number, all work orders wherein Spire West's ISRS petition seek to recover any costs associated with replacing steel service lines or service line segments that are not worn out or in deteriorated condition. For purposes of this request, a segment refers to just the portion of steel service line, and does not include attached portions of plastic or copper service lines.

Response: Other than facilities replaced because of relocations mandated by governmental entities, any replacement of steel service lines was performed as part of a Commission mandated replacement programs or because of a leak, defect or other flaw that necessitated immediate replacement. This is precisely the type of work contemplated by the ISRS Statute. Pipes subject to these mandates are by definition worn out or in deteriorated condition

8504. Please identify, by individual work order number, all work orders wherein Spire West's ISRS petition seek to recover costs associated with replacing plastic main segments that are not worn out or in deteriorated condition. For purposes of this request, a segment refers to just the portion of plastic main, and does not include attached portions of cast iron main.

Response: Other than facilities replaced because of relocations mandated by governmental entities, any replacements of plastic main were performed as part of a Commission mandated replacement programs or because of a leak, defect or other flaw that necessitated immediate replacement. This is precisely the type of work contemplated by the ISRS Statute. The engineering analyses provided by the Company of the various ISRS projects carried out under its replacement programs demonstrate that there is no cost associated with replacing rather than reusing such plastic, but instead a cost savings. Similarly, the analyses performed by the Company of facility replacements done under a blanket work order because of a leak, defect or other flaw in such facilities that necessitated an immediate replacement demonstrates the ISRS eligibility of such facilities.

8505. Please identify, by individual work order number, all work orders wherein Spire West's ISRS petition seek to recover costs associated with replacing plastic service lines or service line segments that are not worn out or in deteriorated condition. For purposes of this request, a segment refers to just the portion of plastic service line, and does not include attached portions of steel or copper service lines.

Response: Other than facilities replaced because of relocations mandated by governmental entities, any replacements of plastic services were performed as part of Commission mandated replacement programs or because of a leak, defect or other flaw

that necessitated immediate replacement. This is precisely the type of work contemplated by the ISRS Statute. The engineering analyses provided by the Company of the various ISRS projects carried out under its replacement programs demonstrate that there is no cost associated with replacing rather reusing such plastic, but instead a cost savings. Similarly, the analyses performed by the Company of facility replacements done under a blanket work order because of a leak, defect or other flaw in such facilities that necessitated an immediate replacement demonstrates the ISRS eligibility of such facilities.

8506. Regarding all projects Spire West claims are eligible for ISRS recovery for the investments covering the period July 1, 2018 through January 31, 2019 (and which Spire West has included in this case), please provide the following:

a. The total feet of new mains installed.
b. The total feet of new mains installed for each different diameter of main.
c. The total feet of new service lines installed.
d. The total feet of new service lines installed for each different diameter of service line.
e. The total feet of steel mains abandoned.
f. The total feet of cast iron mains abandoned.
g. The total feet of plastic mains abandoned.
h. The total feet of plastic mains abandoned for each diameter of main.
i. The total feet of service lines abandoned.
j. The total feet of service lines abandoned for each diameter of service line.

k. The average cost to install a foot of plastic main.
l. The average cost to install a foot of plastic main for each diameter of main.
m. The average cost to install a foot of service line.
n. The average cost to install a foot of service line for each diameter of service line.
o. Please provide all workpapers associated with (a) through (n) above.

Response: Please see Spire's objection letter dated March 4, 2019.

8507. Please provide the total cost to uprate all mains and all service lines in all work orders Spire West claims are eligible for ISRS for the period July 1, 2018 through January 31, 2019. Please also provide Spire West's work papers to calculate these costs.

Response: These costs are not separately tracked but included in additions.

8508. For all work orders identified in this case that Spire West claims are eligible for ISRS recovery and that include costs incurred to uprate a segment of main or service line, please provide the year the segment of main or service line was installed (vintage) and the date of each test performed to uprate the segment of main or service line. Please also provide all documentation that supports this data.

Response: The Company is not clear what the definition of "uprate" is being used here; therefore, this needs to be clarified in order to appropriately respond.

8509. For each work order included in this ISRS filing, please provide the name(s) of the Spire West Operations employee(s) who determined that the work and the costs included in the work order qualified for ISRS treatment.

Response: Please see the Company's objection letter dated March 4th, 2019.

8510. For each work order included in this ISRS filing, please provide the name(s) of the Spire West employee(s) or contractor(s) who determined that the work and the costs included in each work order submitted qualified for ISRS treatment. Please state yes or no if this individual(s) / contractor(s) reviewed each ISRS work order included in this Application prior to the filing of this Application. If this individual did not review each and every work order included in this Application, please list the work orders that this individual did not review prior to the Application filing.

Response: Please see the Company's objection letter dated March 4th, 2019.

8511. Please list, describe, and provide a copy of each internal control that Spire West uses to ensure that each and every work order included in an ISRS Application qualifies for ISRS treatment under Section 393.1009(5) "**Gas utility plant projects.**" RSMo and any applicable Commission rules.

Response: All work orders are created by Spire's engineering department and coded ISRS or non-ISRS per a defined list of codes. All work orders undergo a review process by senior regulatory or operational personnel.

8512. Does this Application reflect in the ISRS revenue requirement calculation all of the accumulated deferred income taxes available, as a result of all available bonus depreciation deductions, available to Spire West in the past and currently available to Spire West for its Spire East and Spire West divisions?

Response: Due to changes provided in the Tax Cuts and Jobs Act, Spire no longer claims bonus depreciation on ISRS investments; however, Spire uses the MACRS 20 depreciation schedule which does create deferred taxes. All deferred taxes created by accelerated depreciation are reflected in the ISRS revenue requirement.

8513. For each work order included in this ISRS filing, please provide any and all documentation demonstrating the pipe being replaced is in a worn out or deteriorated condition.

Response: Other than relocations, most of the replacements were performed as part of Commission mandated replacement programs. This is precisely the type of work contemplated by the ISRS Statute. We have long held that the pipes subject to these mandates are by definition worn out or in deteriorated condition.

8514. For each work order included in this ISRS filing, Provide copies of any and all testing or other analysis related to interior diameter and outer diameter of any pipe that was retired.

Response: Spire does not perform testing on the interior or outer diameters of pipe.

8515. Identify how retirement or "renewal units" are identified and selected for retirement? For example is it by area, or type or size of pipe or pipe age, or some other feature?

Response: Retirements are prioritized according to the Company's Distribution Integrity Management Plan. Beyond the DIMP plan, retirements are dictated by other factors such as leaks etc.

8516. Provide a full copy of the Pipe Management Plan for Spire West (electronic is acceptable).

Response: While the company is not clear on what "pipe management plan" is being requested here, attached are PDF maps and slide decks which include information on the Company's plan, and its anticipated 2018-2020 projects. Please note that these documents were provided in Spire's last ISRS filings; Case Nos. GO-2018-0309 and GO-2018-0310.

8517. Provide all documents demonstrating that Spire West is in compliance with all PHMSA requirements/regulations.

Response: Please see the Company's objection letter dated March 4th, 2019.

8518. Identify any information/documentation Spire West ISRS added to the required supporting documentation provided in these filings which shows each project included meets the requirements of Section 393.1009(5) **"Gas utility plant projects."** RSMo.

Response: Please see Appendix A for both Spire East and West. Projects included in ISRS are all coded to reflect which requirement of Section 393.1009 (5) they satisfy.

8519. Did Spire West perform tests on service lines that were retired and replaced under earlier ISRS filings that indicated lines were worn out or in a deteriorated condition? If yes please provide the testing documentation for each project. If no please indicate that no testing was done.

Response: If it is economically and operationally feasible to reconnect a service line to a main that is being installed in connection with the Company's cast iron and bare steel replacement programs, it will be reused. If it is not economically or operationally feasible to reconnect a service line to a newly installed main, a new service line will be installed. As the Company has repeatedly demonstrated, such an approach does not result in any incremental increase in either the Company's ISRS costs and or the resulting ISRS charges but instead reduces them compared to the costs that would be incurred if an attempt was made to reuse service lines that cannot feasibly be economically or operationally reconnected to the main. Any effort to perform "tests" on service lines that cannot be economically or operationally reused would serve no purpose, but instead would be an unnecessary and imprudent expenditure of resources. Also see the response to DR 8505.

8520. Please provide documentation for Spire West if any sub-section of any/each of the ISRS projects fall under 4 CSR 240-40.030(15)(D)1.

Response: Please see Spire's objection letter dated March 4th, 2019.

8521. Has the Spire West completed all replacements that fall under 4 CSR 240-40.030(15)(D)1 definition of "high priority"? If not, please identify all "high priority" areas that have not been addressed in an expedited manner.

Response: As the Company has stated previously, the Company has addressed all high priority areas in the past, and it continues to prioritize them as they occur.

8522. 4 CSR 240-40.030(15)(D)2. Requires a "long-term, organized replacement program and schedule shall also be established for cast iron pipelines not identified by the operator as being high priority. Has this plan been provided to the Commission's Gas Safety Staff? Please provide this plan and schedule to OPC for Spire West or provide the EFIS item number and File number where these plans and schedules may be found.

Response: Yes, these plans have been provided. They were approved by the Commission in Case Nos. GO-91-275 and GO-2002-50.

Missouri Public Service Commission

POST OFFICE BOX 360
JEFFERSON CITY, MISSOURI 65102
573-751-3234
573-751-1847 (Fax Number)
http://www.psc.state.mo.us

September 6, 2001

FILED[3]
SEP 6 2001
Missouri Public
Service Commission

Mr. Dale Hardy Roberts
Secretary/Chief Regulatory Law Judge
Missouri Public Service Commission
P. O. Box 360
Jefferson City, MO 65102

RE: Case No. GO-2002-50

Dear Mr. Roberts:

Enclosed for filing in the above-captioned case are an original and eight (8) conformed copies of a **STAFF RECOMMENDATION.**

This filing has been mailed or hand-delivered this date to all counsel of record.

Thank you for your attention to this matter.

Sincerely yours,

Dennis L Frey

Dennis L. Frey
Associate General Counsel
(573) 751-8700
(573) 751-9285 (Fax)
dfrey03@mail.state.mo.us

DLF:ccl
Enclosure
cc: Counsel of Record

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Missouri Gas Energy's Application for Approval of Certain Matters Pertaining to Ongoing Cast Iron Main and Service/Yard Line Replacement as Part of its Safety Line Replacement Program.	)))))	Case No. GO-2002-50

STAFF RECOMMENDATION

COMES NOW the Staff ("Staff") of the Missouri Public Service Commission ("Commission") and for its Recommendation, respectfully states as follows:

1. On July 30, 2001, Missouri Gas Energy ("MGE"), a division of Southern Union Company, filed an Application for approval of certain matters pertaining to ongoing cast iron main and service/yard line replacement as a part of MGE's Safety Line Replacement Program ("SLRP"), pursuant to 4 CSR 240-40.030(15)(C) and (D).

2. In the attached Memorandum (Appendix A), the Staff recommends approval of the Application, with two minor modifications to which MGE has agreed; namely, the deletion of the last sentence of subparagraph 11D of the Application and the addition of the following item to the list in paragraph 14: "Number of cast iron main leaks cleared by pipe diameter;". In addition, the Staff recommends: a) that the Commission approve MGE's requested modification of the waiver granted in Case No. GO-99-302, and direct that a copy of the Commission's order in the instant case be filed in Case No. GO-99-302; and b) in the event the Commission determines that the new SLRP costs to be incurred in connection with the instant Application may be deferred under the accounting authority order ("AAO") granted in Case No. GR-2001-

292, that the Commission state, in its order in the instant case, that the terms and conditions for SLRP deferral found in said AAO are fully applicable to said new SLRP costs.

WHEREFORE, the Staff requests that the Commission approve MGE's Application, as amended in the attached Memorandum, and adopt, as applicable, the additional recommendations set forth therein.

Respectfully submitted,

DANA K. JOYCE
General Counsel

Dennis L. Frey
Associate General Counsel
Missouri Bar No. 44697

Attorney for the Staff of the
Missouri Public Service Commission
P. O. Box 360
Jefferson City, MO 65102
(573) 751-8700 (Telephone)
(573) 751-9285 (Fax)
e-mail: dfrey03@mail.state.mo.us

Certificate of Service

I hereby certify that copies of the foregoing have been mailed or hand-delivered to all counsel of record as shown on the attached service list this 6th day of September 2001.

MEMORANDUM

TO: Missouri Public Service Commission Official Case File
Case No. GO-2002-50, Missouri Gas Energy

FROM: Robert Leonberger and John Kottwitz, Energy Department – Safety/Engineering

Robert K. Leonberger / 9/4/2001 Thomas R. Schwarz, Jr. 9/5/01 D.L.F. 9.5.01
Project Coordinator / Date General Counsel's Office / Date

SUBJECT: Staff Recommendation for Approval of an Ongoing Replacement Program

DATE: September 4, 2001

Missouri Gas Energy Application

On July 30, 2001, Missouri Gas Energy (MGE) filed an APPLICATION requesting approval of certain matters pertaining to its ongoing cast iron main and service/yard line replacement programs, pursuant to 4 CSR 240-40.030 (15)(C) and (15)(D). MGE's replacement programs are also known as the Safety Line Replacement Program (SLRP). MGE's past and current replacement programs for service/yard lines have been approved in Case Nos. GO-91-239, GO-92-295 and GO-99-302, and have resulted in the replacement of more than 230,000 service/yard lines. MGE's cast iron main replacement program was approved in Case No. GO-91-277 and resulted in the replacement of nearly 300 miles of cast iron mains, but it ended in 2000. The Application includes a new long-term replacement program for cast iron mains, as required by 4 CSR 240-40.030(15)(D)2. In addition to cast iron main replacements, the Application proposes a more comprehensive program that covers the repair of cast iron joint leaks and the replacement of copper service lines, protected (cathodically-protected) bare steel mains, and unprotected (not cathodically-protected) steel service/yard lines. The Application requests that the program be scheduled and reported using MGE's fiscal year of July 1 to June 30.

The long-term cast iron main replacement program involves the minimum replacement of 5 miles per year. Past and future cast iron main fractures will be tracked and, under specific criteria, will trigger a required cast iron main replacement schedule for the main segment where fractures have occurred. A cast iron coupon (test sample) will be collected at each cast iron main fracture and will be analyzed to determine what percentage of the pipe wall exhibits graphitization (corrosion). If the percentage of graphitization exceeds the applicable criterion, this cast iron main segment will be replaced within 24 months. Special emphasis will be also given to the following cast iron mains: intermediate pressure (2 psig to 60 psig) beneath wall-to-wall pavement or near public concentrations; 3-inch diameter; in areas of disturbed soil support subject to the requirements of subsection (13)(Z); in areas of planned future developments; and in close proximity to extensive excavation, blasting, or construction activities. MGE will also place emphasis on segmenting its low-pressure (30" water column) system by extending intermediate pressure mains to areas with a history of fractures, so that replacements in those areas can be more efficient and cost-effective.

Beyond the replacement considerations in the previous paragraph, MGE proposes to repair no less than 400 leaking cast iron bell joints annually on cast iron mains that are not targeted for replacement. This will continue until leaks of this category are eliminated. Significantly more than 800 joint leaks will be repaired in the first two fiscal years ending June 30, 2003. MGE will continue to annually leak survey all 4-inch diameter and smaller cast iron mains, and to semi-annually leak survey cast iron mains in business districts.

MGE also seeks approval for several other provisions related to protected bare steel mains, copper service lines, and unprotected steel service/yard lines, including modification of the waiver granted in Case No. GO-99-302. MGE proposes to replace a minimum of 5 miles of protected bare steel mains per year, which will be triggered by a 5-5-3 program (5 leaks within 500 feet within a 3-year period). MGE proposes to replace all copper-related service lines (approximately 2,700) by June 30, 2006, and all leaking unprotected steel service/yard lines (approximately 1,200) by June 30, 2003. Instead of replacing all unprotected steel service/yard lines by December 31, 2004, as approved in Case No. GO-99-302, MGE proposes to have them all replaced by June 30, 2020 (averaging approximately 2,310 annually). Any new leaks discovered on these unprotected steel service/yard lines will be classified no lower than Class 3 and will be replaced within 5 years.

The Application includes a paragraph requesting that the costs associated with these replacements and/or rehabilitations be eligible for deferral under any current Accounting Authority Order (AAO) for SLRP related costs that has been granted by the Missouri Public Service Commission (Commission). Approval of this provision shall not be construed as requiring the Commission to grant future AAOs for these costs or to mandate subsequent rate recovery of costs deferred through current or future AAOs.

If the Application is approved, MGE will submit an annual status report to the Commission's Energy Department – Safety/Engineering Section (Staff) and the Office of Public Counsel. The report will include status information on 13 items at the end of each fiscal year ending on June 30, and will be submitted by September 24 of each year.

Staff Response

The Application is the result of extensive discussions between MGE and the Staff. These discussions began last year when the Staff requested a long-term replacement program for cast iron mains from MGE, as required by 4 CSR 240-40.030(15)(D)2. MGE's short-term cast iron replacement program required by paragraph (15)(D)1., and approved in Case No. GO-91-277, ended on December 31, 2000. The Staff recognizes and commends MGE on the effort required to complete that program and replace nearly 300 miles of cast iron main from 1992 through 2000. As a result, a large portion of the cast iron mains covered by paragraph (15)(D)1. have been replaced.

As indicated in the Application, MGE had not considered the long-term cast iron program requirement when submitting an application in 1999 to shorten the replacement deadline for unprotected steel service/yard lines from December 31, 2009 to December 31, 2004. Due to this and other factors (including copper service lines, cast iron joint leaks, and protected bare steel main leaks), the Staff has agreed with MGE that the entire system (not just cast iron) should be evaluated with regard to current leak inventory and the risk potential. This evaluation includes the fact that the replacement of all customer-owned service lines (considered by the Staff to have been the most hazardous facility in MGE's system) was completed on October 30, 2000. The remaining unprotected steel service/yard lines are either company-owned service lines or customer-owned yard lines that have a much lower risk potential, and most of the leaking lines have already been replaced. A substantial leak inventory has accumulated on cast iron bell joints and on cathodically-protected bare steel mains, and both MGE and the Staff agree this leak inventory needs to be minimized. A potential risk with copper service lines has been identified in another part of Missouri, and MGE has agreed to the Staff's request to consider replacing them. The Staff believes that MGE's proposals contained in the Application are an acceptable approach for addressing MGE's entire system.

The Staff believes that the long-term cast iron main replacement program contained in the Application is acceptable under the requirements of 4 CSR 240-40.030(15)(D)2. Most importantly, it covers each of the high-priority types of cast iron mains listed under paragraph (15)(D)1., with the greatest priority given to cast iron mains with fracture history or substantial graphitization. The highest potential for risk with cast iron mains is a fracture, and substantial graphitization indicates the pipe is weakened and more likely to fracture. The replacement criteria and schedule for cast

iron fractures are based on similar provisions contained in an ongoing replacement program for Laclede Gas Company (Laclede) that was approved by the Commission in Case No. GO-91-275. The replacement criteria and schedule for graphitization found in coupons are more stringent than ones used previously by MGE, which were based on a Kansas Corporation Commission regulation. The Staff notes a program item where a semi-annual patrol and replacement/rehabilitation emphasis are proposed, instead of scheduled replacement, for 1.6 miles of large diameter cast iron mains beneath wall-to-wall pavement or near public concentrations. This proposal corresponds to a provision that was approved by the Commission for Laclede in Case No. GO-91-275, and the Staff believes this is also acceptable for MGE due to the very low risk of fracture associated with large diameter cast iron pipe. For cast iron mains that are not prone to fracture and are not targeted for replacement, the Staff agrees with MGE's proposal to repair the leaking bell joints and significantly reduce its leak inventory. Low-pressure bell joint leaks have a low potential for risk.

The Staff believes that the request in the Application to modify the waiver granted in Case No. GO-99-302 should be approved. This will extend the replacement deadline for unprotected steel service/yard lines from 2004 to 2020 and reduce the average number of annual replacements to approximately 2,310. The Staff recognizes that this involves an abnormally long extension of the replacement deadline, but the Staff believes it is justified by the increased attention on facilities with a higher risk potential (copper-related service lines and protected bare steel mains, discussed further below) and the fact that Laclede has already been granted a deadline of 2020 for unprotected steel service/yard lines in Case No. GO-99-155. Also, MGE previously had a later deadline under its first waiver, which extended the replacement deadline from 1999 to 2009 and was granted by the Commission in Case No. GO-92-295. As discussed above (and in previous waivers for MGE, Laclede, and AmerenUE), the risk for these remaining lines is low because the yard lines operate at low-pressure and the service lines were installed using better materials and installation practices by the gas company (one of MGE's predecessors, in this case) instead of the customer. All existing leaks on these service/yard lines will be replaced by June 30, 2003, and any new leak will be classified no lower than Class 3, which requires replacement within 5 years. In addition, these unprotected steel service/yard lines will continue to be annually leak surveyed as required under subsections (13)(M) and (15)(C).

The Staff believes that the replacement program for copper-related service lines contained in the Application should be approved. In the wake of the copper service line problems experienced by Laclede that have resulted in an extensive leak survey and replacement program, the Staff has requested that other Missouri gas system operators with copper service lines consider a leak survey and replacement program for copper service lines. The Staff appreciates the fact that MGE has brought forward a copper service line replacement program in this Application.

The Staff believes that the replacement program for cathodically-protected bare steel mains contained in the Application should be approved. These bare steel mains were not cathodically protected for many years following installation and then from 1992 to 1997, cathodic protection was added to these mains under a program approved by the Commission in Case No. GO-91-277. A large number of leaks have accumulated on these mains and the Staff agrees that a replacement program is needed. The annual reporting of leaks and replacements of these protected bare steel mains will allow MGE and the Staff to monitor the appropriate level of replacements for these mains. The 5-5-3 criterion is one that was used by MGE's predecessors for many years and is a good initial criterion for this program.

MGE's request that the SLRP costs to be incurred as a result of Commission approval of this Application be allowed deferral treatment pursuant to the SLRP AAO granted by the Commission in its Order in Case No. GR-2001-292, dated July 5, 2001, is acceptable to the Staff, under the condition that the terms and conditions for a SLRP deferral found in the Order in Case No. GR-2001-292 are deemed to be fully applicable to new SLRP costs incurred if this Application is approved.

During the Staff's review of the Application as compared to Staff's discussions with MGE, two minor errors were noted. The Staff has discussed the two items with MGE, and MGE agrees that these two items should be corrected.

Since they are minor changes, MGE agreed that Staff should address them in this recommendation instead of amending the Application. First, in subparagraph 11D on page 8 of the Application, the last sentence "In addition, in an effort ..." should be deleted. This sentence incorrectly states that existing Class 4 leaks on unprotected steel service/yard lines will be re-classed to Class 3 and repaired within 5 years. Instead, all unprotected steel service/yard lines that have an existing leak (including all existing Class 4 leaks) will be repaired no later than June 30, 2003 in accordance with subparagraph 11B on page 7 of the Application. For new leaks discovered on unprotected steel service/yard lines in the future, MGE will no longer use the Class 4 leak classification that does not include a repair deadline. Second, an item was inadvertently left out of the Status Report list in paragraph 14 on page 9 of the Application. The item should have followed item J and should have stated "Number of cast iron main leaks cleared by pipe diameter;".

Staff Recommendations

The Staff recommends that the Commission approve the Application with the two following modifications that are agreeable to MGE. The first modification is to delete the last sentence of subparagraph 11D on page 8 of the Application. The second modification is to add the following item to the list in paragraph 14 on pages 9 and 10 of the Application: Number of cast iron main leaks cleared by pipe diameter.

The Staff recommends that the Commission approve a modification of the waiver granted in Case No. GO-99-302, as requested in the Application. If this modification of the waiver is granted by the Commission, the Staff further recommends that a copy of the Order in this case or a Notice to Case No. GO-99-302, or both, be filed in Case No. GO-99-302 to reflect the change.

If the Commission approves the Application and MGE's request in the Application that the SLRP costs to be incurred as a result be allowed deferral treatment pursuant to the SLRP AAO granted by the Commission in its Order in Case No. GR-2001-292, dated July 5, 2001, the Staff recommends that the Commission include a condition or finding that the terms and conditions for a SLRP deferral found in the Order in Case No. GR-2001-292 are fully applicable to new SLRP costs incurred if this Application is approved.

Service List for
Case No. GO-2002-50
Verified: September 5, 2001 (ccl)

Office of the Public Counsel
P. O. Box 7800
Jefferson City, MO 65102

Robert J. Hack
Missouri Gas Energy
3420 Broadway
Kansas City, MO 64111

MISSOURI GAS ENERGY
3420 Broadway • Kansas City, MO • 64111-2404 • (816) 360-5755

ROBERT J. HACK
Vice President, Pricing & Regulatory Affairs

September 6, 2001

Mr. Dale Hardy Roberts
Secretary/Chief Regulatory Law Judge
Missouri Public Service Commission
200 Madison Street, Suite 100
P.O. Box 360
Jefferson City, Missouri 65102-0360

FILED[3]
SEP 7 2001
Missouri Public
Service Commission

RE: Case No. GO-2002-50, Missouri Gas Energy

Dear Mr. Roberts:

Enclosed for filing in the above-referenced matter, please find an original and eight (8) conformed copies of **Missouri Gas Energy's Response to Staff Recommendation.**

A copy of this filing has been mailed or hand-delivered this date to counsel of record.

Thank you for bringing this matter to the attention of the Commission. Please call me if you have any questions regarding this matter.

Sincerely,

Robert J. Hack

C: Dennis L. Frey
Douglas E. Micheel
Steve Holcomb
Jim Gorman

Enclosures

FILED[3]
SEP 7 2001
Missouri Public Service Commission

BEFORE THE PUBLIC SERVICE COMMISSION OF THE STATE OF MISSOURI

In the matter of Missouri Gas Energy's Application for approval of certain matters Pertaining to ongoing cast iron main and Service/yard line replacement as a part of Safety Line Replacement program.	)))))	Case No. GO-2002-50

MISSOURI GAS ENERGY'S RESPONSE TO STAFF RECOMMENDATION

Comes now Missouri Gas Energy ("MGE"), a division of Southern Union Company, by and through counsel and for its response to the recommendation filed by the Commission's Staff herein on or about September 6, 2001, respectfully states as follows:

1. MGE has reviewed the Staff Recommendation and hereby states its agreement to the two (2) modifications recommended by the Staff on page 4.

Wherefore, MGE respectfully request that the Commission issue its order approving the provisions of paragraphs 10, 11, 12, 13 and 14 of the Application as modified in the two respects suggested at page 4 of the Staff Recommendation.

Respectfully submitted,

Robert J. Hack MBE #36496
3420 Broadway
Kansas City, MO 64111
(816)360-5755
FAX: (816)360-5536
e-mail: rob.hack@southernunionco.com

ATTORNEY FOR MISSOURI GAS ENERGY

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing have been mailed or hand-delivered this 6th day of September, 2001, to:

Dennis L. Frey
Missouri Public Service Commission
P.O. Box 360
Jefferson City, MO 65102

Douglas E. Micheel
Office of the Public Counsel
P.O. Box 7800
Jefferson City, MO 65102

STATE OF MISSOURI
PUBLIC SERVICE COMMISSION
JEFFERSON CITY
September 20, 2001

CASE NO: GO-2002-50

Office of the Public Counsel
P.O. Box 7800
Jefferson City, MO 65102

General Counsel
Missouri Public Service Commission
P.O. Box 360
Jefferson City, MO 65102

Robert J. Hack
3420 Broadway
Kansas city, MO 64111

Enclosed find certified copy of an ORDER in the above-numbered case(s).

Sincerely,

Dale Hardy Roberts

Dale Hardy Roberts
Secretary/Chief Regulatory Law Judge

STATE OF MISSOURI
PUBLIC SERVICE COMMISSION

At a Session of the Public Service Commission held at its office in Jefferson City on the 20th day of September, 2001.

In the Matter of Missouri Gas Energy's Application for Approval of Certain Matters Pertaining to Ongoing Cast Iron Main and Service/yard Replacement as a Part of its Safety Line Replacement Program	))))	Case No. GO-2002-50

ORDER APPROVING APPLICATION

On July 30, 2001, Missouri Gas Energy (MGE), a division of Southern Union Company, filed an application asking the Commission to approve certain modifications to its ongoing cast iron main, and service line and yard line replacement, as a part of its Safety Line Replacement Program. This order approves that application.

The Commission issued an Order and Notice on August 1, giving notice of MGE's application to the County Commission of the counties in MGE's service territory, to the members of the general assembly who represent the counties in MGE's service territory, and to the newspapers that serve the counties in MGE's service territory. That order also directed that any person wishing to intervene should file an application to intervene no later than August 21. No applications to intervene were filed.

The requirement for a hearing is met when the opportunity for hearing has been provided and no proper party has requested the opportunity to present evidence.[1] Since

[1] *State ex rel. Rex Deffenderfer Enterprises, Inc. v. Public Service Commission*, 776 S.W.2d 494, 496 (Mo. App. 1989).

no one has asked permission to intervene, or requested a hearing, the Commission may grant the relief requested based on the application.

On September 6, 2001, the Staff of the Commission filed its Recommendation and Memorandum. Staff indicates that MGE's line replacement programs are referred to as its Safety Line Replacement Program, known by the acronym SLRP. MGE's past and current replacement programs for service and yard lines have resulted in the replacement of more than 230,000 service and yard lines. MGE's cast iron main replacement program resulted in the replacement of nearly 300 miles of cast iron mains, but the program ended in 2000. MGE's application includes a new long-term replacement program for cast iron mains, as required by 4 CSR 240-40.030(15)(D)2. In addition to cast iron main replacements, the application proposes a more comprehensive program that covers the repair of cast iron joint leaks and the replacement of copper service lines. The application also affects the inspection and replacement of protected bare steel mains and unprotected steel service and yard lines.

Staff indicates that it finds MGE's proposal to be generally acceptable. Staff does, however, recommend two modifications to MGE's proposal. The first modification is to delete the last sentence of subparagraph 11D on page 8 of the application. That sentence refers to efforts to eliminate Class 4 leaks over unprotected steel service and yard lines. Under Commission rule 4 CSR 240-40.030(14)(c)4, class 4 leaks are those that are confined or localized and are considered to be completely non-hazardous. The gas company is not required to take any further action regarding a class 4 leak. Staff indicates that the sentence in question incorrectly states that existing Class 4 leaks on unprotected steel service and yard lines will be re-classed to Class 3 and repaired within 5 years.

Instead, all unprotected steel service and yard lines that have existing leaks, including all leaks that are currently classified as Class 4 leaks, will be replaced no later than June 30, 2003. MGE proposes this repair schedule in subparagraph 11B on page 7 of the Application. For new leaks discovered on unprotected steel service and yard lines, MGE will no longer use the Class 4 leak classification. Such leaks will be classified as Class 3 or higher, meaning that they will have an established repair deadline.

The second modification proposed by Staff refers to an item that was inadvertently left out of the Status Report list in paragraph 14 on page 9 of the application. The item should have followed item J and should have stated "Number of cast iron main leaks cleared by pipe diameter." Staff states that the two modifications are agreeable to MGE, and on September 7, MGE filed a response indicating its agreement to the modifications.

Staff recommends that the Commission approve the application with the two modifications previously indicated. Staff also recommends that the Commission approve a modification of the waiver granted in Case No. GO-99-302, as requested in the application. Staff recommends that a copy of this order, or a notice to the case, or both, then be filed in Case No. GO-99-302 to reflect the change. Finally, Staff recommends that the Commission approve MGE's request that the Safety Line Replacement Program costs to be incurred as a result of the approved program be allowed deferral treatment pursuant to the Safety Line Replacement Program Accounting Authority Order granted by the Commission in Case No. GR-2001-292.

The Commission has considered the application filed by MGE, along with the Recommendation and Memorandum filed by Staff. The Commission concludes that

MGE's proposed changes to its existing Safety Line Replacement Program will enhance the safety of its gas distribution system. The application should be approved.

IT IS THEREFORE ORDERED:

1. That the application filed by Missouri Gas Energy, a division of Southern Union Company, on July 30, 2001 is approved with the following modifications:

   a. The last sentence of subparagraph 11D on page 8 of the application is deleted; and

   b. The following item is added to the list of information, found in paragraph 14 on page 9 and 10 of the application: "Number of cast iron main leaks cleared by pipe diameter."

2. That the waiver granted in Case No. GO-99-302 is modified as requested by Missouri Gas Energy in paragraph 11 of its application filed on July 30, 2001.

3. That a copy of this order shall be filed in Case No. GO-99-302.

4. That the costs associated with replacements and rehabilitations called for under the provisions of paragraphs 10, 11, and 12 of the application filed by Missouri Gas Energy on July 30, 2001, are eligible for deferral under any Accounting Authority Order granted by the Commission to Missouri Gas Energy, including the Accounting Authority Order granted by the Commission in Case No. GR-2001-292.

5. That the deferral approved in paragraph 4 of this order shall not be construed as requiring the Commission to grant an Accounting Authority Order with regard to Missouri Gas Energy's Safety Line Replacement Program in the future. Nor shall it be construed as requiring the Commission to permit subsequent rate recovery of Safety Line Replacement Program costs deferred through issuance of an Accounting Authority Order.

6. That this order shall become effective on September 30, 2001.

BY THE COMMISSION

Dale Hardy Roberts

Dale Hardy Roberts
Secretary/Chief Regulatory Law Judge

(SEAL)

Simmons, Ch., Murray and Lumpe, CC., concur
Gaw, C., dissents

Woodruff, Senior Regulatory Law Judge

ALJ/Secretary: Woodruff/Boyce

Date Circulated: 9-14

CASE NO. EO-2002-50

Simmons, Chair: KS ?

Murray, Commissioner: CM

Lumpe, Commissioner: SL ?

Gaw, Commissioner: [signature] No

Commissioner: ____

Agenda Date: 9-20

Action taken: 3-1 AS (Gaw) no

Must Vote Not Later Than ____

STATE OF MISSOURI

OFFICE OF THE PUBLIC SERVICE COMMISSION

I have compared the preceding copy with the original on file in this office and I do hereby certify the same to be a true copy therefrom and the whole thereof.

WITNESS my hand and seal of the Public Service Commission, at Jefferson City, Missouri, this 20th day of Sept. 2001.

Dale Hardy Roberts
Secretary/Chief Regulatory Law Judge

MISSOURI GAS ENERGY
3420 Broadway • Kansas City, MO • 64111-2404 • (816) 360-5755

ROBERT J. HACK
Vice President, Pricing & Regulatory Affairs

July 27, 2001

FILED
JUL 30 2001
Missouri Public
Service Commission

Mr. Dale Hardy Roberts
Secretary/Chief Regulatory Law Judge
Missouri Public Service Commission
200 Madison Street, Suite 100
P.O. Box 360
Jefferson City, Missouri 65102-0360

RE: Case No. GO-2002-50, Missouri Gas Energy

Dear Mr. Roberts:

Enclosed for filing in the above-referenced matter, please find an original and eight (8) conformed copies of Missouri Gas Energy's **Application.**

A copy of this filing has been mailed or hand-delivered this date to counsel of record.

Thank you for bringing this matter to the attention of the Commission. Please call me if you have any questions regarding this matter.

Sincerely,

Robert J. Hack

C: F. Jay Cummings
Thomas R. Schwarz, Jr.
Douglas E. Micheel
Steve Holcomb
Jim Gorman

Enclosures

FILED

JUL 3 0 2001

Missouri Public Service Commission

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the matter of Missouri Gas Energy's Application for approval of certain matters Pertaining to ongoing cast iron main and Service/yard line Replacement as a part of its) Safety Line Replacement program.	)))))	Case No. GO-2002-50

APPLICATION

Comes now Missouri Gas Energy ("MGE"), a division of Southern Union Company, by and through counsel and for its application for approval of certain matters pertaining to ongoing cast iron main and service/yard line replacement as a part of MGE's Safety Line Replacement Program, pursuant to 4 CSR 240-40.030(15)(C) and (D), respectfully states as follows:

I. General Matters

1. The name and address of Applicant are: Missouri Gas Energy, 3420 Broadway, Kansas City, Missouri, 64111.

2. MGE is an operating division of Southern Union Company which is duly incorporated under the laws of the State of Delaware, and conducts business in Missouri under the name of Missouri Gas Energy. The articles of incorporation of Southern Union Company have previously been provided to the Commission in Case No. GM-94-40.

3. MGE is a gas corporation and a public utility engaged in the distribution of natural gas at retail to approximately 491,000 customers in Andrew, Barry, Barton, Bates, Buchanan, Carroll, Cass, Cedar, Christian, Clay, Clinton, Cooper, Dade, Dekalb, Greene, Henry, Howard, Jackson, Jasper, Johnson, Lafayette, Lawrence, McDonald,

Moniteau, Newton, Pettis, Platte, Ray, Saline, Stone and Vernon counties in Missouri, subject to the jurisdiction of the Missouri Public Service Commission ("Commission").

4. Although uncertain precisely what information the Commission seeks by 4 CSR 240-2.060(1)(K), MGE provides the following in an attempt to comply therewith. MGE is unaware of any pending action or final unsatisfied judgments or decision against MGE from any state or federal agency or court which involve customer service or rates, which action, judgment or decision has occurred since June 6, 1998. Nevertheless, since that time MGE has been involved in a number of judicial review proceedings, filed against the Commission, involving MGE's rates. The Commission itself should be aware of all such cases.

5. No annual report or assessment fees pertaining to MGE are overdue.

6. All correspondence, communications, notices, orders and decisions of the Commission with respect to this matter should be sent to:

Steve Holcomb
Director,
Field Operations
Missouri Gas Energy
3420 Broadway
Kansas City, MO 64111
816/360-5605
Fax: 816/360-5541
e-mail: steve.holcomb@southernunionco.com

Robert J. Hack
Vice President, Pricing
& Regulatory Affairs
Missouri Gas Energy
3420 Broadway
Kansas City, MO 64111
816/360-5755
FAX: 816/360-5536
e-mail: rob.hack@southernunionco.com

II. Purpose of Filing

7. Since 1990 MGE (and its predecessor in interest) has been engaged in a substantial infrastructure replacement project know as the Safety Line Replacement Program ("SLRP"). MGE's SLRP has been undertaken pursuant to Commission rule (4 CSR 240-40.030), many of the details of which have been administered through orders in

various Commission cases (e.g., Case Nos. GO-91-277, GO-91-239, GO-91-295 and GO-99-302). MGE's SLRP has so far entailed the replacement of more than 230,000 service lines and nearly 300 miles of cast iron main lines.

8. The cast iron main replacement component of MGE's SLRP, as approved by Commission order in Case No. GO-91-277, concluded on or about December 31, 2000. Commission rule, 4 CSR 240-40.030(15)(D)2, requires that operators who have cast iron mains (such as MGE) to develop a long-term, organized replacement program and schedule for cast iron pipelines not identified as being high priorty.

III. Explanation and Specific Approvals Requested

9. Since 1990, MGE's SLRP has been a significant undertaking. This lengthy construction project has required substantial capital resources, has commanded significant management attention and, on occasion, has also inconvenienced customers. These significant costs have resulted in significant safety improvements throughout the MGE system. MGE's objective through this filing is to make certain changes to the existing SLRP, including the implementation of an ongoing cast iron main replacement program, which will continue to achieve significant safety improvements while deploying capital in an efficient and cost-effective fashion.

10. Consistent with the provisions of 4 CSR 240-40.030(15)(D)2, MGE seeks approval of the following provisions for a long-term, organized cast iron replacement program and schedule:

A. MGE will replace a minimum of 5 miles of cast iron main per year, targeting for replacement those segments for which breakage history currently exists. Replacement standards and criteria shall be as follows: i) MGE shall, on an ongoing

basis, keep a current record of cast iron breaks (excluding those caused by third party damage) and plot them on a mapping system; ii) MGE shall utilize all break records dating back to January 1, 1995, and in addition any older breakage history that is readily available such as that in the MGE mapping system for MGE's Kansas City Central division (which has been observed by the Commission's gas safety staff personnel); iii) any new break (excluding those caused by third party damage) after July 1, 2001, within 500 feet of a previously recorded break triggers a minimum replacement of 500 feet of main within five years of the discovery date of the new break; iv) any additional break on a segment of pipe targeted for replacement will accelerate the completion date to within 24 months of the discovery date of the additional break, or five years from the original trigger date, whichever causes the replacement to be completed sooner.

B. MGE shall collect a coupon[1] at every cast iron main break (excluding those caused by third party damage). Each coupon shall be analyzed for graphitization.[2] Cast iron mains exceeding the following percent of graphitization shall be scheduled for replacement: 3-, 4- and 6-inch diameter pipe at 50%; and 8-inch and greater diameter at 75%. (These revised criteria are more stringent than those currently in place: 60% for 3- and 4-inch diameter pipe; 75% for 6- and 8-inch diameter pipe; and 90% for 10-inch and greater diameter pipe.) Any coupon found which shows graphitization in excess of the above revised criteria shall trigger replacement of approximately 500 feet of cast iron main within 24 months.

---

1 A "coupon" is a small sample of pipe.

2 "Graphitization" means the degree of corrosion on cast iron pipe.

C. MGE will place emphasis on rehabilitating or replacing intermediate pressure cast iron mains (2# to 60#) where the main is below pavement in wall-to-wall pavement applications or near public concentrations (e.g., a school, church, hospital, day-care facility, etc.). MGE will continue to patrol such existing intermediate pressure cast iron main systems on a semi-annual basis. Current records indicate that MGE has approximately 1.6 miles of cast iron main 12 to 24 inches in diameter operating in this pressure range in such locations.

D. MGE will place emphasis on replacing the existing 3-inch cast iron main system in Independence, Missouri.

E. MGE will place emphasis on cast iron mains as required by 4 CSR 240-40.030(13)(Z).

F. MGE will place emphasis on replacing or rehabilitating sections of cast iron main in areas of planned future development projects, such as city, county or state highway construction and relocations. Urban renewal and public improvement projects would be monitored as well.

G. MGE will place emphasis on replacing segments of cast iron mains in close proximity to extensive excavation, blasting or construction activities.

H. MGE will place emphasis on segmenting its current low-pressure, 30-inch water column system to extend intermediate-pressure lines into existing low-pressure neighborhoods where the lines have a history of breakage. This will allow for more cost-effective replacement of existing cast iron pipe by utilizing smaller diameter pipes. By deploying capital in this fashion, MGE would be able to provide a more customer friendly remedial action to problems on the cast iron main system in the

future. By segmenting the low-pressure, 30-inch water column system with smaller diameter intermediate-pressure systems (2# to 60#), MGE will be able to replace existing large diameter cast iron mains (low-pressure, 30-inch water column operating at approximately 1# of pressure) with much smaller diameter pipelines. Replacing main in this fashion causes significantly less damage to customers' property and the public right-of-way. Size-on-size replacement of cast iron main is significantly less-cost-effective than utilizing smaller diameter pipe. Moreover, using smaller diameter pipe should also reduce ancillary damage and associated customer complaints.

I. MGE will make greater use of encapsulation[3] to rehabilitate cast iron mains not prone to breakage. Specifically, MGE will encapsulate no less than 400 leaking bell joints annually until leaks of this category are eliminated, on cast iron main that is not targeted for replacement. For the first two years of this program (i.e., until June 30, 2003), MGE will repair by encapsulation significantly more than the minimum pledged. This will significantly reduce MGE's leak inventory.

J. MGE will continue its annual leak survey of all cast iron mains of 4-inch diameter and smaller (approximately 124 miles as of January 1, 2001).

K. MGE will continue its semi-annual leak survey of cast iron mains in business districts.

L. MGE does not have any cast iron service lines.

---

[3] "Encapsulation" is a process whereby a mixture of chemicals within a sleeve sets up to a very hard consistency forming a permanent repair of a joint or fitting with a minimum life expectancy of 50 years.

M. To the extent so desired by the Commission or the Commission's Staff, MGE is willing to re-evaluate the effectiveness of the foregoing long-term cast replacement program after two years of implementation.

11. Consistent with the long-term cast iron replacement program as proposed in paragraph 10 herein as well as the objectives of achieving significant safety improvements while deploying capital in an efficient and cost-effective fashion, MGE seeks approval of the following provisions with respect to replacement of service lines and yard lines and modification of the waiver granted to MGE in Case No. GO-99-302[4]:

A. MGE shall replace all copper-related service lines (approximately 2700) no later than June 30, 2006, with priority given to replace any leaking service lines first. MGE shall continue to leak survey such service lines on an annual basis as recommended by the Commission's Gas Safety Staff in a letter to all operators dated January 16, 2001.

B. MGE shall replace all unprotected steel service lines and yard lines that currently have leakage on them (approximately 1200) no later than June 30, 2003.

---

[4] In considering this Application, MGE wants to make sure the Commission is aware that the current deadline for replacement of unprotected steel service lines and yard lines is December 31, 2004. This was approved by Commission order in Case No. GO-99-302. MGE made that proposal to the Commission in good faith at a time when it was replacing 36 miles of cast iron main annually. When that proposal was made, MGE did not consider the implications of the development and implementation, after the year 2000, of a long-term cast iron main replacement program. The proposals made in this Application are comprehensive and believed by MGE to consider adequately future developments. This Application also offers a re-evaluation after two years if such is believed to be appropriate by the Commission or its Gas Safety Staff (See, paragraph 10.M. herein).

C. MGE shall replace all unprotected steel service lines and yard lines no later than June 30, 2020. On average, therefore, MGE shall replace approximately 2310 unprotected steel service lines and yard lines annually .

D. MGE shall continue its annual leak survey of unprotected steel service lines and yard lines as provided by Commission rule, 4 CSR 240-40.030(13)(M)2.B.(I). Any leak discovered on an unprotected steel service line or yard line shall be classified no lower than a class 3 leak and repaired within no longer than a 5-year time frame. In addition, in an effort to eliminate class 4 leaks over unprotected steel service lines and yard lines, MGE will re-classify all such existing leaks as class 3, as a minimum, and repair them accordingly.

12. Consistent with the long-term cast iron replacement program as proposed in paragraph 10 herein, the service line replacement program as proposed in paragraph 11 herein, as well as the objectives of achieving significant safety improvements while deploying capital in an efficient and cost-effective fashion, MGE seeks approval of the following provisions with respect to replacement of bare steel mains:

A. MGE shall replace a minimum of 5 miles of protected bare steel mains that will be triggered by use of what is known as a 5-5-3 program (that is, 5 leaks within 500 feet within a 3-year period of time triggers replacement).

13. The costs (e.g., depreciation expense, property taxes and carrying costs) associated with replacements and/or rehabilitations called for under the provisions of paragraphs 10, 11 and 12 herein shall be eligible for deferral under any Accounting Authority Order ("AAO") granted by the Commission to MGE, including the AAO granted by the Commission in Case No. GR-2001-292 in its order dated July 5, 2001.

Commission approval of this paragraph 13 herein shall not be construed as requiring the Commission to grant an AAO with respect to MGE's SLRP in the future or as requiring the Commission to permit subsequent rate recovery of SLRP costs deferred through issuance of an AAO.

14. MGE requests that its SLRP reporting requirements be changed from the current calendar-year based reporting to reporting based on MGE's fiscal year (July through June). Therefore, following Commission approval of this application, MGE shall submit its SLRP Status Report to the Commission's Gas Safety Staff (as well as the Office of the Public Counsel) no later than September 24 of each year, which report shall cover MGE's fiscal year (the first such report shall cover the period of July 1, 2001 through June 30, 2002). Each Status Report shall include the following information:

A. Miles of cast iron main eliminated by pipe diameter;

B. Miles of protected bare steel main eliminated;

C. Number of unprotected steel service lines and yard lines eliminated;

D. Number of copper-related service lines eliminated;

E. Number of cast iron bell joint leaks encapsulated by pipe diameter;

F. Number of miles patrolled semi-annually over intermediate pressure cast iron pipe in public areas;

G. Cast iron coupon analysis report on graphitization; and

H. Number of cast iron main breaks by pipe diameter (excluding third party damage);

I. Number of cast iron main leaks found by pipe diameter;

J. Number of cast iron main leaks repaired by pipe diameter;

K. Number of protected bare steel main leaks found;

L. Number of protected bare steel main leaks repaired; and

M. Number of protected bare steel main leaks cleared.

IV. Conclusion

15. The above proposal is specifically targeted to reducing leakage on MGE's piping system in a systematic and organized fashion. As a result, MGE believes that the above proposal will enhance gas safety. In addition, the above proposal has been designed to prioritize capital expenditures on the basis of need and therefore results in efficient and cost-effective capital deployment.

Wherefore, MGE respectfully request that the Commission issue its order approving the provisions of paragraphs 10, 11, 12, 13 and 14 of this Application.

Respectfully submitted,

Robert J. Hack MBE #36496
3420 Broadway
Kansas City, MO 64111
(816)360-5755
FAX: (816)360-5536
e-mail: rob.hack@southernunionco.com

ATTORNEY FOR MISSOURI
GAS ENERGY

VERIFIED EXPLANATION OF STEVE HOLCOMB

STATE OF MISSOURI)
) ss
COUNTY OF JACKSON)

I, Steve Holcomb, having been duly sworn upon my oath, state that I am the Director of Field Operations for Missouri Gas Energy, that I am duly authorized to make this verification on behalf of Missouri Gas Energy ("MGE") and that the matters set forth in the foregoing Application are true and correct to the best of my information, knowledge and belief. In addition, Steve Holcomb further states as follows:

1. I have been employed by MGE, or its predecessors in interest, for 25 years. As Director of Field Operations for Missouri Gas Energy, I am responsible for ensuring that MGE's operational activities are conducted in accordance with established company policies and procedureas and are in conformance with applicable governmental rules and regulations, including pipeline safety regulations.

2. Pursuant to paragraph 10 of the foregoing Application, MGE proposes to implement a long-term, organized replacement program and schedule for cast iron pipeline that is not high priority for replacement. The replacement criteria proposed for cast iron mains are rigorous, and should result in the replacement of cast iron main at the appropriate time. The use of replacement criteria makes sense to MGE because the criteria will focus capital expenditures where they are needed. Because this is a new program for MGE, it is presently not know with precision how much cast iron main will be called for replacement under these criteria. Thus, MGE has proposed the possibility for re-evaluation of the program after two years of experience.

3. Pursuant to paragraph 11 of the foregoing Application, MGE proposes to replace all copper-related service lines no later than June 30, 2006; to replace all unprotected steel service lines and yard lines that currently have leakage no later than June 30, 2003; and to replace all unprotected steel service lines and yard lines no later than June 30, 2020. In the process, MGE will give priority to any leaking service lines first. Although MGE has not experienced increased leakage history with the relatively limited number of copper-related service lines on its system, I understand that the Commission's Gas Safety Staff has expressed concerns regarding copper-related service lines with respect to another Missouri operator. In light of those expressed concerns, MGE proposes to eliminate copper-related service lines from its system, where there is no current requirement to do so. With respect to unprotected steel service lines and yard lines, MGE's belief, based on experience, is that replacing all such lines by year-end 2004 will result in significant capital expenditures without a corresponding benefit in gas safety improvement. This is because the vast majority of such service lines are not leaking and will not leak prior to December 30, 2004. MGE will continue its annual leak survey of unprotected steel service lines and yard lines.

4. Pursuant to paragraph 12 of the foregoing Application, MGE proposes to replace a minimum of 5 miles of protected bare steel mains per year using a 5-5-3 program, whereby replacement will be triggered by the occurrence of 5 leaks within 500 feet within a 3-year period. These replacement

criteria are, in my opinion based on my experience, reasonable and will result in replacement of protected bare steel mains at the appropriate time.

5. The reporting provisions of paragraph 14 are designed to provide the Commission with relevant information on a timely basis and to reconcile MGE's Commission-approved SLRP operating and reporting obligations with MGE's fiscal year (July to June).

6. In total, the foregoing Application improves MGE's current SLRP requirements from both the gas safety perspective and the perspective of efficient and cost-effective deployment of capital resources. MGE will continue to address safety concerns by utilizing flame ionization devices to leak survey the entire service on each service order that currently requires a minimum number of leak checks at the property line and where the pipe enters the building. This MGE practice exceeds the requirements of the current Commission rule on this topic, 4 CSR 240-40.030(14)(B).

7. I hereby swear and affirm that the information presented herein is true and correct to the best of my information, knowledge and belief.

Steve Holcomb

Subscribed and sworn before me this 27th day of July, 2001.

KIM W. HENZI
Notary Public - Notary Seal
State of Missouri
Jackson County
My Commission Expires Feb 3, 2003

Notary Public

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing have been mailed or hand-delivered this 30th day of July, 2001, to:

Thomas R. Schwarz, Jr.
Missouri Public Service Commission
P.O. Box 360
Jefferson City, MO 65102

Douglas E. Micheel
Office of the Public Counsel
P.O. Box 7800
Jefferson City, MO 65102

Form 9

CASE NO. GO-91-275

Folder #1

STATE OF MISSOURI

PUBLIC SERVICE COMMISSION

1. Motion To Establish Docket For Commission Acknowledgement And Approval of Pipeline Replacement Program	2/8/91
2. Notice	2/13/91
3. Laclede Gas Company's Cast-Iron Replacement Program	6/21/93
4. Staff's Recommendation	7/13/93
5. Order Approving Main Replacement Program	8/27/93

STATE OF MISSOURI
PUBLIC SERVICE COMMISSION
JEFFERSON CITY

August 27, 1993

CASE NO: GO-91-275

Richard W. French, Assistant General Counsel, Laclede Gas Company,
720 Olive Street, St. Louis, MO 63101

Enclosed find certified copy of ORDER in the above-numbered case(s).

Sincerely,

David L. Rauch
Executive Secretary

Uncertified Copy:

Office of the Public Counsel, P.O. Box 7800, Jefferson City, MO 65102

STATE OF MISSOURI
PUBLIC SERVICE COMMISSION

At a Session of the Public Service Commission held at its office in Jefferson City on the 27th day of August, 1993.

In the matter of the review and approval of cast iron main program for Laclede Gas Company.) CASE NO. GO-91-275

ORDER APPROVING MAIN REPLACEMENT PROGRAM

On May 1, 1990, Laclede Gas Company (Laclede) filed its cast iron replacement program pursuant to 4 CSR 240-40.030(15)(D). On February 13, 1991, the Commission established Case No. GO-91-275 to receive the cast iron main replacement program and to receive subsequent filings concerning said program. On June 21, 1993, Laclede filed a revised main replacement program. On July 13, 1993, the Staff of the Commission (Staff) filed a memorandum consisting of its recommendations regarding Laclede's revised main replacement program.

Staff stated that Laclede's program complies with the majority of subsection (15)(D), yet allows Laclede some flexibility to effectively schedule the necessary replacements. In addition, the program contains provisions that will result in the replacement of larger quantities of cast iron mains if the mains begin to experience increased fracture rates.

Staff indicated that Laclede has conducted an extensive records search of all historical fractures, updated its fracture maps and established a computer database to implement the program. Staff also noted that Laclede's accelerated replacement of cast iron mains in the 1960s and 1970s eliminated large quantities of cast iron mains that would be high priority replacements under the current regulations. Staff stated that while a few requirements will not be completely met, it believes that Laclede has adequately addressed such requirements in its program and has explained why the program's approach is appropriate.

For example, subparagraphs (15)(D)1.A. and B. require expedited replacement of all high-pressure cast iron mains beneath continuous pavement and/or near concentrations of the general public. Laclede's program provides an expedited schedule for the small remaining amounts of six-inch diameter mains. The program explains that expedited replacement for ten-inch diameter and larger mains is not justified because of the low fracture potential for the larger mains. Laclede has agreed to conduct semi-annual patrols of the ten-inch diameter and larger mains. Staff stated that it believes Laclede's approach is prudent.

Also, subparagraphs (15)(D)1.C. and G. require expedited replacement of all cast iron mains that are small diameter and/or which exhibit a history of fractures or graphitization. Laclede's program provides an expedited schedule for all small diameter mains that operate at high pressure and provides for replacement of low-pressure cast iron mains based upon the number of fractures and other criteria contained in the program. Staff indicated that the majority of the fracture criteria replacements will be of small diameter because small diameter mains have a greater fracture potential. Staff stated that this approach is appropriate because the potential for hazard is considerably less for distribution systems that operate at low-pressure and the provisions in the program will require the amount of replacement to increase if the fracture rate increases.

Staff recommends that the Commission approve Laclede's revised main replacement program. Staff notes that Laclede indicates a preference to commence its program on October 1, 1993, the beginning of its fiscal year, and that Staff has no objection to the program commencing on that date.

Upon review of Laclede's revised main replacement program and Staff's recommendation, the Commission finds that Laclede's revised program adequately addresses the requirements contained in 4 CSR 240-40.030(15)(D). The Commission

also finds that October 1, 1993, the beginning of Laclede's fiscal year, is a reasonable point at which to commence the program. Thus, the Commission determines that Laclede's revised main replacement program is reasonable and should be approved.

IT IS THEREFORE ORDERED:

1. That Laclede Gas Company's revised main replacement program as contemplated by this Order is hereby approved.

2. That the main replacement program approved in Ordered Paragraph 1 shall commence on or before October 1, 1993.

3. That this Order shall become effective on September 8, 1993.

BY THE COMMISSION

David L. Rauch

David L. Rauch
Executive Secretary

(S E A L)

Mueller, Chm., McClure, Kincheloe,
and Crumpton, CC., Concur.
Perkins, C., Absent.

Grotthoff - Buckta

CASE NO. GC-91-275

Chairman

Commissioner

absent

Commissioner

Commissioner

Commissioner 4-0 AS

Agenda 8/25

STATE OF MISSOURI

OFFICE OF THE PUBLIC SERVICE COMMISSION

I have compared the preceding copy with the original on file in this office and I do hereby certify the same to be a true copy therefrom and the whole thereof.

WITNESS my hand and seal of the Public Service Commission, at Jefferson City, Missouri, this 27th day of August, 1993.

David L. Rauch
Executive Secretary

MEMORANDUM

FILED
JUL 13 1993
MISSOURI PUBLIC SERVICE COMMISSION

TO: Missouri Public Service Commission Official Case File
Case No. GO-91-275
Laclede Gas Company

FROM: John D. Kottwitz and Robert R. Leonberger
Energy Department - Gas Safety

SUBJECT: Staff's Recommendation for Approval of the Cast Iron Replacement Program Filed on June 21, 1993

DATE: July 9, 1993

Reviewed By: _____ 7/12/93
Utility Operations Division/date

_____ 7/12/93
General Counsel's Office/date

Subsection (15)(D) of 4 CSR 240-40.030 required each natural gas operator in the State to develop a cast iron replacement program to be submitted with an explanation to the Commission by May 1, 1990, for review and approval. Laclede Gas Company (Laclede) originally submitted its cast iron replacement program on May 1, 1990. Case No. GO-91-275 was established for receipt of Laclede's cast iron replacement program and for receipt of subsequent filings concerning this program. Extensive discussions between Laclede and the MoPSC Gas Safety Staff (Staff) culminated in the cast iron replacement program that was filed by Laclede on June 21, 1993 (PROGRAM). The PROGRAM contains numerous revisions to the original program submitted by Laclede.

The Staff has determined that the PROGRAM is in compliance with the majority of subsection (15)(D), yet allows Laclede some flexibility to efficiently schedule the necessary replacements. In addition, the PROGRAM contains provisions that will result in the replacement of larger quantities of cast iron mains if the mains begin to experience increased fracture rates. Laclede has conducted an extensive records search of all historical fractures, updated its fracture maps, and established a computer database to implement the PROGRAM. Also, Laclede's accelerated replacement of cast iron mains in the 1960's and 1970's eliminated large quantities of cast iron mains that would be high priority replacements under the current regulations. There are a few requirements that will not be completely met, but the Staff believes that Laclede has adequately addressed these requirements in the PROGRAM and has explained why the PROGRAM's approach is appropriate. These requirements are discussed below.

Subparagraphs (15)(D)1.A. and B. - Requires expedited replacement of all high-pressure cast iron mains beneath continuous pavement and/or near concentrations of the general public. The PROGRAM provides an expedited schedule for the small remaining amounts of six-inch diameter mains in these two categories, and explains why expedited replacement is not justified for the ten-inch diameter and larger mains in these two categories. The Staff agrees that the fracture potential for these larger mains is low, as evidenced by Exhibits 2 and 3, which were attached to the PROGRAM. Laclede has agreed to conduct semi-annual patrols of the ten-inch diameter and larger mains in these categories

(which represents a small amount at about 2.5 miles). Considering these added patrols and the other items listed in the PROGRAM, the Staff believes Laclede's approach is prudent.

Subparagraphs (15)(D)1.C. and G. - Requires expedited replacement of all cast iron mains that are small diameter and/or which exhibit a history of fractures or graphitization. The PROGRAM provides an expedited schedule for all small diameter mains that operate at high-pressure (about five remaining miles of six-inch diameter mains), and provides for replacement of low-pressure cast iron mains based upon the number of fractures and other criteria contained in the PROGRAM. Since small diameter mains have a greater fracture potential, the vast majority of these fracture criteria replacements will be small diameter. The Staff agrees that this approach is appropriate because the potential for hazard is considerably less for distribution systems that operate at low-pressure, and the provisions in the PROGRAM will require the amount of replacements to increase if the fracture rate increases.

In addition to the PROGRAM, Laclede filed a response in Case No. GS-91-267 on July 30, 1991, that states:

> The Company's cast iron replacement criteria has and will continue to give a higher priority, all other things being equal, to those mains within areas of debris/fill.

Recommendation:

The Staff recommends that the Commission approve the PROGRAM filed by Laclede on June 21, 1993. On page 6 of the PROGRAM, Laclede indicates a preference to commence the PROGRAM at the beginning of its fiscal year, which starts October 1, 1993. The Staff has no objection to the PROGRAM commencing at the beginning of Laclede's fiscal year.

copies: Director-Utility Operations Division
Director-Policy & Planning Division
Assistant to the Director-Utility Services Division
Manager-Financial Analysis Department
Manager-Accounting Department
Manager-Energy Department
Office of the Public Counsel
Richard W. French (Laclede)
J. Gerald Hofer (Laclede)

Laclede Gas Company

City of St. Louis

Land Clearance for Redevelopment Authority

Major Urban Renewal Projects

Name of Project	Year Started	Mileage C.I.
Plaza Square	1953	1.3
Mill Creek Valley	1958	6.0
Kosciusko	1959	3.4
Civic Center (Stadium)	1961	1.4
Grandel	1964	1.3
West End	1964	4.8
DeSoto - Carr	1969	1.4
LaSalle - Park	1969	1.6
Murphy - Blair	1969	0.8
Convention Plaza	1974	0.8
Dr. M.L. King Ind. Park	1975	1.5
Washington U. Med. Ctr.	1975	1.9
St. Louis Centre	1978	1.0
Mill Creek North	1981	1.2
	TOTAL	28.4

EXHIBIT 1

LACLEDE GAS COMPANY
CAST IRON MAIN BREAKS
BREAKS PER MILE PER YEAR VS. SIZE

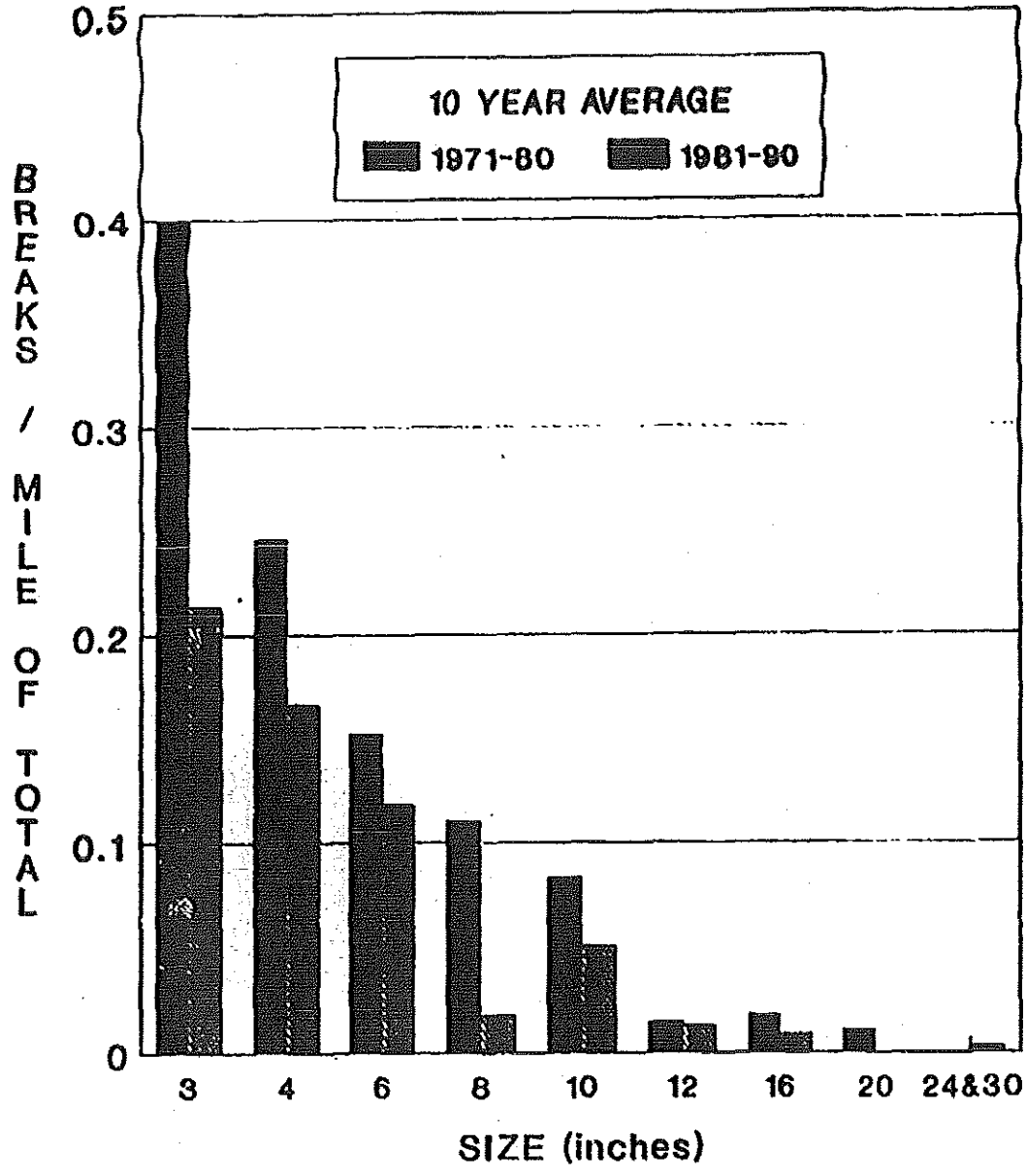


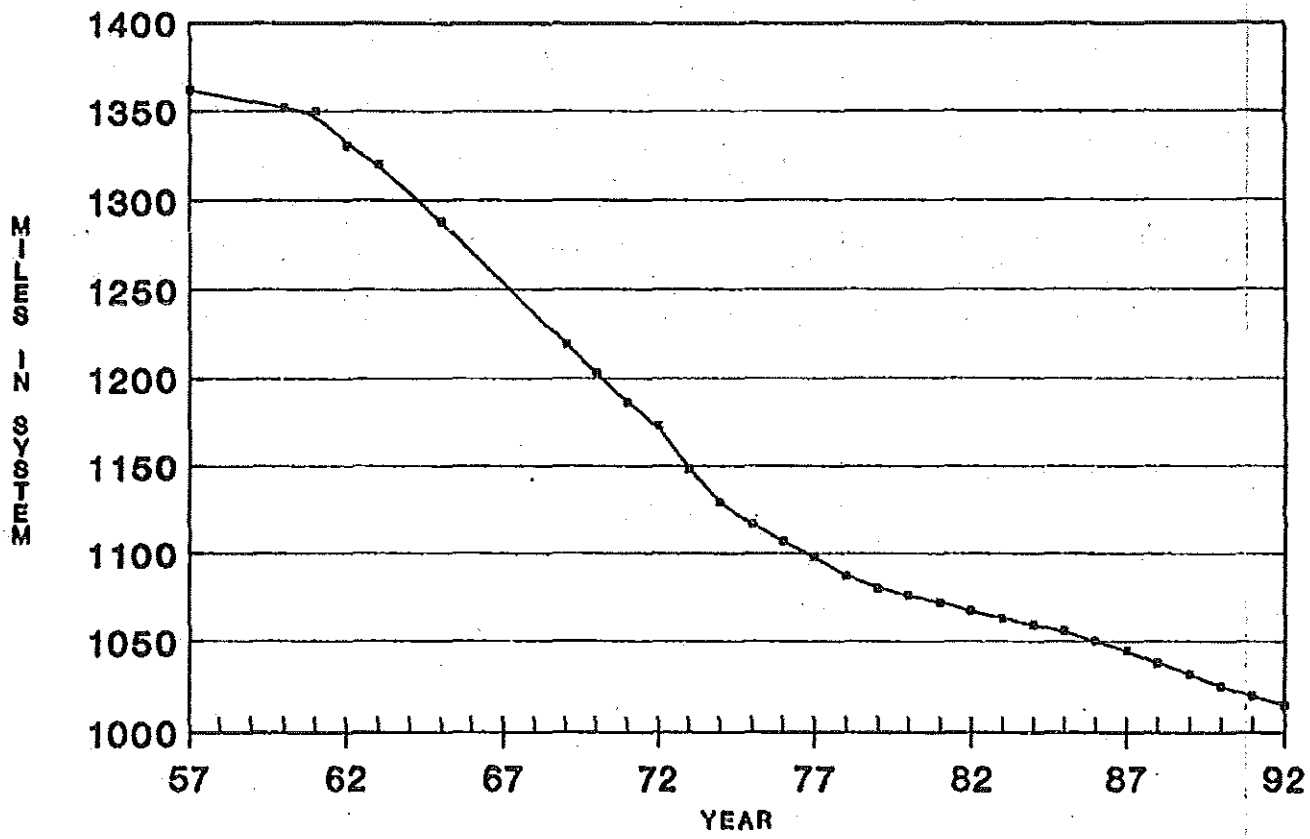
EXHIBIT 2

LACLEDE GAS COMPANY
CAST IRON BROKEN MAIN SUMMARY

CALENDAR YEAR 1970 - 1992

C.Y.	3"	4"	6"	8"	10"	12"	16"	20"	24"&30"	TOTAL
70	13	148	93	1	5	3	0	0	0	263
71	12	158	113	2	2	3	0	0	0	290
72	6	114	83	6	1	0	0	0	0	210
73	4	82	60	1	3	1	0	0	0	151
74	2	95	55	0	2	1	1	1	0	157
75	3	82	43	0	3	0	0	0	0	131
76	6	86	67	1	2	3	0	0	0	165
77	9	131	111	5	4	5	0	0	0	265
78	4	76	66	0	2	1	0	0	0	149
79	2	73	84	0	4	2	2	0	0	167
80	1	66	64	0	2	3	0	0	0	136
81	4	57	53	0	3	1	0	0	0	118
82	0	89	67	0	2	4	0	0	0	162
83	1	42	35	0	3	1	0	0	0	82
84	0	77	82	0	2	1	2	0	0	164
85	1	82	76	0	1	3	0	0	0	163
86	6	51	49	0	1	3	0	0	0	110
87	6	40	48	1	1	2	0	0	0	98
88	1	53	45	0	0	1	0	0	1	101
89	3	50	43	0	1	0	0	0	0	97
90	0	48	47	1	0	0	0	0	0	96
91	2	31	41	0	0	3	0	0	0	77
92	0	29	28	0	0	0	0	0	1	58

LACLEDE GAS COMPANY
TOTAL CAST IRON MAINS IN SYSTEM
AT END OF YEAR FOR
1957 - 1992



BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the matter of the review and approval of the cast iron main program for Laclede Gas Company.) CASE NO. GO-91-275

NOTICE

Donald L. Godiner, General Counsel and Vice President, Laclede Gas Company, 720 Olive Street, St. Louis, Missouri 63101
William M. Shansey, Assistant General Counsel, Missouri Public Service Commission, P. O. Box 360, Jefferson City, Missouri 65102
Uncertified copy to:
Office of Public Counsel, P. O. Box 7800, Jefferson City, Missouri 65102

Case No. GO-91-275 has been established for receipt of the cast iron main program for Laclede Gas Company and for receipt of subsequent filings concerning this program.

BY THE COMMISSION

Brent Stewart

Brent Stewart
Executive Secretary

(S E A L)

Dated at Jefferson City, Missouri,
on this 13th day of February, 1991.

Missouri Public Service Commission

POST OFFICE BOX 360
JEFFERSON CITY, MISSOURI 65102
314 751-3234
314 751-1847 (Fax Number)

February 8, 1991

Lee

Mr. Charles Brent Stewart
Executive Secretary
Missouri Public Service Commission
P.O. Box 360
Jefferson City, Missouri 65102

RE: Case No. GO-91-275 -- In the matter of the Review and Approval of the Cast Iron Main Program for Laclede Gas Company.

Dear Mr. Stewart:

Enclosed for filing by the Commission Staff in the above-captioned case is an original and fourteen (14) copies of a MOTION TO ESTABLISH DOCKET FOR COMMISSION ACKNOWLEDGEMENT AND APPROVAL OF PIPELINE REPLACEMENT PROGRAM. Copies have been sent this date to all parties of record.

Thank you for your attention to this matter.

Sincerely yours,

William M. Shansey

William M. Shansey
Assistant General Counsel

WMS:rsn

Enclosures

cc: Parties of Record

FILED

FEB 8 1991

PUBLIC SERVICE COMMISSION

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the matter of the Review and)
Approval of the Cast Iron Main)
Program for Laclede Gas Company.)

Case No. GO-91-275

MOTION TO ESTABLISH DOCKET FOR COMMISSION ACKNOWLEDGEMENT AND APPROVAL OF PIPELINE REPLACEMENT PROGRAM

Comes now the Staff of the Missouri Public Service Commission ("Staff") and for its Motion states as follows:

1. Commission Rule 4 CSR 240-40.030(15)(D), adopted by order of this Commission effective December 15, 1989, required the operators of natural gas transportation systems in the State of Missouri having facilities which contain cast iron transmission lines, feeder lines or mains to establish and submit replacement programs to this Commission by May 1, 1990 for Commission review and approval.

2. In compliance with this rule, Laclede Gas Company ("Laclede") submitted its program to this Commission for review and approval. A copy of this program is attached and hereby incorporated by reference as Staff's Exhibit 1.

3. On December 27, 1990, after reviewing all programs submitted by operators in the State of Missouri in compliance with the Commission rules, Staff submitted its Motion to Establish Docket for Commission Acknowledgement and Approval of Pipeline Replacement Programs.

4. In paragraph 6.e. of Staff's Motion, Staff stated its intention to seek the establishment of separate dockets for review and acceptance of the submitted programs of certain

operators with whom Staff continued to work concerning certain items in their programs.

5. Staff is continuing to work with Laclede concerning certain items in its submitted program.

6. Staff therefore moves this Commission to establish a docket to receive KPL's cast iron main program, Staff's ultimate recommendation and the Commission's review and subsequent order concerning approval.

WHEREFORE the Staff of the Public Service Commission respectfully requests this Commission issue its order establishing a docket for the receipt of the cast iron main and program of Laclede Gas Company and for receipt of subsequent filings concerning this program.

Respectfully submitted,

William M. Shansey

William M. Shansey
Assistant General Counsel

Attorney for the Staff of the
Missouri Public Service Commission
P. O. Box 360
Jefferson City, MO 65102
314-751-8702

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing have been mailed or hand-delivered to all parties of record on this 8th day of February, 1991.

William M. Shansey

LACLEDE GAS COMPANY
SAINT LOUIS

3950 FOREST PARK BOULEVARD
ST. LOUIS, MISSOURI 63108

314/658-5479
FAX No. 314/535-9414

May 1, 1990

W. R. Ellis
Pipeline Safety Program Manager
Missouri Public Service Commission
P.O. Box 360
Jefferson City, MO 65102

Re: 4 CSR 240-40.030(15)(B)-(E)
Replacement Program Filing

Dear Mr. Ellis:

Pursuant to the requirements of 4 CSR 240-40.030(15)(B)-(E) of the Commission Rules ("Rules"), Laclede Gas Company ("Laclede") hereby submits the attached Written Replacement Programs ("Programs"). Such Programs are submitted herewith only for the purpose of compliance with the currently existing aforementioned Rules and for no other purpose. Such filing should not be construed as an acceptance of, or an acquiescence in, the substance of such Rules, any such acceptance or acquiescence being specifically withheld by Laclede. Furthermore, Laclede reserves all of its rights regarding such rules, including without limitation its right to petition the Commission to amend or rescind such Rules, to apply for waivers from such Rules and to otherwise take such action with respect to such Rules as Laclede deems appropriate in the circumstances.

Very truly yours,

J. Gerald Hofer
Superintendent
Engineering and
Support Services

LACLEDE GAS COMPANY

PROPOSED REPLACEMENT PROGRAM FOR CAST IRON PIPING PURSUANT TO 4 CSR 240-40.030(15)(D)

Section (15)D of the MoPSC's Safety Regulations requires that all operators who have cast iron pipe in their distribution systems develop and submit a systematic replacement program. The regulations specify that the program be prioritized to identify and eliminate that cast iron piping which presents the greatest potential for hazard. Seven high priority categories are identified in the regulations.

Laclede already has an effective maintenance and replacement program for cast-iron mains. The Company's program is based upon using a thirty to forty year history of leak repairs, main condition reports, age, soil condition, customer interruption problems, street paving projects as well as all criteria listed in the regulations.

Laclede's procedures to implement a cost effective cast-iron replacement program has achieved outstanding results. Major accomplishments are;

1) All 4" and smaller medium-pressure cast-iron mains have been replaced.

2) All cast-iron services have been replaced.

3) All 10" and larger medium pressure AGA bell and spigot cast iron joints have been reinforced with bell joint clamps.

4) Thirty-nine (39) miles of bell and spigot low pressure and medium pressure cast-iron mains were internally sealed between 1961 and 1970 in high maintenance areas and areas of continuous pavement.

5) All cast iron mains in the downtown area of the City of St. Louis have been replaced with the exception of one large diameter (24") main.

6) A total of 315 miles of cast iron main has been eliminated since the mid-1950's.

Laclede's cast-iron replacement program is based on on-going monitoring of the condition of cast-iron mains and is accomplished by the following practices and procedures:

(1) Whenever a cast-iron main is exposed for any reason, a pipe condition report is submitted to the Maintenance Engineering Section.

(2) Whenever a cast-iron main is repaired, a pipe condition and repair report is submitted to Maintenance Engineering.

(3) All cast_iron main breaks are reported to Maintenance Engineering on a specially designed Cast Iron Broken Main Report.

(4) All repairs, breaks, and pipe condition reports are entered on maps of the cast-iron system.

(5) All 6" medium pressure cast-iron mains are incorporated in a special study file which is reviewed periodically to determine priority for replacement.

(6) All 4" and 6" low pressure cast_iron mains with two or more breaks in 500 feet are placed in study files for monitoring and special review.

(7) Information contained in the maintenance history file is supplemented on a current basis with reports from the field on service outages caused by water problems, freeze-ups and/or customer complaints.

(8) Since 1962, flame ionization leak surveys have been conducted annually on the entire cast-iron system with additional special surveys conducted when weather/ground conditions are severe.

In view of the foregoing, Laclede plans to continue its present cast iron replacement program for the foreseeable future. We estimate this will consist of replacing approximately 40 miles of cast-iron main in the next ten (10) years in the following categories:

1) 3.5 miles of 6" medium pressure mains in continuous pavement areas and areas of public assembly such as schools, hospitals and business districts.

2) 4.0 miles of 4" and 6" low pressure cast-iron in break areas as indicated by existing study files.

3) 32.0 miles of various sizes of low pressure cast-iron mains in areas which are susceptible to breaks.

LACLEDE GAS COMPANY
720 OLIVE STREET
ST. LOUIS, MO 63101

AREA CODE 314
342-0532

RICHARD W FRENCH
ASSISTANT GENERAL COUNSEL

June 18, 1993

Mr. C. Brent Stewart
Executive Secretary
Missouri Public Service Commission
P.O. Box 360
Jefferson City, MO 65102

Re: Case No. GO-91-275

Dear Mr. Stewart:

Enclosed for filing on behalf of Laclede Gas Company please find the original and fourteen copies of Laclede Gas Company's Cast-Iron Replacement Program in the above-captioned cause. Please see that this filing is brought to the attention of the appropriate Commission personnel.

Please file-stamp the additional copy of such filing and return the same in the pre-addressed, stamped envelope provided.

Thank you for your consideration in this matter.

Sincerely,

Richard W. French

RWF:dv

Enclosures

cc: Office of the Public Counsel

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the matter of the review and approval of the cast-iron main program for Laclede Gas Company.	)))	Case No. GO-91-275

LACLEDE GAS COMPANY'S CAST-IRON REPLACEMENT PROGRAM

Comes now Laclede Gas Company ("Laclede"), by its counsel, and for the filing, and seeking approval, of Laclede's Cast-Iron Replacement Program ("Program") states that:

1. By its Order of Rulemaking in Case No. GX-89-220 filed with the Secretary of State of the State of Missouri on November 9, 1990, the Missouri Public Service Commission ("Commission") issued certain revised gas safety rules ("Rules"), including the Rules contained in 4 CSR 240-40.030. Commission Rule 4 CSR 240-40.030(15)(D) required that Laclede develop a replacement program for cast-iron transmission lines, feeder lines and mains, and submit said program to the Commission by May 1, 1990 for Commission review and approval.

2. On May 1, 1990, Laclede filed its initially Proposed Replacement Program for Cast-Iron Piping with the Commission. Subsequently, on February 8, 1991, the Commission Staff filed a Motion to Establish a Docket For Commission's Acknowledgment and Approval of Laclede's Cast-Iron Pipeline Replacement Program. In said Motion, the Commission Staff stated that it was continuing to work with

Laclede concerning certain items in Laclede's initially Proposed Replacement Program for Cast-Iron Piping and requested that the Commission establish a docket to deal with Laclede's finally proposed Program, as well as the Commission Staff's recommendation and the Commission's subsequent order concerning approval of the Program.

3. By an Order dated February 13, 1991, the Missouri Public Service Commission established this docket for the receipt of Laclede's Program and for subsequent filings concerning the Program.

4. Laclede and the Commission Staff have held ongoing discussions concerning the ultimate content of Laclede's finally proposed Program. These discussions have resulted in the formulation of the Program which is attached hereto as Schedule 1, and is incorporated by reference herein for all purposes. The Commission Staff has indicated that it is in general agreement with the attached Program.

WHEREFORE, Laclede respectfully requests that the Commission issue an order approving the Program set forth in Schedule 1 hereto.

Respectfully submitted,

Richard W. French
Assistant General Counsel
Laclede Gas Company
720 Olive Street, Rm. 1517
St. Louis, Missouri 63101
314-342-0530

CERTIFICATE OF SERVICE

Richard W. French, Assistant General Counsel of Laclede Gas Company, hereby certifies that the foregoing Filing of Laclede Gas Company's Cast-Iron Replacement Program in Case No. GO-91-275 has been duly served upon the Office of the Public Counsel, Post Office Box 7800, Jefferson City, Missouri 65102 by placing a copy thereof in the United States mail, postage prepaid on this 18th day of June, 1993.

Richard W. French

Schedule 1

Laclede Gas Company

CAST-IRON REPLACEMENT PROGRAM
PURSUANT TO 4 CSR 240-40.030(15)(D)

4 CSR 240-40.030(15)(D) of the MoPSC's Pipeline Safety Regulations ("Subsection (15)(D)") requires that all operators who have cast-iron pipe in their distribution systems develop and submit a systematic replacement program. The regulations specify that the program be prioritized to identify and eliminate that cast-iron piping which presents the greatest potential for hazard. Seven high priority categories are identified in the regulations.

Laclede formulated a systematic maintenance and replacement program for cast-iron pipe in the early 1950's. This program has been reviewed periodically and the priority criteria revised as necessary so as to replace and eliminate cast-iron pipelines that have a history of leaks and a potential for breaks.

Laclede's comprehensive Cast-Iron Maintenance, Monitoring, and Replacement Program in effect for the past forty years, has resulted in the following actions and policies:

1. Reinforcement by clamping or sealing of all AGA bell and spigot joints operating at medium pressure. (3 to 25 psig).[1]

2. Prohibition of upgrading low pressure cast-iron mains to medium pressure.

3. Elimination of cast-iron mains not specifically required to maintain the capacity of the system.

4. Replacement or elimination of cast-iron mains in areas affected by heavy equipment, blasting, major demolition and/or urban renewal and development.

5. Annual flame-ionization mobile leak survey of all cast-iron mains with additional special surveys conducted when weather/ground conditions warrant.

6. A comprehensive report on the pipe condition, pipe environment, traffic loading, depth of cover, repair type, leak cause, etc. is originated for every

---

[1]The MoPSC's Pipeline Safety Regulations solely defines "high" and "low" pressure distribution systems. Only Laclede's medium pressure distribution system contains cast-iron pipe which falls within the definition of a "high pressure" distribution system set forth in Section 4 CSR 240-40.030(1)(B)10.--namely one where the pressure is higher than an equivalent to 14 inches water column.

excavation where a cast-iron main is exposed. This report along with the maintenance history for that section of main is reviewed and evaluated by Maintenance Engineering to determine replacement requirements and priorities.

7. Replacement of all cast-iron service lines with the highest priority being schools, churches and buildings of public assembly.

8. Replacement or elimination of cast-iron mains affected by major street or highway construction, reconstruction, paving , or relocation.

9. Replacement or elimination of cast-iron main where construction activity that could have a detrimental effect due to vibration, settlement or added loading, occurs in close proximity.

10. Replacement or elimination of all cast-iron mains with unreinforced bell and spigot joints in the downtown City of St. Louis business district.

11. Replacement or elimination of 4-inch and 6-inch cast-iron medium pressure mains.

12. Replacement or elimination of cast-iron mains that have a history of breaks, leaks or graphitization.

The above long-standing policies and procedures for maintaining and replacing cast-iron pipelines have achieved outstanding results. Major accomplishments are:

1. Reinforcement by clamping or sealing of all 49 miles of AGA bell and spigot joints in the medium pressure system.

2. All cast-iron service lines have been replaced as a result of a program begun in 1961 to replace cast-iron and bare steel services to schools, churches, hospitals and other buildings of public assembly.

3. Replacement of all 8 miles of 4-inch and 5 miles of 6-inch medium pressure cast-iron mains.

4. Replacement of 30 miles of cast-iron low pressure mains in the downtown business area east of Twelfth St. (Tucker Blvd.) in the City of St. Louis.

5. Replacement or elimination of 28 miles of cast-iron mains in major urban renewal projects as shown on Exhibit 1.

The St. Louis Land Clearance for Redevelopment Authority approved 70 plans for urban redevelopment between 1953 and 1980, and over 340 plans since 1981. Most of these plans were reviewed by Laclede in the normal course of business for consideration of cast-iron main abandonment or replacement, providing service to the project, and relocation of existing facilities in conflict with the project but required for system integrity.

6. A significant reduction in the cast-iron break frequency during the 1980's as compared to the 1970's is shown in Exhibit 2. The statistical history of circumferential main breaks by size over the past 21 years is shown in Exhibit 3. As can be seen from these exhibits, the number and frequency of breaks on large-diameter cast-iron mains (8-inch and larger) is such that they do not warrant consideration for replacement based upon potential for breakage.

7. Elimination of a total of 331 miles of cast-iron mains from 1957 to 1990 as shown on Exhibit 4. As the curve on Exhibit 4 shows, Laclede's aggressive program eliminated large amounts of cast-iron with a leak/break history during the 1950's and 1960's. During the 1970's and 1980's, the rate of elimination slowed as the leak/break history of remaining cast-iron mains improved. It is important to point out that Laclede is

not now just beginning to develop a cast-iron replacement program, but we are continuing to implement and enhance a plan that is both cost-effective and comprehensive.

Laclede's Cast-Iron Replacement Program, which contains a Specific Priority Schedule, and an Ongoing and a Long-Term Program, will eliminate those high priority categories of cast-iron pipe identified in paragraph (15)(D)1. as presenting the greatest potential for hazard. Prioritization within the categories set out below will take into account all available information about the areas for replacement consideration. This information will reflect, but not be limited to, soil type and condition, traffic loading, depth of cover, operating pressure, leak cause, and pipe condition including indications of graphitization.

Provided that this program is approved by the Commission in a timely manner, such program's first year will begin with the commencement of Laclede's 1994 fiscal year on October 1, 1993, and will end with such fiscal year's conclusion on September 30, 1994. Successive program years will correspond with Laclede's fiscal year.

SPECIFIC PRIORITY REPLACEMENT SCHEDULE

This schedule applies to specific predetermined facilities that have been identified at the time of submission of this program.

1. Six-inch medium pressure cast-iron main located beneath pavement which is continuous to building walls will be replaced or eliminated within the first year of the program (approximately 0.5 miles).

2. Cast-iron low pressure main areas having three (3) or more breaks with at least one of these breaks occurring within the previous ten years will be replaced or eliminated within the first three years of the program (approximately 20.2 miles).

3. Six-inch medium pressure cast-iron main near concentrations of the general public will be replaced or eliminated within the first five years of the program (approximately 2.5 miles).

4. Cast-iron low pressure main areas having two (2) breaks, where at least one of these breaks have occurred within the last ten years, will be replaced or eliminated within the first eight years of the program (approximately 22.6 miles)

5. Cast-iron low pressure main areas having three or more breaks, all of which occurred more than ten years ago, will be replaced or eliminated within the first eight years of the program (approximately 6.3 miles).

6. All other 6-inch medium pressure cast-iron main will be replaced or eliminated within the first ten years of the program (approximately 2.1 miles).

Laclede's break history data for large diameter (10 inch and larger) cast-iron medium pressure mains in areas identified in subparagraphs (15)(D)1.A. and B. ("Categories A and B"), does not justify replacement of these mains for the following reasons:

1. Main Condition Reports are favorable.

2. Very low frequency of breaks on these types of Laclede mains.

3. Mobile leak surveys are conducted annually.

It is Laclede's position based on its experience and record of operating cast-iron distribution systems ranging in size from 3-inches to 30-inches, that small diameter cast-iron mains which have exhibited a history of breaks should receive a higher replacement priority than large diameter cast-iron

medium pressure mains which have no history of breaks, but are located in areas included in Categories A and B. Laclede believes that its replacement efforts should address those areas where experience indicates a higher probability of breaks, rather than areas in Categories A and B which specify general location conditions of perceived high risk without consideration of breakage potential.

Laclede will, however, institute semi-annual patrols of these large diameter, medium pressure mains in Categories A and B to supplement its annual mobile leak survey.

Special consideration will be given to replacement of any cast-iron medium pressure main section that should experience a break.

ONGOING REPLACEMENT PROGRAM

This schedule applies to facilities that are identified subsequent to the submission of this program.

1. Cast-iron low pressure main areas with two or more existing breaks will be replaced or eliminated within three years of the discovery of a new break.

2. Cast-iron low pressure main areas with one existing break will be replaced or eliminated within five years of the discovery of a new break.

3. Sections of cast-iron main will be replaced, as required, where extensive excavation, blasting or construction activities have occurred in close proximity to such main.

4. Sections of cast-iron main will be replaced as required by 4 CSR 240-40.030(13)(Z) ("Protecting Cast-Iron Pipelines").

5. Unspecified newly identified priority replacement sections or areas will be replaced or eliminated as required.

LONG-TERM REPLACEMENT PROGRAM

Laclede will continue cast-iron main replacements with special long-term replacement consideration given to the following:

- Cast-iron low pressure main areas with two existing breaks which occurred more than ten (10) years ago.

- Cast-iron low pressure main areas with one break which occurred less than ten (10) years ago.

- Six-inch and smaller cast-iron low pressure mains under pavement which is continuous to building walls.

- Sections of cast-iron main which demonstrate significant graphitization.

As stated previously, Laclede has already replaced its cast-iron service lines.

Public Utility

Depreciation Practices

August 1996

Compiled and Edited by

Staff Subcommittee on Depreciation of

The Finance and Technology Committee

of the

National Association of Regulatory Utility Commissioners

Published by

National Association of Regulatory Utility Commissioners
1101 Vermont Avenue, N.W., Suite 200
Washington, DC 20005
Telephone (202) 898-2200
Facsimile (202) 898-2213

CHAPTER II

CURRENT CONCEPTS OF DEPRECIATION

The preceding chapter outlined a number of different historical utility depreciation methods and concepts. This chapter presents two current depreciation concepts—value and cost allocation—and discusses several associated issues and considerations.

In everyday speech, depreciation generally means a decrease in the value or worth of an asset. The goal of depreciation is to allocate or assign a dollar amount to the reduction in worth or value occurring in each accounting period. This reduction starts when the asset is placed in service and usually continues throughout its life. The value of an asset is considered as being used up or consumed in the production of service. Consequently, a charge is made to the cost of production, over the asset's life, by some equitable method of allocation. Thus, depreciation accounting is fundamentally a process of allocating in a systematic and rational manner the value of a depreciable asset over its life.

Value Concept

The value concept assumes that all depreciable plant, due to forces such as obsolescence, wear and tear, and inadequacy, tends to diminish in value or worth with the passage of time. This value reduction may be dramatic—as when one purchases a new automobile. The new owner needs to do little more than drive it off the dealer's lot in order to put it in the classification of a "used car" with a value often substantially less than the purchase price. On the other hand, the reduction in value may occur much more slowly. For example, heavy duty manufacturing machinery will continue to perform the same operations in the same efficient manner for many years. Depreciation, in this sense, may not be consistent. If manufacturing machinery were producing a product that was in heavy demand for many years and suddenly lost its market, the machinery would rapidly lose value.

All other things being equal, on the day before this sharp demand decrease, the machinery would be nearly as valuable in the production of goods as the day it was first installed (assuming it had been kept in good repair). However, the day after the market disappeared the machine would be practically worthless or valueless.

Similarly, the installation of a new technology offering new or different services may cause existing plant to have little or no customer value. For example, a computerized supervisory control and data acquisition system (SCADA) may make the existing use of chart and pen recorders and the manual operation of gas city gate station valves unnecessary and uneconomical.

This situation suggests that depreciation can be determined through a series of periodic appraisals or estimates of plant value. The decrease in value between such estimates is regarded as a measure of the depreciation attributable to the period between estimates. The estimates could be based on the reproduction cost, market value, or earnings value of the property. Estimates may recognize the changing purchasing power of the dollar or they may be confined

strictly to original cost terms. In all cases, some measure of depreciation occurring between estimates can be determined. The customary method is for a competent appraiser to study the effect of factors such as obsolescence, inadequacy, and public requirements, as well as to conduct a physical inspection of the property, or a scientific sample of it, to determine its loss in value since it was first constructed. Regardless of the method employed, in order to achieve consistency, the successive estimates must be made in the same way.

It would, however, be a staggering undertaking to attempt such estimates on an annual basis for complex and extensive utility plant. Therefore, the practice of conducting annual estimates has found little application in the utility industry. It is particularly cumbersome and inadequate because utilities need to record depreciation on a monthly basis for earnings and expense reports. A further complication, of course, is that major technological improvements tend to make questionable any year-to-year measure of depreciation that is determined by this process.

Cost Allocation Concept

This concept recognizes the original cost of the asset as a prepaid expense. As such, it must be allocated to specific accounting periods and realized on income statements during the time the asset is providing service. The unallocated amount, often called net plant or net book (gross plant less accumulated depreciation), is recorded on the asset side of the balance sheet. The cost allocation concept satisfies the accounting principle of matching expense and revenues.

On the income statement, the inflow of resources is revenue. The outflow is expense. Using up the productive capacity of assets in an accounting period is recorded in accounting records as depreciation expense.

As used above, "cost" is based on the cost valuation principle of accounting, with cost being a surrogate for value. The amount of money used to purchase the asset is the basis for the entry in accounting records. This amount is regarded as being definite and immediately determinable. The accounting objectives of verifiability and neutrality are also satisfied.

Equally important to the proper estimation of current net income is the recovery of the investment over its useful life. Depreciation accounting cannot, automatically and of itself, result in the recovery of investment in property. However, if revenues are adequate to cover depreciation expense in addition to other current expense, the investment will be recovered. On the other hand, if revenues are not sufficient to cover the depreciation expense, the investment will not be fully recovered. Recognition of depreciation merely records the fact that costs are being incurred.

Definitions

Before proceeding into an investigation of some of the associated procedures and problems, let us examine some important definitions of depreciation.

According to the Supreme Court of the United States:

> Broadly speaking, depreciation is the loss; not restored by current maintenance, which is due to all the factors causing the ultimate retirement of the property. These factors embrace wear and tear, decay, inadequacy and obsolescence. Annual depreciation is the loss which takes place in a year.[1]

The Interstate Commerce Commission defines depreciation as:

> Depreciation is the loss in service value not restored by current maintenance and incurred in connection with the consumption or prospective retirement of property in the course of service from causes against which the carrier is not protected by insurance, which are known to be in current operation, and whose effect can be forecast with a reasonable approach to accuracy.[2]

The National Association of Railroad and Utilities Commissioners in 1958 sanctioned the following definition:

> 'Depreciation,' as applied to depreciable utility plant, means the loss in service value not restored by current maintenance, incurred in connection with the consumption or prospective retirement of utility plant in the course of service from causes which are known to be in current operation and against which the utility is not protected by insurance. Among the causes to be given consideration are wear and tear, decay, action of the elements, inadequacy, obsolescence, changes in the art, changes in demand, and requirements of public authorities.[3]

The Federal Communications Commission uses a definition in Part 32 of its rules that is almost identical to NARUC's, except that it applies to "telephone plant" instead of "utility plant," and it requires that the causes of depreciation "can be forecast with a reasonable approach to accuracy."

The definitions used by the Federal Energy Regulatory Commission for electric (Part 101 of the Code of Federal Regulations) and gas (Part 201 of the Code of Federal Regulations) companies are essentially the same as that used by NARUC. The only difference is that the definition for gas companies recognizes the exhaustion of natural resources as a cause of depreciation for natural gas companies.

Sec. 167 of the Internal Revenue Code states:

---

[1] *Lindheimer v. Illinois Bell Telephone Company*, 292 U.S. 151, 167 (1934).

[2] 177 ICC 351, 422 (1931), 14700 Depreciation Charges of Telephone Companies, 15100 Depreciation Charges of Steam Railroad Companies.

[3] *Uniform System of Accounts for Class A and Class B Electric Utilities*, 1958, rev., 1962.

> There shall be allowed as a depreciation deduction a reasonable allowance for the exhaustion, wear and tear (including a reasonable allowance for obsolescence)—(1) of property used in the trade or business, or (2) the property held for the production of income.

Some of the definitions refer to depreciation as a loss in service value. "Service value" is used in a special sense, meaning the cost of plant less net salvage (net salvage is gross salvage less the cost of removal). The Uniform System of Accounts for electric utilities recommended by NARUC defines "service value" as follows:

> The difference between the original cost and the net salvage value of the utility plant.

"Loss in service value," therefore, must be understood and construed in light of its specially defined meaning.

The American Institute of Certified Public Accountants in Accounting Research and Terminology Bulletin #1 defines depreciation accounting as follows:

> Depreciation accounting is a system of accounting which aims to distribute cost or other basic value of tangible capital assets, less salvage (if any), over the estimated useful life of the unit (which may be a group of assets) in a systematic and rational manner. It is a process of allocation, not of valuation. Depreciation for the year is the portion of the total charge under such a system that is allocated to the year. Although the allocation may properly take into account occurrences during the year, it is not intended to be a measurement of the effect of all such occurrences.

This definition of depreciation accounting brings the "allocation of cost" concept into much clearer focus. It de-emphasizes the concept of depreciation expense as a "loss in service value" or an "allowance" and emphasizes the concept of depreciation expense as the cost of an asset which is allocable to a particular accounting period. This definition also clearly illustrates that the goal is recognizing cost, not providing funds for replacement of the asset.

Factors Which Affect the Retirement of Property

The sole reason for concern about depreciation is that all plant devoted to the pursuit of a business enterprise will ultimately reach the end of its useful life. Several factors cause property to be retired. They include:

1. Physical Factors
   a. Wear and tear
   b. Decay or deterioration
   c. Action of the elements and accidents

2. Functional Factors
   a. Inadequacy
   b. Obsolescence
   c. Changes in the art and technology
   d. Changes in demand
   e. Requirements of public authorities
   f. Management discretion

3. Contingent Factors
   a. Casualties or disasters
   b. Extraordinary obsolescence

Physical factors are the most readily observed causes of retirement. However, functional factors sometimes are the more frequent causes.

Inadequacy is a lack of capacity to supply what is required or demanded. For example, a telephone company's central office switch may not have sufficient capacity to process the traffic generated, or it may be unable to provide certain information services desired by customers. Thus, it may be more prudent to replace the entire switch in lieu of making additions.

Obsolescence may bring about retirements by rendering plant uneconomical, inefficient, or otherwise unfit for service because of improvements in technology or because of changes in function. Equipment manufacturers may contribute to obsolescence by discontinuing production of replacement parts or de-emphasizing maintenance, software, or other kinds of support for older equipment.

Technological advances have increased the frequency in which obsolescence causes the retirement of utility plant. Computers, the electronic chip, remote controlled operation and supervision of power distribution stations and natural gas regulating equipment, remote meter reading, fiber optic cable, as well as interest in nonutility power production and demand-side management are technological developments that have impacted utility operations.

Changes in demand reflect changing customer preferences requiring the replacement of plant which no longer permits the utility to fulfill its obligation to provide service. An example is the replacement of electric kilowatt hour meters with meters that also record usage by time of day.

Public authorities may require utility plant to be relocated because of its interference with public uses, such as highway relocations. They also may require utility plant to be replaced or refurbished because its design fails to meet current service, environmental, or safety standards. An example is the imminent expiration of operating licenses for hydraulic production plants. This has often resulted in an extensive review of the safety, environmental, recreational, as well as power generation aspects of these projects. Substantial requirements for additional maintenance and capital expenditures may be required to satisfy the concerns of regulatory agencies and their constituencies.

Although not included in the previous definitions, management discretion clearly is also a factor in the retirement of plant. This can occur when management decides to:

1. Retire production plant, rather than extend its life;

2. Sell and lease back plant to affect cash flow;

3. Replace aging plant with new plant to enhance the corporate image;

4. Contract out functions which were formerly done by utility personnel and equipment in an effort to reduce costs;

5. Place surplus plant in storage in anticipation of future growth in demand; and

6. Retain removed plant that would normally be scrapped in anticipation of repairing it for reuse.

The advent of competition in markets that were historically monopolistic adds a new dimension to property retirements, particularly for incumbent public utilities. Competition may influence some or all of the functional factors. For example, a competitor may deploy modern technology, which may render the incumbent's equipment inadequate or obsolete because it cannot duplicate the competitor's new services or match a lower price enabled by the new, low-cost technology. Competition provides incentives to look for new technologies to provide enhanced or less costly services. Competition can also affect the demand for services if the competitor succeeds in obtaining a significant share of existing markets or creates new markets. And finally, because of competition, public authorities may require companies to do things that otherwise would not be done. For example, the FCC required local telephone companies to offer equal access interconnection to all long distance companies so that the companies could compete on equal terms.

Contingent causes are associated with such things as casualties and extraordinary obsolescence. Remote contingencies are not properly considered in establishing depreciation rates. For example, it would not be proper to include, as a cost of operation, a charge for depreciation because an earthquake might destroy property in a location where such a phenomenon is a rare occurrence. On the other hand, property retirements from ordinary storm damages, recurring more or less continually, are properly considered in estimating service lives.

Usually, any given retirement is a result of the inseparable action of a number of underlying causes. Public authorities, for example, may require that a fish ladder be installed at an existing dam, making retirement of some plant necessary. Physical deterioration of certain parts may take place such that high maintenance charges justify replacement of the whole with a more modern and more durable material or design. Reduction of the carrying capacity of water mains resulting from interior deposit buildup may cause them to become inadequate for the required loads. Shifting load centers may result in under-utilization of the facilities. This, in turn, may result in economic justification for substituting smaller, more efficient, or more economical facilities. The possibility of price increases, labor shortages, or functional changes may cause prudent management to replace large blocks of plant before physical deterioration or other factors materialize. What appears to be the cause may be only the final straw.

Methods of Allocating Depreciation Expense to the Accounting Period

Having developed the "allocation of cost" concept as being the most appropriate for day-to-day utility operation; having compared this concept to standard definitions of depreciation and found it to be compatible with them; and having discussed many of the factors that cause plant retirements, we can now consider the determination of the actual amount of depreciation expense to be recorded for a utility.

There are many ways, of course, to allocate the cost of property to the various accounting periods. One method is to charge to expense the total cost at the time of installation. This is known as "expense" accounting, which is used in lieu of depreciation, and is generally applicable to inexpensive and short-lived items. At the other extreme is "retirement" accounting which charges the cost of the property to expense in a lump sum at the time of its retirement from service.

The expense and retirement accounting methods fail to achieve the goal of distributing costs to the accounting periods during the property's life. Therefore, they would not properly match revenues and costs, and the accounting representation of net income would be distorted. Furthermore, the appropriate customer would not pay a fair share of the cost, assuming depreciation expense is included in the cost of service. Generally accepted accounting principles require expenses, such as depreciation, to be allocated by systematic and rational procedures to the periods during which the related assets are expected to provide benefits.[4] The simplest and most logical way to accomplish this is to use a method that distributes the cost of property in a reasonable and consistent manner to all the accounting periods in which the property is providing utility service.

Several methods for distributing these costs are explained in detail in other chapters. Generally these methods may be grouped as follows:

1. The deferred method assigns more depreciation expense to the later years of the life of the plant by applying compound interest formulas. Among the several variations of this approach are the "annuity," "sinking fund," and "compound interest" procedures.

2. The accelerated method assigns more depreciation expense to the earlier years of the plant's life. These methods have been allowed by the Internal Revenue Code for income tax purposes. "Sum-of-the-years-digits" and "declining balance" are two methods in this category. (see Chapter V).

3. The straight line method distributes the cost of property in equal annual amounts, as nearly as is practicable, over its life. This includes the "average service life" and "remaining life" procedures.

---

[4] *Statement of Financial Accounting Concepts No. 5,* Financial Accounting Standards Board, December 1984.

Costs may also be distributed over production rather than over service life. This method, the unit of production method, distributes the costs as units are produced using a rate per unit developed from the total estimated units to be produced. It is similar to the straight-line method but is a function of production rather than a function of time.

Salvage Considerations

Under presently accepted concepts, the amount of depreciation to be accrued over the life of an asset is its original cost less net salvage. Net salvage is the difference between the gross salvage that will be realized when the asset is disposed of and the cost of retiring it. Positive net salvage occurs when gross salvage exceeds cost of retirement, and negative net salvage occurs when cost of retirement exceeds gross salvage. Net salvage is expressed as a percentage of plant retired by dividing the dollars of net salvage by the dollars of original cost of plant retired. The goal of accounting for net salvage is to allocate the net cost of an asset to accounting periods, making due allowance for the net salvage, positive or negative, that will be obtained when the asset is retired. This concept carries with it the premise that property ownership includes the responsibility for the property's ultimate abandonment or removal. Hence, if current users benefit from its use, they should pay their pro rata share of the costs involved in the abandonment or removal of the property and also receive their pro rata share of the benefits of the proceeds realized.

This treatment of net salvage is in harmony with generally accepted accounting principles and tends to remove from the income statement any fluctuations caused by erratic, although necessary, abandonment and removal operations. It also has the advantage that current consumers pay or receive a fair share of costs associated with the property devoted to their service, even though the costs may be estimated.

The practical difficulties of estimating, reporting, and accounting for salvage and cost of retirement have raised questions as to whether more satisfactory results might be obtained if net salvage were credited or charged, as appropriate, to current operations at the time of retirement instead of being provided for over the life of the asset. The advocates of such a procedure contend that salvage is not only more difficult to estimate than service life but, for capital intensive public utilities, it is typically a minor factor in the entire depreciation picture. The obvious exception, of course, is the huge retirement cost of decommissioning nuclear power plants. The advocates of recording salvage at the time of retirement further contend that salvage could properly be accounted for on the basis of known happenings at the date of retirement rather than on speculative estimates of factors, such as junk material prices, future labor costs, and environmental remediation costs in effect at the time of retirement.

One of the practical difficulties of estimating net salvage is that reported salvage is a mixture of salvage on items retired and reused internally, salvage on items sold externally as functional equipment, and salvage on items junked and sold as scrap. Because the likelihood of reuse is greater for items that are retired at early ages, the historical salvage is usually higher than the future salvage to be realized when the account begins to decline and there is little opportunity for reuse. Therefore, under these circumstances, book salvage may overstate the average salvage realized over the entire life of the account. This has led to the proposal to

Depreciation Systems

FRANK K. WOLF

W. CHESTER FITCH

amount of plant in service are inputs to the system, and the accumulated provision for depreciation is a measure of the state of the system at any time. The process of calculating the accumulated provision for depreciation is determined by the factors needed to define the system. The initial input to the system is estimates of the life and salvage, which are combined in an accrual rate. Dynamic forces affect the life and salvage, and revision of the original life and salvage estimates are the result of the monitoring process. These revisions to the initial input initiate feedback in the form of adjustments to the accumulated provision for depreciation. The goal of the system is recovery of capital in a timely manner.

One consideration that complicates this discussion is that many options can be combined to form many different depreciation systems. Whether the depreciation is for book, tax, valuation, or other purposes, each of these factors must be considered when discussing and defining a depreciation system.

DEFINING A DEPRECIATION SYSTEM

Below is a list of the factors needed to define a depreciation system. Each factor contains two or three options, and the complete definition of a system requires the selection of one option from each factor. The order of the list is arbitrary, but the last four factors are those whose options are varied when discussing depreciation systems commonly used to calculate book depreciation.

1. The depreciation concept, including (a) physical condition, (b) decrease in value, or (c) cost of operation
2. Depreciation over (a) time or (b) units of production
3. Depreciation of (a) a unit of property or (b) a group of property
4. Methods of allocation, including (a) the straight line method, (b) an accelerated method, or (c) a decelerated method
5. Procedures for applying the method of allocation including (a) the average life procedure, (b) the equal life group procedure, or (c) the probable life procedure
6. Adjustment using (a) the amortization method or (b) the remaining life method
7. Use of (a) the broad group model or (b) the vintage group model

The mathematically astute reader who multiplies the number of options in each factor will find that there are 432 combinations of options, each of which is a potential depreciation system. However, not all of these combinations are feasible, and some are unimportant. Only a few of these combinations are of major interest when considering systems of book depreciation currently being used.

Concepts of Depreciation

Three options are available when defining the concept of depreciation. These include (a) physical condition, (b) decrease in value, or (c) cost of operation. Though all have been used by utilities to determine book value, the cost of operation is, with few exceptions, the concept in current use.

Physical condition is, perhaps, the first option a lay person would think of if asked to define depreciation. An early reference to the relationship between depreciation and physical condition is from the 1588 textbook by John Mellis who referred to a debit to the profit and loss account because "implements of householde I doe find at this day to be consumed and worn." A later reference is in the 1833 annual report of the Baltimore and Ohio Railroad, which reported that an annuity was established "to provide for the replacement of oak sills and sleepers and yellow pine stringpieces."

Two problems arise when using the concept of physical condition as a measure of depreciation. First, wear and tear do not account for all retirements; in fact, they are often a minor reason for the retirement of property. Second, physical condition can be difficult to measure. Though it is possible to measure directly the wear of railroad track and the corrosion of cast iron pipe, easily measurable wear is not characteristic of most industrial property.

The concept of loss of value is also a common depreciation concept, and the lay person often uses it to explain the difference between the purchase price and the current market value of an automobile or major household appliance. The definition from the Supreme Court case *Lindheimer v. Illinois Bell Telephone* (1934) is often quoted: "Broadly speaking, depreciation is the loss, not restored by current maintenance, which is due to all the factors causing the ultimate retirement of the property. These factors embrace wear and tear, decay, inadequacy, and obsolescence."

In contrast to the concept of physical depreciation, the Lindheimer definition recognizes that factors other than wear and tear cause or contribute to the retirement of property. The definition refers to the "loss" but does not clearly state what is "lost" or how the "loss" should be measured. A 1935 definition by the Federal Communications Commission was similar to the Lindheimer definition but referred to "loss in service value," where service value is equated to the original cost less salvage.

Use of the concept of loss of value to determine annual depreciation charges might imply the need for an annual valuation of the property owned by the organization, particularly if the rate of loss in value was not

uniform or readily defined. The process of determining a value is complex, depending on the purpose of the valuation and type of property. Thus, an annual valuation of a utility could be such an expensive and time-consuming process that it would not be a practical approach to use in determining annual depreciation.

Many types of property provide a constant level of service until they are retired. The intrinsic physical value of this type of property is only that it functions. A gas meter is a common example of a type of property that may provide a constant level of service throughout its life. If value is measured by the level of service provided, the meter would retain full value until retirement because its value to the utility would depend on its function rather than its age. This concept ignores the consumption of future service and would result in an annual depreciation charge that would be zero until the final year of service. Then the charge would equal the full value and would result in deferring all depreciation charges until the final year of service. A concept that better matches depreciation to service rendered and weighs it in relation to the total service potential might be preferable for purposes of both book and valuation depreciation. That is, a quantitative measure of value, such as service-years, is generally preferable to a functional measure.

The third concept is that depreciation represents an allocated cost of capital to operation. This concept recognizes that depreciation is a cost of providing service and that an organization should recover the capital invested in equipment and other property needed to provide the required service. In fact, the term *capital recovery* is often used in connection with depreciation. An early reference to depreciation is by the Roman Marcus Vitrurius Pollio, who in 27 B.C. wrote of "walls which are built of soft and smooth-looking stone, that will not last long." He calculated that the walls would not last more than eighty years and suggested that, for purposes of valuation, one-eightieth part of their original cost be deducted each year. Pollio not only raised several issues concerning depreciation but seemed to be equating depreciation to a cost of operation.

The definition of *depreciation accounting* by the American Institute of Certified Public Accountants (1961, par. 56) reflects the concept of depreciation as a cost: "Depreciation accounting is a system of accounting that aims to distribute cost or other basic value of tangible capital assets, less salvage (if any), over the estimated useful life of the unit (which may be a group of assets) in a systematic and rational manner. It is a process of allocation, not of valuation." This definition does not use the term *loss of service value* because it is defining depreciation accounting rather than depreciation itself. The definition emphasizes that the purpose of depreciation accounting is a means of distributing cost in a rational manner during the service life, in turn providing for the systematic recovery of capital. By use of the term *useful life,* the definition encompasses all causes of retirement. By referring to the distribution of cost less salvage, this definition recognizes that salvage should be considered when developing depreciation charges.

Historically, all three concepts of depreciation have been used by utilities to determine the book value of industrial property. Of these, the concept of depreciation as the allocation of cost has proven to be the most useful and most widely used concept.

Time versus Unit of Production

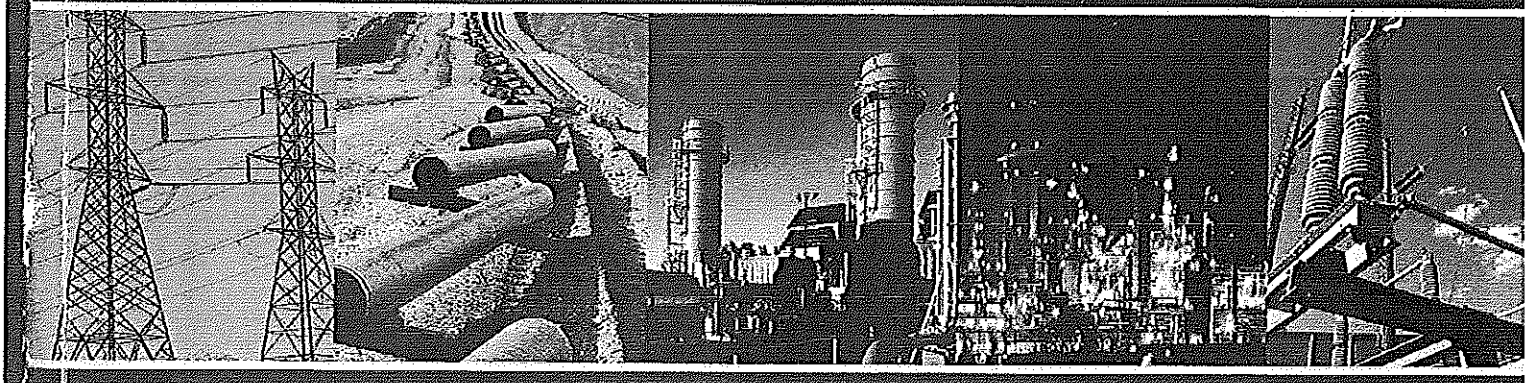
Useful life can be measured in units of time or units of production (also called units of service). Measurement of life in years is a common and familiar concept. Measurement of life in units of production can be applied to some types of property such as a truck, whose life can be measured in miles (e.g., a useful life of 100,000 miles). A feeder pipeline connecting an oil field to a transmission line will be in service until the field is no longer productive. If the only function of the feeder line is to transport oil from the field to the transmission line, the life of the feeder line is determined by the reserves of the oil field that must eventually pass through the pipeline. Annual depreciation could be measured in units of production, such as barrels of oil. A railroad might depreciate rail as a function of the accumulated weight that the rail has carried.

Suppose a truck is to be depreciated over its life as measured in miles. First, the life must be estimated, say 100,000 miles. Second, the number of miles the truck will be driven during the next year, say 27,000 miles, must be forecast to have sufficient information to budget the annual depreciation charge. Third, at the end of the year when the budgeted annual depreciation becomes an accounting entry, the amount would be calculated to reflect the actual miles driven.

The most common measure of life is in units of time rather than units of production. Most types of property (e.g., poles, buildings, wire) do not have a measure of production associated with them. If the life can be measured in some unit of production and the rate of production is constant from year to year, measurement of life in either units of time or production will result in the same annual accruals. The unit of production has strong appeal in situations where use varies significantly over time and the life can be measured in units of production. But these two conditions are not often met, and usually life is measured over time.

Depreciation of an Individual Unit versus a Group

Accounting records of transactions relating to depreciable property can be kept on either a unit or a group basis. An individual unit of property has a single life, while the units in a group of property display a range, or



INTRODUCTION TO DEPRECIATION

For Public Utilities and Other Industries

Edison Electric Institute

Power by Associations

AGA American Gas Association

that the portion of the stub curve starting at about age 30 years, extending to 44 years, which stays above the empirical curve in the chart, may drop to match it as time goes on. In many cases, the amount of information contained in the lowest portion of the curve will contain very little information on which to base a decision. At times, only one or two retirement transactions will drive the shape of the "tail" of the curve.

Based on these considerations, the historical average service life for the property reflected by the specific graph in Chart 6-1 is 23 years, the same as that for the smooth empirical curve. In addition, the shape of the curve (called the "retirement dispersion curve") also yields important information, which will be discussed later.

The service life of a unit of property is the number of years elapsing from the time a unit of property is placed in service until it is removed or abandoned. Average service life for an account, then, is the average of the lives of all such units within a plant account.

The process of life estimation is complicated by the fact that average service life is just that, an average. It is the average service life of a group of units that may number anywhere from a hundred or so in one group to several million units in another group. Similar equipment in such groups does not always last the same length of time. One unit may fail in service after only six months of use, while another apparently identical unit may last for fifty years. As a practical matter, the equipment grouped in a plant account cannot possibly consist of identical units. Thus, it follows that the various units will be retired at dissimilar ages. This phenomenon of the various units within a group of similar, but not identical, units being retired at different ages is modeled with the "retirement dispersion." Further discussion of retirement dispersion will appear later.

Estimates of Future Life Characteristics

Before examining the statistical tools used to support estimates of lives and retirement dispersion patterns for a group of property, it is important to emphasize that such analysis is based on history, whereas life estimates for depreciation purposes are estimates of the future. As a result, the statistical analysis of historical data is useful as a tool only to the degree that the past will be representative of the future. In any depreciation study, the intended result is an estimate of *future* life characteristics for a group of property. Thus, it is critical that those conducting depreciation studies incorporate the appropriate judgment and information from subject matter experts in order to assess whether the results of analyses of historical data will be representative of the future.

As an example, a depreciation study that uses the methods described in this chapter may determine that the historical life analysis for electric FERC Account 370, Meters indicates that a 30-year average service life and a dispersion pattern as described by the R2 survivor curve is the best representation of the historical data. If meters are expected to experience similar life characteristics in the future as in the past, then this 30-R2 survivor curve may be a good life estimate for the account.

However, if the historical data will not be representative of future experience for meters, then the 30-R2 survivor curve estimate is no longer valid as an estimate of property currently in service. Instead, it may be determined throughout the course of conducting the depreciation study that the historical analysis consists of the statistical history of lives and retirement experience of electromechanical meters, which were robust units of property that had relatively long lives. The current population of meters in service today may instead be primarily solid state electric meters, which are subject to much higher failure rates, and are also perhaps subject to obsolescence as newer technologies emerge. These types of meters are not expected to remain in service as long as the earlier technology electromechanical meters. As a result, the life characteristics

Attachment 4
Laclede Gas Company - GR-2013-0171
Depreciation Rates

Account Number	Account Description	Depreciation Rate	Service Life	Net Salvage
	Manufactured Gas Plant - LPG			
305	Structures and improvements	1.67%	60	0%
307	Other power equipment	3.50%	30	-5%
311	Equipment	3.71%	35	-30%
311.1	Storage caverns	1.11%	90	0%
	Underground Storage Plant			
351.2	Compressor station structures	3.33%	45	-50%
351.4	Other structures	2.18%	55	-20%
352	Wells - underground storage	1.22%	90	-10%
352.2	Reservoirs	1.22%	90	-10%
352.3	Non-recoverable gas	1.11%	90	0%
352.4	Wells - oil and vent gas	1.22%	90	-10%
353	Lines	1.17%	90	-5%
354	Compressor station equipment	1.22%	90	-10%
355	Measuring and regulating equipment	1.79%	56	0%
356	Purification equipment	2.38%	42	0%
357	Other equipment	4.55%	20	0%
	Transmission Plant			
367.7	Mains - Monat	1.44%	80	15%
371.7	Other equipment - Monat	2.33%	45	-5%
	Distribution Plant			
375.1	Structures and improvements	3.00%	45	-35%
375.2	Service centers	3.00%	45	-35%
375.3	Garage	3.00%	45	-35%
375.4	Other small structures	3.00%	45	-35%
376.1	Mains - steel	1.44%	80	-15%
376.2	Mains - cast iron	3.31%	80	-165%
376.3	Mains - plastic and copper	1.57%	70	-10%
378.1	Measuring and regulating station equip. (general)	3.71%	35	-30%
379.1	Measuring and regulating station equip. (CGCS)	3.71%	35	-30%
380.1	Services - steel	5.23%	44	-130%
380.2	Services - plastic and copper	3.75%	44	-65%
381.1	Meters	2.37%	38	10%
383.1	House regulators	2.00%	50	0%
385.1	Industrial meas. and regulating equipment	3.25%	40	-30%
386.1	Other property on customers' premises	7.14%	14	0%
387.1	Other equipment	2.78%	36	0%
	General Plant			
390.1	Structures and improvements	3.00%	35	-5%
391.0	Office furniture and equipment	3.33%	30	0%
391.1	Data processing systems	20.00%	5	0%
391.2	Mechanical office equipment	10.00%	10	0%
391.3*	Data processing software	20.00%	5	0%
391.4	Data processing equipment	10.00%	10	0%
391.5	Enterprise Information Management System	7.00%	15	-5%
392.1	Transportation Equipment - automobiles	14.17%	6	15%
392.2	Transportation Equipment - trucks	8.18%	11	10%
392.7	Transportation Equipment - automobiles - Monat	14.17%	6	15%
392.71	Transportation Equipment - trucks - Monat	8.18%	11	10%
393.1	Stores equipment	2.22%	45	0%
394.1	Tools, shop and garage equipment	2.63%	38	0%
395.1	Laboratory equipment	3.57%	28	0%
396.1	Power operated equipment	6.92%	13	10%
397.1	Communication equipment	5.00%	20	0%
398.1	Miscellaneous equipment	3.45%	29	0%

* Account 391.3 will be amortized rather than depreciated.

Missouri Gas Energy
Depreciation Rates

Account Number	Description	Depreciation Rate	ASL (Years)	Net Salvage (%)	Life Only Rate	Net Salvage Rate
	Distribution					
374.2	Land Rights	2.08%	48.0	0.00%	2.08%	0.00%
375.0	Structures and Improvements	2.13%	47.0	0.00%	2.13%	0.00%
376.0	Mains	1.78%	50.0	11.00%	2.00%	0.22%
378.0	Measuring and Regulating Eq.	2.86%	35.0	0.00%	2.86%	0.00%
379.0	Measuring and Regulating Eq.-City Gate	2.63%	38.0	0.00%	2.63%	0.00%
380.0	Services	2.68%	40.0	-7.20%	2.50%	-0.18%
381.0	Meters	2.86%	35.0	0.00%	2.86%	0.00%
382.0	Meter Installation	2.86%	35.0	0.00%	2.86%	0.00%
383.0	House Regulators	2.44%	41.0	0.00%	2.44%	0.00%
385.0	Measuring and Regulating Eq.-Industrial	3.33%	30.0	0.00%	3.33%	0.00%
	General (Including Corporate)					
390.1	Structures and Improvements	2.13%	47.0	0.00%	2.13%	0.00%
391.0	Office Furniture and Eq.	9.09%	11.0	0.00%	9.09%	0.00%
391.5	Enterprise Information Management System	7.00%	15.0	-5.00%	6.67%	-0.33%
392.1	Transportation Eq. [Cars & Small Trucks]	13.28%	6.0	20.30%	16.67%	3.38%
392.2	Transportation Eq. [Large Trucks]	8.06%	10.0	19.40%	10.00%	1.94%
393.0	Stores Eq.	3.57%	28.0	0.00%	3.57%	0.00%
394.0	Tool, Shop, and Garage Eq.	5.26%	19.0	0.00%	5.26%	0.00%
396.0	Power Operated Eq.	10.00%	10.0	0.00%	10.00%	0.00%
397.1	Electronic Reading - ERT	5.26%	19.0	0.00%	5.26%	0.00%
397.2	Communication Eq.	6.25%	16.0	0.00%	6.25%	0.00%
398.0	Miscellaneous Eq.	4.35%	23.0	0.00%	4.35%	0.00%

Project #	Overhead Cost	Total Cost	Overhead % Total Cost
800028	$ 72,990	$ 180,657	40.40%
800039	$ 1,137,365	$ 1,862,832	61.06%
800041	$ 79,884	$ 210,841	37.89%
800044	$ 125,537	$ 303,350	41.38%
800045	$ 272,138	$ 718,266	37.89%
800046	$ 105,292	$ 259,354	40.60%
800069	$ 158,016	$ 417,057	37.89%
800070	$ 77,694	$ 205,070	37.89%
800072	$ 414,064	$ 921,825	44.92%
800073	$ 511,243	$ 1,303,261	39.23%
800075	$ 261,780	$ 688,017	38.05%
800076	$ 318,131	$ 587,197	54.18%
800083	$ 229,708	$ 600,471	38.25%
800091	$ 185,403	$ 303,030	61.18%
800092	$ 172,181	$ 410,767	41.92%
800093	$ 196,935	$ 448,424	43.92%
800094	$ 151,775	$ 362,176	41.91%
800097	$ 48,355	$ 109,936	43.98%
800100	$ 192,923	$ 462,540	41.71%
800112	$ 146,592	$ 287,671	50.96%
800121	$ 58,221	$ 150,830	38.60%
800122	$ 163,257	$ 427,994	38.14%
800123	$ 111,264	$ 289,563	38.42%
800124	$ 93,843	$ 247,683	37.89%
800125	$ 56,638	$ 149,488	37.89%
800126	$ 133,041	$ 310,613	42.83%
800127	$ 315,274	$ 760,880	41.44%
800128	$ 58,384	$ 137,393	42.49%
800130	$ 235,755	$ 549,605	42.90%
800131	$ 303,967	$ 758,387	40.08%
800132	$ 140,981	$ 344,395	40.94%
800133	$ 175,233	$ 430,030	40.75%
800136	$ 184,873	$ 267,262	69.17%
800137	$ 419,037	$ 667,681	62.76%
800138	$ 41,276	$ 108,941	37.89%
800142	$ 317,060	$ 596,666	53.14%
800143	$ 120,949	$ 319,225	37.89%
800144	$ 72,664	$ 190,213	38.20%
800145	$ 154,632	$ 408,128	37.89%
800146	$ 198,047	$ 522,714	37.89%
800147	$ 383,264	$ 980,486	39.09%
800148	$ 140,105	$ 370,948	37.77%
800149	$ 200,569	$ 494,948	40.52%
800150	$ 131,031	$ 343,934	38.10%
800151	$ 286,906	$ 751,183	38.19%
800152	$ 308,370	$ 777,148	39.68%

800153	$ 165,381	$ 416,010	39.75%
800154	$ 286,939	$ 757,332	37.89%
800155	$ 272,643	$ 697,715	39.08%
800156	$ 256,718	$ 663,978	38.66%
800157	$ 246,950	$ 641,078	38.52%
800158	$ 362,434	$ 940,728	38.53%
800159	$ 324,603	$ 718,894	45.15%
800163	$ 321,281	$ 845,371	38.00%
800224	$ 786,979	$ 2,074,286	37.94%
800227	$ 50,665	$ 133,721	37.89%
800230	$ 446,450	$ 712,071	62.70%
800256	$ 469,828	$ 883,897	53.15%
800257	$ 295,453	$ 647,249	45.65%
800258	$ 375,642	$ 923,938	40.66%
800259	$ 277,497	$ 732,438	37.89%
800260	$ 134,586	$ 355,219	37.89%
800261	$ 76,493	$ 194,530	39.32%
800262	$ 134,916	$ 330,018	40.88%
800263	$ 116,588	$ 275,803	42.27%
800264	$ 261,575	$ 656,606	39.84%
800265	$ 146,828	$ 355,725	41.28%
800274	$ 381,241	$ 735,116	51.86%
800275	$ 158,783	$ 419,082	37.89%
800276	$ 138,434	$ 365,376	37.89%
800277	$ 354,773	$ 936,367	37.89%
800278	$ 182,896	$ 438,917	41.67%
800279	$ 369,101	$ 920,889	40.08%
800280	$ 222,972	$ 543,655	41.01%
800281	$ 155,674	$ 371,553	41.90%
800282	$ 226,220	$ 538,264	42.03%
800283	$ 729,346	$ 1,744,062	41.82%
800284	$ 283,447	$ 748,114	37.89%
800285	$ 157,106	$ 414,001	37.95%
800286	$ 421,926	$ 1,113,607	37.89%
800290	$ 177,774	$ 426,071	41.72%
800301	$ 516,729	$ 1,363,939	37.89%
800335	$ 1,111,630	$ 1,570,267	70.79%
800336	$ 157,902	$ 390,465	40.44%
800338	$ 663,443	$ 1,181,182	56.17%
800340	$ 1,046,778	$ 1,650,911	63.41%
800341	$ 388,118	$ 652,329	59.50%
800342	$ 130,905	$ 356,031	36.77%
800343	$ 489,900	$ 697,235	70.26%
800344	$ 162,986	$ 229,623	70.98%
800385	$ 630,102	$ 1,038,302	60.69%
800390	$ 38,771	$ 102,330	37.89%
800393	$ 362,702	$ 546,851	66.33%

800396	$ 228,792	$ 603,862	37.89%
800405	$ 43,113	$ 100,308	42.98%
800406	$ 15,326	$ 40,460	37.88%
800412	$ 235,090	$ 594,411	39.55%
800413	$ 363,577	$ 828,830	43.87%
800414	$ 136,359	$ 335,554	40.64%
800431	$ 170,925	$ 410,382	41.65%
800432	$ 477,115	$ 1,188,850	40.13%
800435	$ 340,345	$ 825,322	41.24%
800439	$ 603,610	$ 1,374,185	43.92%
800440	$ 890,025	$ 1,406,231	63.29%
800441	$ 866,025	$ 1,244,783	69.57%
800444	$ 170,406	$ 440,379	38.70%
800449	$ 39,222	$ 57,679	68.00%
800453	$ 1,725,852	$ 2,508,484	68.80%
800463	$ 134,605	$ 317,878	42.34%
800474	$ 109,366	$ 288,656	37.89%
800475	$ 167,206	$ 441,314	37.89%
800480	$ 265,930	$ 664,400	40.03%
800489	$ 209,966	$ 506,448	41.46%
800491	$ 664,171	$ 997,598	66.58%
800493	$ 10,221	$ 14,632	69.85%
800496	$ 849,952	$ 1,550,097	54.83%
800497	$ 590,408	$ 1,330,500	44.37%
800498	$ 441,727	$ 942,335	46.88%
800499	$ 518,886	$ 912,346	56.87%
800500	$ 586,480	$ 1,028,301	57.03%
800501	$ 398,540	$ 908,141	43.89%
800502	$ 572,492	$ 1,072,640	53.37%
800542	$ 442,380	$ 1,089,431	40.61%
800551	$ 186,357	$ 408,261	45.65%
800558	$ 429,987	$ 682,253	63.02%
800566	$ 63,628	$ 157,343	40.44%
800578	$ 166,397	$ 435,508	38.21%
800584	$ 331,516	$ 879,985	37.67%
800597	$ 202,872	$ 500,995	40.49%
800598	$ 269,243	$ 654,637	41.13%
800599	$ 152,709	$ 385,708	39.59%
800600	$ 180,507	$ 450,002	40.11%
800601	$ 95,513	$ 252,941	37.76%
800604	$ 38,335	$ 98,774	38.81%
800606	$ 56,124	$ 150,911	37.19%
800610	$ 174,756	$ 397,949	43.91%
800613	$ 111,705	$ 167,923	66.52%
800616	$ 183,416	$ 460,356	39.84%
800622	$ 97,931	$ 255,444	38.34%
800623	$ 58,147	$ 144,855	40.14%

800626	$ 413,407	$ 1,064,190	38.85%
800636	$ 89,898	$ 237,272	37.89%
800639	$ 361,064	$ 907,345	39.79%
800640	$ 315,092	$ 767,152	41.07%
800647	$ 209,592	$ 687,230	30.50%
800654	$ 260,314	$ 687,735	37.85%
800655	$ 198,515	$ 509,398	38.97%
800658	$ 72,513	$ 157,171	46.14%
800659	$ 323,291	$ 825,457	39.17%
800660	$ 147,919	$ 362,706	40.78%
800661	$ 115,002	$ 276,818	41.54%
800668	$ 144,278	$ 366,947	39.32%
800671	$ 296,892	$ 783,601	37.89%
800672	$ 110,107	$ 290,611	37.89%
800690	$ 205,705	$ 446,897	46.03%
800711	$ 87,478	$ 122,959	71.14%
800718	$ 55,174	$ 79,084	69.77%
800720	$ 160,159	$ 369,170	43.38%
800721	$ 188,886	$ 455,410	41.48%
800722	$ 105,216	$ 273,458	38.48%
800726	$ 40,101	$ 104,212	38.48%
800727	$ 113,481	$ 299,516	37.89%
800756	$ 44,897	$ 106,859	42.02%
800758	$ 76,318	$ 202,430	37.70%
800759	$ 364,660	$ 759,226	48.03%
800760	$ 394,108	$ 922,034	42.74%
800761	$ 197,225	$ 517,910	38.08%
800762	$ 201,888	$ 532,851	37.89%
800763	$ 412,221	$ 1,073,190	38.41%
800794	$ 487,600	$ 1,645,636	29.63%
800795	$ 416,464	$ 1,107,786	37.59%
800796	$ 613,107	$ 1,620,970	37.82%
800797	$ 317,379	$ 837,672	37.89%
800798	$ 306,800	$ 809,752	37.89%
800799	$ 247,749	$ 653,896	37.89%
800800	$ 508,411	$ 1,341,871	37.89%
800801	$ 400,527	$ 1,070,732	37.41%
800802	$ 246,793	$ 833,603	29.61%
800818	$ 17,108	$ 45,154	37.89%
800824	$ 27,512	$ 72,614	37.89%
800825	$ 27,966	$ 74,202	37.69%
800826	$ 29,795	$ 99,901	29.82%
800827	$ 111,613	$ 172,903	64.55%
800830	$ 57,848	$ 102,762	56.29%
800834	$ 56,913	$ 150,214	37.89%
800849	$ 28,597	$ 75,477	37.89%
800855	$ 180,423	$ 476,199	37.89%

800856	$ 76,938	$ 203,065	37.89%
800864	$ 165,957	$ 356,770	46.52%
800867	$ 237,791	$ 628,888	37.81%
800912	$ 117,104	$ 300,000	39.03%
800921	$ 102,377	$ 198,973	51.45%
800924	$ 21,402	$ 53,461	40.03%
800932	$ 40,860	$ 60,950	67.04%
800940	$ 119,349	$ 189,161	63.09%
800971	$ 59,927	$ 149,582	40.06%
800977	$ 345,742	$ 873,732	39.57%
801040	$ 522,264	$ 1,715,868	30.44%
801041	$ 824,959	$ 2,099,069	39.30%
801042	$ 386,779	$ 1,022,161	37.84%
801057	$ 295,979	$ 781,191	37.89%
801063	$ 52,526	$ 144,879	36.25%
801089	$ 330,610	$ 688,212	48.04%
801096	$ 293,735	$ 740,666	39.66%
801101	$ 271,660	$ 722,285	37.61%
801102	$ 355,609	$ 931,922	38.16%
801103	$ 326,855	$ 868,802	37.62%
801106	$ 165,199	$ 424,028	38.96%
801107	$ 455,664	$ 1,195,290	38.12%
801119	$ 132,460	$ 201,721	65.67%
801125	$ 94,192	$ 224,278	42.00%
801142	$ 163,276	$ 369,483	44.19%
801148	$ 188,974	$ 475,972	39.70%
801149	$ 175,588	$ 430,389	40.80%
801156	$ 35,016	$ 94,020	37.24%
801167	$ 22,917	$ 60,487	37.89%
801179	$ 553,942	$ 1,410,019	39.29%
801193	$ 299,544	$ 728,465	41.12%
801206	$ 258,181	$ 644,413	40.06%
801214	$ 646,612	$ 1,649,649	39.20%
801219	$ 266,226	$ 416,652	63.90%
801220	$ 1,229,890	$ 1,867,259	65.87%
801223	$ 54,664	$ 79,736	68.56%
801224	$ 51,284	$ 132,155	38.81%
801238	$ 61,434	$ 162,146	37.89%
801240	$ 221,346	$ 337,630	65.56%
801243	$ 170,508	$ 444,615	38.35%
801250	$ 154,321	$ 387,613	39.81%
801251	$ 457,735	$ 1,213,194	37.73%
801253	$ 43,038	$ 67,557	63.71%
801269	$ 35,709	$ 85,169	41.93%
801284	$ 290,111	$ 479,871	60.46%
801295	$ 18,787	$ 48,537	38.71%
801297	$ 30,656	$ 77,128	39.75%

801299	$ 253,672	$ 423,159	59.95%
801300	$ 200,174	$ 329,063	60.83%
801302	$ 382,309	$ 1,004,427	38.06%
801304	$ 182,631	$ 489,149	37.34%
801305	$ 246,692	$ 646,305	38.17%
801306	$ 326,233	$ 855,105	38.15%
801307	$ 250,061	$ 656,155	38.11%
801308	$ 224,054	$ 587,669	38.13%
801309	$ 189,715	$ 491,706	38.58%
801315	$ 23,759	$ 63,208	37.59%
801323	$ 356,717	$ 903,437	39.48%
801356	$ 131,943	$ 332,063	39.73%
801360	$ 28,117	$ 74,211	37.89%
801365	$ 91,051	$ 224,403	40.57%
801376	$ 151,496	$ 379,839	39.88%
801377	$ 203,879	$ 514,244	39.65%
801378	$ 180,761	$ 457,652	39.50%
801410	$ 14,231	$ 37,559	37.89%
801428	$ 75,322	$ 191,468	39.34%
801439	$ 60,067	$ 207,381	28.96%
801450	$ 19,834	$ 42,314	46.87%
801472	$ 472,114	$ 1,242,931	37.98%
801475	$ 191,759	$ 485,050	39.53%
801520	$ 301,146	$ 599,021	50.27%
801527	$ 164,944	$ 303,800	54.29%
801528	$ 98,398	$ 224,593	43.81%
801546	$ 132,924	$ 335,816	39.58%
801547	$ 146,165	$ 353,022	41.40%
801548	$ 114,526	$ 296,106	38.68%
801549	$ 373,942	$ 967,872	38.64%
801550	$ 290,408	$ 749,400	38.75%
801625	$ 30,522	$ 78,229	39.02%
801626	$ 68,730	$ 173,772	39.55%
801627	$ 73,758	$ 175,476	42.03%
801628	$ 30,012	$ 51,770	57.97%
801647	$ 135,105	$ 356,598	37.89%
801648	$ 192,348	$ 507,672	37.89%
801649	$ 209,590	$ 538,709	38.91%
801650	$ 73,642	$ 194,366	37.89%
801651	$ 75,803	$ 200,070	37.89%
801652	$ 181,886	$ 486,578	37.38%
801703	$ 63,465	$ 105,465	60.18%
801709	$ 53,023	$ 131,449	40.34%
801710	$ 38,253	$ 99,682	38.37%
801712	$ 114,630	$ 293,236	39.09%
801731	$ 86,548	$ 160,023	54.08%
801770	$ 86,548	$ 160,023	54.08%

801789	$ 78,224	$ 177,015	44.19%
801799	$ 198,636	$ 514,141	38.63%
801801	$ 183,473	$ 484,248	37.89%
801806	$ 288,656	$ 713,777	40.44%
801815	$ 54,759	$ 134,703	40.65%
801827	$ 31,851	$ 61,946	51.42%
801828	$ 72,832	$ 189,234	38.49%
801834	$ 38,951	$ 95,542	40.77%
801835	$ 494,264	$ 1,286,142	38.43%
801837	$ 286,928	$ 764,796	37.52%
801843	$ 609,204	$ 1,540,704	39.54%
801844	$ 18,227	$ 49,894	36.53%
801862	$ 645,034	$ 1,642,783	39.26%
801866	$ 249,367	$ 652,119	38.24%
801868	$ 47,956	$ 123,953	38.69%
801873	$ 109,326	$ 174,951	62.49%
801874	$ 94,773	$ 134,011	70.72%
801875	$ 118,409	$ 172,662	68.58%
801886	$ 85,192	$ 270,592	31.48%
801909	$ 290,872	$ 471,793	61.65%
801950	$ 480,307	$ 1,256,906	38.21%
801952	$ 75,752	$ 198,248	38.21%
801959	$ 188,268	$ 431,288	43.65%
801979	$ 284,873	$ 704,968	40.41%
801980	$ 413,618	$ 1,087,813	38.02%
801982	$ 260,553	$ 670,462	38.86%
802002	$ 38,223	$ 95,530	40.01%
802003	$ 111,517	$ 295,653	37.72%
802032	$ 41,466	$ 82,932	50.00%
802039	$ 325,093	$ 844,928	38.48%
802042	$ 193,995	$ 501,776	38.66%
802043	$ 188,467	$ 494,587	38.11%
802130	$ 104,440	$ 155,420	67.20%
802144	$ 96,771	$ 158,521	61.05%
802198	$ 95,454	$ 251,937	37.89%
802248	$ 64,076	$ 166,560	38.47%
802275	$ 116,838	$ 305,850	38.20%
802301	$ 182,743	$ 448,799	40.72%
802330	$ 21,052	$ 29,614	71.09%
802354	$ 18,598	$ 26,369	70.53%
900613	$ 402,985	$ 725,467	55.55%
900950	$ 8,982	$ 16,382	54.83%
900992	$ 276,373	$ 505,371	54.69%
900995	$ 257,704	$ 468,202	55.04%
900997	$ 270,236	$ 487,422	55.44%
901042	$ 278,329	$ 512,345	54.32%
901043	$ 565,575	$ 1,024,301	55.22%

901045	$ 397,574	$ 716,509	55.49%
901046	$ 190,805	$ 346,393	55.08%
901049	$ 246,137	$ 437,942	56.20%
901050	$ 247,342	$ 451,033	54.84%
901051	$ 436,023	$ 798,701	54.59%
901126	$ 323,160	$ 583,869	55.35%
901128	$ 276,301	$ 497,713	55.51%
901132	$ 296,656	$ 538,105	55.13%
901274	$ 352,219	$ 639,003	55.12%
901275	$ 227,123	$ 422,278	53.79%
901276	$ 426,008	$ 788,201	54.05%
901296	$ 202,884	$ 378,865	53.55%
901309	$ 549,127	$ 956,273	57.42%
901310	$ 510,436	$ 932,904	54.71%
901312	$ 218,505	$ 396,003	55.18%
901315	$ 221,877	$ 402,692	55.10%
901362	$ 150,582	$ 274,713	54.81%
901388	$ 335,448	$ 614,463	54.59%
901389	$ 190,097	$ 346,943	54.79%
901399	$ 341,855	$ 618,919	55.23%
901400	$ 343,211	$ 624,122	54.99%
901405	$ 144,444	$ 267,352	54.03%
901406	$ 336,741	$ 620,455	54.27%
901408	$ 375,248	$ 686,203	54.68%
901409	$ 150,442	$ 283,435	53.08%
901410	$ 285,591	$ 526,818	54.21%
901432	$ 977,027	$ 1,623,261	60.19%
901454	$ 145,536	$ 258,441	56.31%
901457	$ 363,231	$ 683,043	53.18%
901475	$ 338,273	$ 616,897	54.83%
901494	$ 260,774	$ 472,882	55.15%
901534	$ 284,451	$ 486,013	58.53%
901547	$ 212,983	$ 388,197	54.86%
901548	$ 184,146	$ 334,716	55.02%
901678	$ 258,805	$ 469,111	55.17%
901679	$ 250,862	$ 452,675	55.42%
901746	$ 170,677	$ 309,752	55.10%
901747	$ 55,564	$ 102,266	54.33%
901748	$ 219,423	$ 391,610	56.03%
901749	$ 283,832	$ 514,362	55.18%
901755	$ 91,549	$ 163,787	55.90%
901773	$ 165,066	$ 300,740	54.89%
901774	$ 367,413	$ 639,096	57.49%
901780	$ 206,946	$ 378,674	54.65%
901792	$ 210,199	$ 399,854	52.57%
901867	$ 238,097	$ 443,371	53.70%
901901	$ 94,253	$ 171,690	54.90%

901906	$ 30,218	$ 53,984	55.98%
901908	$ 70,845	$ 126,920	55.82%
901914	$ 103,894	$ 184,935	56.18%
901967	$ 97,175	$ 175,066	55.51%
901972	$ 44,297	$ 81,706	54.22%
901988	$ 82,488	$ 150,340	54.87%
902030	$ 449,942	$ 818,041	55.00%
902090	$ 304,337	$ 551,263	55.21%
902108	$ 364,133	$ 654,850	55.61%

	Overhead Cost	Total Cost	Overhead % Total Cost	Average%
Total	**$ 92,668,113**	**$ 204,107,158**	**45.40%**	45.61%

Project #	Overhead Cost	Total Cost	Overhead % Total Cost
900069	$ 321,975	$ 572,944	56.20%
900613	$ 402,985	$ 725,467	55.55%
900943	$ 61,018	$ 104,340	58.48%
900947	$ 11,299	$ 19,756	57.19%
900950	$ 8,982	$ 16,382	54.83%
900958	$ 8,983	$ 16,147	55.63%
900974	$ 295,229	$ 536,290	55.05%
900992	$ 276,373	$ 505,371	54.69%
900994	$ 163,252	$ 298,510	54.69%
900995	$ 257,704	$ 468,202	55.04%
900996	$ 221,515	$ 368,879	60.05%
900997	$ 270,236	$ 487,422	55.44%
901042	$ 278,329	$ 512,345	54.32%
901043	$ 565,575	$ 1,024,301	55.22%
901045	$ 397,574	$ 716,509	55.49%
901046	$ 190,805	$ 346,393	55.08%
901047	$ 340,008	$ 614,948	55.29%
901048	$ 441,316	$ 788,580	55.96%
901049	$ 246,137	$ 437,942	56.20%
901050	$ 247,342	$ 451,033	54.84%
901051	$ 436,023	$ 798,701	54.59%
901052	$ 96,345	$ 165,788	58.11%
901092	$ 722,897	$ 1,279,572	56.50%
901093	$ 460,749	$ 832,907	55.32%
901094	$ 333,762	$ 606,857	55.00%
901095	$ 236,176	$ 426,432	55.38%
901101	$ 535,602	$ 930,169	57.58%
901124	$ 240,708	$ 419,990	57.31%
901126	$ 323,160	$ 583,869	55.35%
901127	$ 207,734	$ 378,757	54.85%
901129	$ 325,477	$ 578,297	56.28%
901130	$ 151,112	$ 271,246	55.71%
901132	$ 616,171	$ 1,108,943	55.56%
901133	$ 371,192	$ 666,671	55.68%
901134	$ 248,148	$ 446,760	55.54%
901135	$ 222,526	$ 399,835	55.65%
901165	$ 17,438	$ 31,508	55.34%
901188	$ 144,875	$ 265,670	54.53%
901190	$ 194,105	$ 369,928	52.47%
901207	$ 119,815	$ 201,925	59.34%
901237	$ 331,498	$ 597,445	55.49%
901274	$ 352,219	$ 639,003	55.12%
901275	$ 227,123	$ 422,278	53.79%
901276	$ 426,008	$ 788,201	54.05%
901277	$ 558,908	$ 1,022,650	54.65%
901281	$ 203,208	$ 348,184	58.36%

901282	$ 514,114	$ 944,983	54.40%
901283	$ 326,615	$ 597,604	54.65%
901296	$ 202,884	$ 378,865	53.55%
901299	$ 230,532	$ 426,307	54.08%
901300	$ 284,551	$ 520,904	54.63%
901302	$ 229,863	$ 413,408	55.60%
901309	$ 549,127	$ 956,273	57.42%
901310	$ 510,436	$ 932,904	54.71%
901312	$ 218,505	$ 396,003	55.18%
901314	$ 241,709	$ 442,128	54.67%
901315	$ 221,877	$ 402,692	55.10%
901317	$ 151,749	$ 272,801	55.63%
901362	$ 150,582	$ 274,713	54.81%
901363	$ 209,677	$ 379,291	55.28%
901373	$ 248,573	$ 456,774	54.42%
901386	$ 448,028	$ 808,941	55.38%
901388	$ 335,448	$ 614,463	54.59%
901389	$ 190,097	$ 346,943	54.79%
901395	$ 305,102	$ 511,860	59.61%
901399	$ 341,855	$ 618,919	55.23%
901400	$ 343,211	$ 624,122	54.99%
901401	$ 412,889	$ 689,266	59.90%
901403	$ 140,068	$ 257,339	54.43%
901404	$ 323,727	$ 538,900	60.07%
901405	$ 144,444	$ 267,352	54.03%
901406	$ 336,741	$ 620,455	54.27%
901407	$ 326,681	$ 550,807	59.31%
901408	$ 375,248	$ 686,203	54.68%
901409	$ 150,442	$ 283,435	53.08%
901410	$ 285,591	$ 526,818	54.21%
901411	$ 276,637	$ 493,694	56.03%
901412	$ 224,436	$ 417,421	53.77%
901432	$ 977,027	$ 1,623,261	60.19%
901434	$ 30,090	$ 55,890	53.84%
901440	$ 46,336	$ 84,725	54.69%
901450	$ 52,212	$ 96,910	53.88%
901454	$ 145,536	$ 258,441	56.31%
901456	$ 72,952	$ 131,044	55.67%
901457	$ 363,231	$ 683,043	53.18%
901466	$ 244,242	$ 414,751	58.89%
901467	$ 234,661	$ 393,500	59.63%
901468	$ 202,408	$ 366,153	55.28%
901469	$ 136,669	$ 247,330	55.26%
901472	$ 163,544	$ 295,888	55.27%
901475	$ 338,273	$ 616,897	54.83%
901494	$ 260,774	$ 472,882	55.15%
901516	$ 286,982	$ 516,266	55.59%

901518	$ 136,250	$ 248,539	54.82%
901520	$ 58,516	$ 104,457	56.02%
901522	$ 205,227	$ 370,988	55.32%
901523	$ 88,801	$ 159,159	55.79%
901529	$ 150,729	$ 274,526	54.91%
901534	$ 284,451	$ 486,013	58.53%
901547	$ 212,983	$ 388,197	54.86%
901548	$ 184,146	$ 334,716	55.02%
901563	$ 221,178	$ 399,788	55.32%
901564	$ 151,434	$ 272,271	55.62%
901576	$ 233,141	$ 394,964	59.03%
901592	$ 410,739	$ 765,477	53.66%
901596	$ 208,048	$ 349,408	59.54%
901602	$ 204,189	$ 370,791	55.07%
901603	$ 488,334	$ 883,948	55.24%
901606	$ 275,843	$ 483,773	57.02%
901609	$ 136,677	$ 245,991	55.56%
901610	$ 264,706	$ 484,339	54.65%
901611	$ 357,546	$ 651,210	54.90%
901612	$ 286,987	$ 525,288	54.63%
901613	$ 222,580	$ 402,633	55.28%
901614	$ 245,374	$ 446,105	55.00%
901621	$ 188,010	$ 340,405	55.23%
901622	$ 267,363	$ 480,719	55.62%
901623	$ 241,789	$ 435,083	55.57%
901624	$ 148,206	$ 258,816	57.26%
901630	$ 226,462	$ 396,385	57.13%
901666	$ 18,047	$ 32,036	56.33%
901673	$ 276,893	$ 499,968	55.38%
901677	$ 197,167	$ 348,929	56.51%
901678	$ 258,805	$ 469,111	55.17%
901679	$ 250,862	$ 452,675	55.42%
901680	$ 138,647	$ 247,755	55.96%
901681	$ 237,764	$ 428,904	55.44%
901713	$ 50,875	$ 88,644	57.39%
901725	$ 209,068	$ 376,082	55.59%
901729	$ 178,219	$ 329,638	54.07%
901742	$ 16,730	$ 31,379	53.32%
901743	$ 96,655	$ 173,480	55.72%
901744	$ 91,581	$ 167,737	54.60%
901745	$ 105,515	$ 188,221	56.06%
901746	$ 170,677	$ 309,752	55.10%
901747	$ 55,564	$ 102,266	54.33%
901748	$ 219,423	$ 391,610	56.03%
901749	$ 283,832	$ 514,362	55.18%
901750	$ 46,345	$ 82,673	56.06%
901751	$ 209,561	$ 373,616	56.09%

901753	$ 15,006	$ 28,091	53.42%
901755	$ 91,549	$ 163,787	55.90%
901756	$ 109,304	$ 194,857	56.09%
901758	$ 72,701	$ 126,713	57.37%
901759	$ 82,535	$ 147,004	56.14%
901760	$ 174,369	$ 310,923	56.08%
901773	$ 165,066	$ 300,740	54.89%
901774	$ 367,413	$ 639,096	57.49%
901775	$ 174,653	$ 357,808	48.81%
901780	$ 206,946	$ 378,674	54.65%
901785	$ 10,515	$ 17,571	59.84%
901792	$ 210,199	$ 399,854	52.57%
901794	$ 270,045	$ 491,886	54.90%
901797	$ 114,948	$ 190,495	60.34%
901802	$ 390,131	$ 693,516	56.25%
901804	$ 438,604	$ 726,327	60.39%
901867	$ 238,097	$ 443,371	53.70%
901868	$ 382,162	$ 698,439	54.72%
901869	$ 396,478	$ 724,997	54.69%
901900	$ 30,709	$ 57,236	53.65%
901901	$ 94,253	$ 171,690	54.90%
901902	$ 23,023	$ 40,866	56.34%
901903	$ 104,945	$ 187,744	55.90%
901905	$ 190,295	$ 341,789	55.68%
901906	$ 30,218	$ 53,984	55.98%
901907	$ 130,637	$ 218,871	59.69%
901908	$ 70,845	$ 126,920	55.82%
901912	$ 45,684	$ 81,644	55.96%
901913	$ 72,049	$ 129,815	55.50%
901914	$ 103,894	$ 184,935	56.18%
901915	$ 86,558	$ 153,455	56.41%
901916	$ 44,031	$ 78,167	56.33%
901959	$ 216,598	$ 364,321	59.45%
901962	$ 123,268	$ 221,017	55.77%
901964	$ 18,671	$ 31,823	58.67%
901967	$ 97,175	$ 175,066	55.51%
901972	$ 44,297	$ 81,706	54.22%
901973	$ 12,152	$ 20,372	59.65%
901974	$ 57,943	$ 101,292	57.20%
901975	$ 110,679	$ 199,178	55.57%
901978	$ 261,788	$ 474,315	55.19%
901979	$ 255,973	$ 465,539	54.98%
901980	$ 219,222	$ 397,689	55.12%
901982	$ 176,978	$ 320,525	55.22%
901983	$ 130,416	$ 238,377	54.71%
901987	$ 76,107	$ 136,833	55.62%
901988	$ 82,488	$ 150,340	54.87%

902007	$ 14,293	$ 26,424	54.09%
902030	$ 449,942	$ 818,041	55.00%
902031	$ 314,228	$ 568,782	55.25%
902039	$ 9,598	$ 16,191	59.28%
902041	$ 27,309	$ 49,807	54.83%
902074	$ 256,160	$ 462,148	55.43%
902075	$ 370,191	$ 678,193	54.58%
902076	$ 254,023	$ 462,807	54.89%
902090	$ 304,337	$ 551,263	55.21%
902091	$ 366,914	$ 683,837	53.66%
902108	$ 364,133	$ 654,850	55.61%
902111	$ 278,865	$ 506,797	55.02%
902112	$ 419,130	$ 766,443	54.69%
902115	$ 343,977	$ 625,690	54.98%
902132	$ 262,927	$ 478,084	55.00%
902133	$ 227,734	$ 407,443	55.89%
902153	$ 14,790	$ 24,902	59.39%
902185	$ 254,559	$ 460,674	55.26%
902186	$ 146,491	$ 265,205	55.24%
902220	$ 104,599	$ 181,396	57.66%
902243	$ 141,262	$ 257,445	54.87%
902261	$ 224,319	$ 401,977	55.80%
902324	$ 15,314	$ 27,580	55.53%
902337	$ 219,614	$ 397,313	55.27%
902348	$ 140,963	$ 255,382	55.20%
902432	$ 100,786	$ 181,942	55.39%
902541	$ 31,792	$ 54,893	57.92%
902549	$ 38,054	$ 68,338	55.68%
902586	$ 76,636	$ 135,530	56.55%
902605	$ 13,117	$ 22,110	59.33%
Compton Heights F&I	$ 616,171	$ 1,108,943	55.56%
pagedale 901237	$ 331,498	$ 597,445	55.49%
pagedale 901239	$ 391,003	$ 709,559	55.11%
pagedale 901240	$ 181,734	$ 330,615	54.97%
pagedale 901241	$ 437,949	$ 796,460	54.99%
pagedale 901249	$ 291,627	$ 528,409	55.19%

	Overhead Cost	Total Cost	Overhead % Total Cost	Average %
Total	**$ 49,985,587**	**$ 89,868,319**	**55.62%**	55.70%

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-2019-0115
In the Matter of the Application of Spire Missouri Inc. to Change its Infrastructure System Replacement Surcharge in its Spire Missouri West Service Territory	)))))	File No. GO-2019-0116

PUBLIC COUNSEL DATA REQUEST NO. 1

The Office of Public Counsel (Public Counsel) hereby presents the following Data Request to Spire Missouri East and Spire Missouri West pursuant to Commission Rule 4 CSR 240-2.090. Public Counsel asks that Spire respond to this request within two (2) calendar days of receipt as the Commission ordered. Please provide electronic responses to the following: opcservice@ded.mo.gov and john.clizer@ded.mo.gov. This data request is continuing in nature and requires supplemental responses as soon as further or different information is obtained that is responsive to it.

DEFINITIONS

As used herein, the words "document," "documents," or "documentation" include any original and all copies of any written, printed, typed, electronically stored, or graphic matter of any kind or nature, however produced or reproduced, now in your possession, custody or control, or in the possession, custody or control of your agents, representatives, employees of you or any and all persons acting in your behalf, including documents at any time in the possession, custody or control of such individuals or entities, or known by you to exist.

DATA REQUEST

1. On February 26, 2019, the OCP sent Spire a data request ("DR") on behalf of John Robinett numbered 8523 that requested "all documentation that defined how overhead is determined and charged for each project claimed as ISRS eligible." Spire responded to that DR as follows:

> The Company is unclear of how to respond to this request because the definition of "overhead" is vague. There are a variety of types of overheads, including department clearings, mechanical equipment clearings, vehicle hours, pension and group insurance, and other indirect charges etc. This request needs to be more narrowly defined in order for the Company to answer in a meaningful way.

While the OPC considers this to be an improper and untimely objection to its prior DR, the OPC will nevertheless seek to clarify its request through the issuance of this new DR so as to forgo further difficulties.

The "overhead" that the OPC is requesting is that found in the workpapers for individual projects that Spire has already supplied. By way of example, within the electronic copies of the company workpapers supplied by Spire there is a folder labeled "Individual Project Analysis." Within this folder are subfolders labeled "January Individual Files" and "June Individual Files." Within the folder labeled "January Individual Files" there are subfolders labeled "East" and "West." Within the folder labeled "East" are a number of files formatted for Microsoft Excel. One such file is labeled 900974. If one opens the file labeled 900974, then one would find the information contained in the following table as well as several maps and diagrams:

13313515 - Central West End Phase 1B (Partney/Baerman)

	Scenario 1 All new pipe	Scenario 2 Utilize Exsiting pipe
Plastic Abandon	264	10
Steel Abandon	30	30
Cast Iron Abandon	4781	4781
Plastic Main Installed	4425	4171
Plastic Existing Main Used	2012	254
Total Service Renew	70	13
Total Service Transfer	70	74
Total Service Abandon	22	18
Total Service Uprate	20	20
Total Service Install	0	0
Total Services	112	112
Labor Cost	108,253.81	132,711.22
Material Cost	78,075.96	76,306.05
Tool Cost	54,730.56	51,474.92
Overhead Costs	295,229.21	352,613.67
Total Cost	$536,290	$613,106

Comments:
Added extra tie in holes to tie in and upgrade remainin plastic and changed over 61 services from renewals to transfer.

One of the lines of the table found in the file labeled 900974 is titled "overhead costs." This line labeled "overhead costs" is the "overhead" to which the OPC's DR refers.

The OPC is requesting that, for each and every "individual project analysis" for which an "overhead cost" was calculated for either Spire East or Spire West, Spire provide the following information and produce all supporting documentation regarding the same:

(a) A breakdown of all the costs that are included in the line labeled "overhead costs;"
(b) An explanation of how each cost item that makes up the line labeled "overhead costs" is itself calculated;
(c) A narrative description of what measures Spire has in place to ensure all costs included in the line labeled "overhead costs" are not already being collected in base rates; and (when applicable)
(d) An explanation via narrative response for why the line labeled "overhead costs" makes up more than fifty percent of the total cost

HOWEVER, given the scale of this request and the short time remaining for discovery, the OPC will accept **instead** answers to the following more general questions:

(a) A breakdown of all costs that **may** be included in the line labeled "overhead costs" for any given "individual project analysis;"
(b) An explanation of how each cost item that **might** make up the total in the line labeled "overhead costs" for any given "individual project analysis" would itself be calculated;
(c) A narrative description of what measures Spire has in place to ensure that any and all costs that **might** be included in the line labeled "overhead costs" for any given "individual project analysis" are not already being collected in base rates; and
(d) A general explanation via narrative response for why the line labeled "overhead costs" makes up more than fifty percent of the total cost for so many of its projects.

In the event that Spire chooses to answer this second set of more general questions, then the OPC further requests that Spire provide specific examples for each of its answers based on the individual project analysis file labeled 900974 (and identified above).

The OPC notes that these questions should not be answered by reference to ambiguous "accounting practices." There should be sufficient detail within Spire's response to permit independent third-parties to verify calculations are correct.

Submitted March 22, 2019, by John Clizer

(a) A breakdown of all costs that may be included in the line labeled "overhead costs" for any given "individual project analysis;"

Please see the attached spreadsheet which contains the overhead categories and amounts used to derive the calculation of the estimate for overhead costs for both ISRS scenario one and scenario two that were provided as part of the Company's workpapers for project number 900974. Filter column F of the spreadsheet to see the different scenarios (1 and 2).

(b) An explanation of how each cost item that might make up the total in the line labeled "overhead costs" for any given "individual project analysis" would itself be calculated;

For each of the line items in the attached spreadsheet an estimate of the quantity required multiplied by the applicable unit of measurement results in the cost estimate for that item.

(c) A narrative description of what measures Spire has in place to ensure that any and all costs that might be included in the line labeled "overhead costs" for any given "individual project analysis" are not already being collected in base rates; and

Projects are flagged as ISRS eligible or non-ISRS eligible. Those projects that are deemed ISRS eligible are all projects that meet the requirements within the ISRS statute including the requirement that all projects "were not included in the gas corporation's rate base in its most recent general rate case." Therefore, overheads for projects that are deemed ISRS eligible are incremental to any overheads associated with projects that are included in the rate base used in the Company's current base rate revenue requirement. In addition, as stated in the Company response to OPC DR 8524, for overheads capitalized, this capitalized portion is separated from and serves to reduce the O&M expense percentage that is used to establish the Company's revenue requirement in a rate case.

(d) A general explanation via narrative response for why the line labeled "overhead costs" makes up more than fifty percent of the total cost for so many of its projects.

As the Company explained in its initial response to OPC Data Request 8523, the Company capitalizes numerous items in its overheads. The Company has not capitalized any items that are not considered standard overhead loadings that have been reviewed in prior ISRS and general rate cases. The fact that in some instances overheads make up over 50% is not unusual as the Company has followed the same treatment for these items associated with capital projects that it has in the past.

WORKORDER	PROJECTID	REQUESTNUM	CUNAME
13313515	900974	2199	Overheads Capitalized-General (Materials, Tools)
13313515	900974	2199	Overheads Capitalized-General (Materials, Tools)
13313515	900974	2199	Overheads Capitalized-General (Materials, Tools)
13313515	900974	2199	Overheads Capitalized-General (Materials, Tools)
13313515	900974	2199	Overheads Capitalized-General (Materials, Tools)
13313515	900974	2199	Overheads Capitalized-General (0.479 of PT)
13313515	900974	2199	Overhead Capitalized-Benefits (0.472 of Labor+DC)
13313515	900974	2199	Payroll Taxes
13313515	900974	2199	Department Clearings
13313515	900974	2199	Overheads Capitalized-General (0.479 of PT)
13313515	900974	2199	Overhead Capitalized-Benefits (0.472 of Labor+DC)
13313515	900974	2199	Payroll Taxes
13313515	900974	2199	Department Clearings
13313515	900974	2199	Overheads Capitalized-General (0.479 of PT)
13313515	900974	2199	Overhead Capitalized-Benefits (0.472 of Labor+DC)
13313515	900974	2199	Payroll Taxes
13313515	900974	2199	Department Clearings
13313515	900974	2199	Overheads Capitalized-General (Materials, Tools)
13313515	900974	2199	Overheads Capitalized-General (Materials, Tools)
13313515	900974	2199	Overheads Capitalized-General (Materials, Tools)
13313515	900974	2199	Overheads Capitalized-General (Materials, Tools)
13313515	900974	2199	Overheads Capitalized-General (Materials, Tools)
13313515	900974	2199	Overheads Capitalized-General (Materials, Tools)
13313515	900974	2199	Overheads Capitalized-General (Materials, Tools)
13313515	900974	2199	Overheads Capitalized-General (Materials, Tools)

ESTVERSION	ESTDESCRIPTION	RECORDTYPE	LINECOST	QUANTITY	SITEID
6	ISRS 2	LDG	1455.48	3038.59	SITE ONE
6	ISRS 2	LDG	4898.12	10225.71	SITE ONE
6	ISRS 2	LDG	92.01	192.09	SITE ONE
6	ISRS 2	LDG	2606.44	5441.41	SITE ONE
6	ISRS 2	LDG	24.6	51.35	SITE ONE
6	ISRS 2	LDG	3619.4	49580.81	SITE ONE
6	ISRS 2	LDG	50324.52	49580.81	SITE ONE
6	ISRS 2	LDG	7585.86	49580.81	SITE ONE
6	ISRS 2	LDG	57017.93	49580.81	SITE ONE
6	ISRS 2	LDG	5810.06	79589.82	SITE ONE
6	ISRS 2	LDG	80783.67	79589.82	SITE ONE
6	ISRS 2	LDG	12177.24	79589.82	SITE ONE
6	ISRS 2	LDG	91528.29	79589.82	SITE ONE
6	ISRS 2	LDG	258.46	3540.59	SITE ONE
6	ISRS 2	LDG	3593.7	3540.59	SITE ONE
6	ISRS 2	LDG	541.71	3540.59	SITE ONE
6	ISRS 2	LDG	4071.68	3540.59	SITE ONE
6	ISRS 2	LDG	649.96	1356.9	SITE ONE
6	ISRS 2	LDG	3299.04	6887.35	SITE ONE
6	ISRS 2	LDG	714.2	1491.03	SITE ONE
6	ISRS 2	LDG	8482.35	17708.45	SITE ONE
6	ISRS 2	LDG	122.89	256.56	SITE ONE
6	ISRS 2	LDG	8129.83	16972.51	SITE ONE
6	ISRS 2	LDG	4576.18	9553.61	SITE ONE
6	ISRS 2	LDG	250.05	522.03	SITE ONE