

<b>Exhibit No.:</b>	
<b>Issue:</b>	<b>Safety Replacement Programs</b>
<b>Witness:</b>	<b>Craig R. Hoeflerlin</b>
<b>Type of Exhibit:</b>	<b>Direct Testimony</b>
<b>Sponsoring Party:</b>	<b>Laclede Gas Company</b>
<b>Case No.:</b>	<b>GR-2013-0171</b>
<b>Date Testimony Prepared:</b>	<b>December 21, 2012</b>

**LACLEDE GAS COMPANY**

**GR-2012-0171**

**DIRECT TESTIMONY**

**OF**

**CRAIG R. HOEFERLIN**

**DECEMBER 2012**

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**DIRECT TESTIMONY OF CRAIG R. HOEFERLIN**

- Q. Please state your name and business address.
- A. My name is Craig R. Hoeflerlin, and my business address is 3950 Forest Park Avenue, St. Louis, Missouri 63108.
- Q. By whom are you employed and in what capacity?
- A. I am Vice President – Engineering and Field Services for Laclede Gas Company ("Laclede" or "Company").
- Q. How long have you held this position, and would you briefly describe your duties?
- A. I was appointed to this position on May 1, 2012. In this capacity, I manage the Company’s pipeline safety and replacement programs, environmental compliance, operations training, GIS and system planning, construction services, project engineering, damage prevention and right-of-way departments.
- Q. What is your educational background?
- A. I received a Bachelor of Science Degree in Chemical Engineering in 1984 from the University of Missouri-Columbia.
- Q. Please describe your experience with Laclede.
- A. I have been continuously employed by Laclede since June 1984. Prior to my current position, I held a variety of positions in the Engineering, Gas Supply and Control, and Construction and Maintenance Departments.
- Q. What other experience do you have in regards to pipeline safety?
- A. Currently I am the 2012 chair of the Operating Section Managing Committee for the American Gas Association. In this capacity I interact with the Federal

1 Pipeline and Hazardous Materials Administration as well as the staff of the  
2 National Transportation Safety Board.

3 Q. Have you previously testified before this Commission?

4 A. Yes, I have. I testified in Case Nos. GR-98-374, GR-99-315 and GR-2001-629.

5 **PURPOSE OF TESTIMONY**

6 Q. What is the purpose of your testimony in this proceeding?

7 A. My testimony will provide a general explanation of state pipeline safety programs  
8 that Laclede complies with as mandated by the Missouri Public Service  
9 Commission. I will also address how Laclede has accelerated its cast iron main  
10 program. Finally, I will recommend changes to that program and to the bare steel  
11 services program intended to make those programs more cost efficient without  
12 sacrificing safety.

13 **PIPELINE SAFETY PROGRAMS**

14 Q. How extensive are Laclede's facilities?

15 A. Laclede's system includes 222 miles of steel transmission lines, 8,500 miles of  
16 steel, plastic and cast iron distribution mains and 614,000 steel, plastic and hard  
17 copper service lines.

18 Q. What types of programs does Laclede use to administer its pipeline safety  
19 program?

20 A. The Company uses over 70 different programs to administer its pipeline safety  
21 program. These programs include pipeline design and construction, odorization,  
22 tapping, purging, pressure testing, control room management, corrosion control  
23 monitoring, system surveillance, pressure limiting device inspections, valve

1 inspections, leakage surveys and leak management, damage prevention and public  
2 awareness.

3 Q. Does Laclede employ integrity management programs as part of its pipeline  
4 safety programs?

5 A. Yes. The Company has a transmission integrity management program (TIMP)  
6 that employs numerous risk based testing protocols to evaluate the 222 miles of  
7 transmission pipelines. Based on these evaluations, repairs and/or replacement of  
8 the transmission lines are performed to ensure the safe operation of this system.  
9 In addition, the Company has a distribution integrity management program  
10 (DIMP). This program integrates reasonably available information about our  
11 distribution pipelines in order to identify risks and focus priority attention to those  
12 areas. Using DIMP, the Company is better able to identify threats, evaluate and  
13 rank risks, implement measures to address those risks, measure performance and  
14 evaluate the effectiveness of the program.

15 Q. Does Laclede have replacement programs mandated by the Missouri Public  
16 Service Commission?

17 A. Yes.

18 Q. Please list the mandated replacement programs.

19 A. The mandated replacement programs include: (A) the unprotected bare steel main  
20 replacement program; (B) the unprotected bare steel service replacement  
21 program; and (C) the cast iron replacement program. In addition, the Company  
22 completed its mandated direct buried copper service replacement program and  
23 associated bar hole survey in September of 2010.

1 Q. What is the basis for the unprotected bare steel main replacement program?

2 A. The bare steel main replacement program was mandated in 4 CSR 240-  
3 40.030(15)(E) and Case No. GO-91-239. The schedule set forth in Case No.  
4 GO 91-239 required replacement of 20,000 feet per year based on leak history and  
5 1,800 feet per year based on wall-to-wall pavement and areas of high  
6 concentration of the general public through fiscal year 1998. The Company  
7 continued replacements at that rate until the bare steel mains in wall-to-wall  
8 pavement was completed in 2003 and the program was modified by Case No.  
9 GO-2003-0506, requiring replacement of 10,000 feet year based on leak history.  
10 All bare steel main will be replaced by the end of fiscal year 2014.

11 Q. What levels of capital expenditures does the Company expect to incur to comply  
12 with the mandated bare steel main replacement program?

13 A. The estimated capital expenditures associated with the mandated replacements  
14 under the bare steel main replacement program are \$1.7 million and \$1.7 million  
15 respectively for fiscal years 2013 and 2014.

16 Q. What is the basis for the unprotected bare steel service replacement program?

17 A. The bare steel service replacement program was mandated in 4 CSR 240-  
18 40.030(15)(C) and Case No. GO-91-239 and modified by Case No. GO-99-155.  
19 Case No. GO-99-155 revised the replacement schedule during the direct buried  
20 copper replacement program to require only the renewal of bare steel service lines  
21 found leaking and those exposed during main replacement programs or other  
22 routine work. At the conclusion of the direct buried copper service replacement  
23 program, the remaining bare steel services must be renewed by 2020.

1 Replacements planned for fiscal years 2013 and 2014 are 600 and 600,  
2 respectively.

3 Q. What levels of capital expenditures does the Company expect to incur to comply  
4 with the mandated bare steel service replacements?

5 A. The estimated capital expenditures associated with the mandated replacements  
6 under the bare steel service replacement program are \$3.0 million and \$3.0  
7 million respectively for fiscal years 2013 and 2014.

8 Q. What is the basis for the cast iron replacement program?

9 A. Laclede's cast iron system currently consists of 786 miles of cast iron main found  
10 mainly in the City of St. Louis. The vast majority of this main, 722 miles, is  
11 operated at low pressure which is defined to be 0.30 pounds per square inch or 8  
12 inches of water column. The remainder is operated at medium pressure which is a  
13 maximum of 25 pounds per square inch. In addition, the system is fed by 130  
14 regulator stations which are located in below ground vaults.

15 Q. What is the history of Laclede's cast iron main replacement program?

16 A. The cast iron replacement program was mandated by 4 CSR 240-40.030(15)(D)  
17 and Case No. GO-91-275. At the time of its inception, the cast iron replacement  
18 program contained six specific priority replacement categories briefly described  
19 below:

Category Code	Required Replacement	Description
C1	10/1/94	6-inch Medium Pressure in areas of wall to wall pavement
C2	10/1/96	Low Pressure, 3 break areas with 1 occurring since 1983
C3	10/1/98	6-inch Medium Pressure in areas of concentrations of general public

C4	10/1/01	Low Pressure, 2 break areas with 1 occurring since 1983
C5	10/1/01	Low Pressure, 3 break areas all occurring prior to 1983
C6	10/1/03	All remaining areas of 6-inch Medium Pressure

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2 Additionally, ongoing replacement categories were defined as follows:

Category Code	Required Replacement	Description
C7	Within 3 years of discovery	Low Pressure, 2 break areas with the discovery of third break
C8	Within 5 years of discovery	Low Pressure, 1 break areas with the discovery of second break
C9	As required	Areas of extensive excavation, blasting or construction
D1	As required	Areas defined by 4 CSR 240-40.030(13)(Z)
D2	As required	Unspecified newly identified priority replacement areas

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4 The Company has completed the specific priority replacement category C1, C2,  
5 C3, C4, C5 and C6 replacements. The Company is in compliance with the  
6 replacement requirements for ongoing replacement categories C7 and C8. In  
7 addition, the Company continues to track and schedule for replacement, where  
8 practical, cast iron main replacements that were defined in the long-term  
9 replacement program. These areas include low pressure areas with two existing  
10 breaks which occurred prior to 1983, low pressure areas with one break since  
11 1983, six-inch and smaller low pressure mains under wall to wall pavement, and  
12 sections which demonstrate significant graphitization or in areas of angle of  
13 repose.

14 Q. Has this program been successful?

15 A. While the program has enhanced overall safety throughout the years, it is very

1 inefficient in terms of cost per foot of cast iron replaced. Also, the annual  
2 replacement rate under this program has been 5-12 miles per year, mostly  
3 individual blocks rather than entire neighborhoods.

4 Q. Has the program been modified since its inception in 1991?

5 A. Yes. In addition to the cast iron required to be replaced in Case No. GO-91-275,  
6 in 2005 the Company modified its program to include a risk or priority matrix.  
7 In addition to break history, this program also focused on leak history,  
8 graphitization (which occurs when the iron is leached out of the cast iron leaving  
9 only brittle graphite carbon), seismic susceptibility, areas with wall to wall  
10 pavement and areas with bare steel services. While this program modification  
11 continued to enhance overall safety, it was still very inefficient in terms of cost  
12 per foot of cast iron replaced, and the average annual replacement rate continued  
13 at 5-12 miles per year again with a focus on individual streets.

14 Q. Have there been further enhancements to the program since 2005?

15 A. Yes. In 2011, the Company decided to work toward developing a master plan to  
16 replace all 786 miles of remaining cast iron main (the "master plan"). The  
17 development and implementation of the master plan led to the replacement of 16  
18 miles of cast iron in fiscal 2011 and more than 31 miles of cast iron in fiscal 2012.

19 Q. Besides an accelerated replacement rate of cast iron and an increase in efficiency,  
20 what are the main project drivers which led to the development of a master plan?

21 A. The main project drivers are to continue to reduce risk and improve the reliability  
22 of our distribution system. Many of our cast iron mains are over 130 years old.  
23 In addition, recent incidents involving cast iron in Allentown and Philadelphia,



1 Pennsylvania have spurred the Company to escalate its cast iron removal  
2 schedule. These incidents have also resulted in increased federal scrutiny. The  
3 federal government now requires the United States Department of Transportation  
4 to track the amount of cast iron each year in the United States and report back to  
5 Congress.

6 Q. Were operations and maintenance issues a key to the development of a master  
7 plan?

8 A. Yes. Water infiltration of Laclede's cast iron mains cause water outages and  
9 freeze-ups resulting in safety and customer service issues. Scale build-up in low  
10 pressure cast iron mains leads to inadequate pressure, also a major source of risk  
11 concerns and customer service problems. Bell joints that were used to join cast  
12 iron mains and occur every twelve feet are prone to leaks and must be dug up and  
13 clamped.

14 Q. What are the key design elements of the master plan?

15 A. All cast iron main will be replaced. All low and medium pressure mains and  
16 services will be replaced with a higher intermediate pressure system which  
17 operates at a maximum pressure of 60 pounds per square inch. Currently, there  
18 may be up to five pressure systems on one block. Laclede's master plan will  
19 decrease the number of pressure systems in the city from five to three. As a  
20 consequence, there will be fewer mains in the streets, which should result in fewer  
21 third party damages. Over 100 miles of header main consisting of 4, 6, 8 and 12-  
22 inch plastic will be installed. The grid main will be 2-inch plastic. The number of  
23 regulator stations will be reduced from the original 130 to six modern and highly

1 cost efficient stations. Existing plastic and steel mains may be reutilized if main  
2 condition, cathodic protection and pressure test records are good. And valves will  
3 be installed for emergency shutoff purposes.

4 Q. What are the foremost benefits of Laclede's cast iron replacement master plan?

5 A. Enhanced safety and customer service and satisfaction due to the accelerated  
6 replacement of all cast iron in Laclede's system. Also, improved cost efficiency  
7 due to the Company incorporating strategic replacements with its mandatory  
8 replacement requirements (break areas). Laclede will be replacing entire  
9 neighborhoods rather than individual blocks or streets. All of the Company's  
10 meters on the low pressure system are inside customers' homes and businesses.  
11 Laclede's plan is to move as many meters outside as it can, again a significant  
12 increase in safety and customer service.

13 Q. Are there other benefits to be derived from Laclede's cast iron main replacement  
14 master plan?

15 A. As opposed to working an awkward web of streets, performing neighborhood  
16 projects will allow the Company to better communicate with city aldermen and  
17 alderwomen as well as other officials. Communication will continue to improve  
18 with our customers. Laclede will coordinate activities with other utilities like  
19 Ameren, MSD and City Water. The Company will also be able to work with the  
20 city to more efficiently coordinate paving and street repairs. And the hiring of  
21 over 60 new employees – 50 construction personnel, 7 supervisors and 4  
22 engineers - will help promote knowledge transfer from our aging workforce.

23 Q. Are there other issues that could be addressed now that would help promote the

1 efficient replacement of cast iron?

2 A. Yes. As discussed earlier in my testimony, the bare steel service replacement  
3 program was modified by Case No. GO-99-155 in which the replacement  
4 schedule during the direct buried copper replacement program required only the  
5 renewal of bare steel service lines found leaking and those exposed during main  
6 replacement programs or other routine work. Now that the direct buried copper  
7 service replacement program has been completed, the remaining bare steel  
8 services, which are connected to cast iron mains, must be renewed by 2020. But  
9 it is more efficient to continue the replacement of bare steel service lines found  
10 leaking or as they are exposed during the current accelerated strategic cast iron  
11 replacement program, rather than diverting resources to individually locate and  
12 replace the bare steel service lines served off cast iron mains that are not yet  
13 scheduled to be replaced. I would recommend that our current bare steel service  
14 replacement program be modified to continue this efficient practice, resulting in  
15 all bare steel services being replaced by the conclusion of the cast iron main  
16 replacement program.

17 Q. Are there still other issues that could be addressed now that would help promote  
18 the efficient replacement of cast iron?

19 A. Yes. As also discussed earlier in my testimony, the cast iron replacement  
20 program mandated by 4 CSR 240-40.030(15)(D) and Case No. GO-91-275 spells  
21 out very specific replacement categories with very defined timelines. Again,  
22 while this mandated program has enhanced overall safety throughout the years, it  
23 is very inefficient in terms of cost per foot of cast iron replaced because it drives

1 relatively short cast iron replacements throughout the distributions system. It  
2 would be more efficient to extend the deadlines for these specific replacement  
3 categories so that they would be replaced as part of the larger strategic cast iron  
4 replacement program as directed by the cast iron replacement master plan. And if  
5 the particular deadlines needed to be extended in order to allow the incorporation  
6 of the replacement categories at the time of the strategic replacement, additional  
7 leak surveys could be performed until those affected segments are replaced so that  
8 safety is not compromised. This same principle could be applied to other  
9 mandated areas of the program such as angle of repose. I would therefore  
10 recommend that our current mandated cast iron replacement program be modified  
11 to allow for extended deadlines with additional leak surveys, resulting in more  
12 efficient replacement of cast iron under the strategic program with no compromise  
13 in safety.

14 Q. What is the anticipated timeframe to complete the cast iron replacement program?

15 A. More than 31 miles of cast iron was replaced in fiscal 2012. The Company plans  
16 to replace 40 miles in fiscal 2013 along with installing 18 miles of header main.  
17 The key to reaching this milestone is another year of weather comparable to this  
18 past year which afforded an ideal construction environment. Laclede plans to  
19 continue at this replacement rate in the foreseeable future.

20 Q. What is the estimated total cost?

21 A. The total cost for replacing cast iron in fiscal 2012 was \$27.8 million.

22 Q. Does this conclude your testimony?

23 A. Yes.

