

Exhibit No:
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Witness: Timothy S. Lyons
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Sponsoring Party: Laclede Gas Company;
Missouri Gas Energy
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**LACLEDE GAS COMPANY
MISSOURI GAS ENERGY**

**GR-2017-0215
GR-2017-0216**

DIRECT TESTIMONY

OF

TIMOTHY S. LYONS

APRIL 2017

TABLE OF CONTENTS

PURPOSE AND OVERVIEW OF TESTIMONY	2
LEAD-LAG STUDY APPROACH.....	3
Revenue Lag.....	5
Expense Lag.....	7
O&M Expenses	7
Current Income Tax Expense	10
Taxes Other than Income Taxes.....	11
Interest Expense.....	12

SCHEDULES

TSL-D1

TSL-D2

TSL-D3

TSL-D4

TSL-D5

DIRECT TESTIMONY OF TIMOTHY S. LYONS

1 **Q. PLEASE STATE YOUR NAME, OCCUPATION AND BUSINESS**
2 **ADDRESS.**

3 A. My name is Timothy S. Lyons. I am a Partner at ScottMadden, Inc. My business
4 address is 1900 West Park Drive, Suite 250, Westborough, Massachusetts 01581.

5 **Q. ON WHOSE BEHALF ARE YOU SUBMITTING THIS TESTIMONY?**

6 A. I am submitting this testimony on behalf of Laclede Gas (“LAC”) and Missouri
7 Gas Energy (“MGE”), operating units of Laclede Gas Company (“Laclede” or
8 “Company”).

9 **Q. PLEASE DESCRIBE YOUR PROFESSIONAL EXPERIENCE.**

10 A. I have more than 30 years of experience in the energy industry. I started my
11 career in 1985 at Boston Gas Company (now part of National Grid), eventually
12 becoming Director of Rates and Revenue Analysis. In 1993, I moved to
13 Providence Gas Company (also now part of National Grid), eventually becoming
14 Vice President of Marketing and Regulatory Affairs. Starting in 2001, I held a
15 number of management consulting positions in the energy industry first at KEMA
16 and then at Quantec, LLC. In 2005, I became Vice President of Sales and
17 Marketing at Vermont Gas Systems, Inc. before joining Sussex Economic
18 Advisors, LLC (“Sussex”) in 2013. Sussex was acquired by ScottMadden on
19 June 1, 2016.

20 **Q. WHAT IS YOUR EDUCATIONAL BACKGROUND?**

21 A. I hold a Bachelor’s degree from St. Anselm College, a Master’s degree in
22 Economics from The Pennsylvania State University, and a Master’s degree in

1 Business Administration from Babson College. A summary of my professional
2 and educational background, including a list of my testimony in prior
3 proceedings, is included in Exhibit TSL-D1.

4
5 **I. PURPOSE AND OVERVIEW OF TESTIMONY**

6 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

7 A. The purpose of my testimony is to sponsor the lead-lag study. The lead-lag study
8 is used to determine the Cash Working Capital (“CWC”) requirement for the
9 Company.

10 **Q. HAVE YOU PREPARED EXHIBITS SUPPORTING YOUR TESTIMONY?**

11 A. Yes. Schedules TSL-D2 through TSL-D5 support the lead-lag study. The
12 Schedules were prepared by me or under my direction.

13 **Q. PLEASE DEFINE THE TERM “CASH WORKING CAPITAL” AS A RATE**
14 **BASE COMPONENT.**

15 A. The term “cash working capital” refers to the net funds required by the Company
16 to pay for goods and services between the time they are paid for by the Company
17 and the time payment is received by customers. For the Company, the cost of
18 goods and services includes: operations and maintenance (“O&M”) expenses,
19 including labor expenses and non-labor expenses; federal, state, and local taxes;
20 employment taxes; and interest payments.

21 **Q. HOW DID YOU DETERMINE THE CWC REQUIREMENT?**

22 A. The CWC requirement was determined using the results of a lead-lag study,
23 which compares the net difference between the revenue lag and the expense lag.

1 The revenue lag represents the number of days between the time customers
2 receive their service and the time customer payments are made available to the
3 Company. The longer the revenue lag, the more cash the Company needs to fund
4 its day-to-day operations. The expense lag represents the number of days between
5 the time the Company receives goods and services used to provide service, and
6 the time payments are made for those goods and services, *i.e.*, when those funds
7 are no longer available to the Company. The longer the expense lag, the less cash
8 the Company needs to fund its day-to-day operations. Together, the revenue lag
9 and expense lag measure the net lead/lag to determine the CWC requirement,
10 which becomes a component of the Company's rate base.

11 **Q. DO THE RESULTS OF THE LEAD-LAG STUDY REPRESENT AN**
12 **ACCURATE ASSESSMENT OF THE COMPANY'S CWC**
13 **REQUIREMENT?**

14 A. Yes. The lead-lag study represents an accurate assessment of LAC and MGE's
15 actual CWC needs during the test year by determining the requirements for both
16 business units. Furthermore, the methods used to conduct this lead-lag study are
17 generally consistent with those previously used by LAC and MGE in their most
18 recent rate case proceedings, Nos. GR-2013-0171,¹ and GR-2014-0007².

19 **II. LEAD-LAG STUDY APPROACH**

20 **Q. PLEASE SUMMARIZE THE APPROACH USED TO PREPARE THE**
21 **LEAD-LAG STUDY AND ITS RESULTS.**

¹ Laclede Gas Company, Order Approving Unanimous Stipulation and Agreement, No. GR-2013-0171, Order (July 8, 2013).

² MGE did not file a full lead-lag study in its most recent rate case proceeding, GR-2014-0007. The study was based on the results of the study filed in MGE's prior rate case proceeding, GR-2009-0355 (February 10, 2010).

1 A. The lead-lag study is summarized in Schedule TSL-D2 and TSL-D4, and shows
2 that the net CWC is approximately \$21.6 million and \$7.1 million for LAC and
3 MGE, respectively, based on the test year January 1, 2016 through December 31,
4 2016. The CWC calculation is based on the results of the lead-lag study, which is
5 applied to the test year amounts as adjusted in the Cost of Service model for
6 O&M expenses, taxes, and interest expense. I relied on data supplied by the
7 Company to prepare the lead-lag study, including: financial and customer data to
8 determine the revenue lags, a sample of invoices to determine expense lags, and
9 various other supporting documents. In addition, I reviewed the most recent lead-
10 lag studies that were filed with the Commission

11 **Q. PLEASE DESCRIBE THE DEVELOPMENT OF THE LEAD-LAG STUDY.**

12 A. The lead-lag study consists of two elements: revenue lags and expense lags. The
13 lags are measured in days, converted to dollar-days to create a weighted average,
14 and summarized for each element in the lead-lag study. The difference between
15 the revenue lag and the expense lag determines if there is a net revenue lag
16 (revenue lag days are more than expense lag days for a component) or a net
17 expense lead (revenue lag days are less than expense lag days for a component).
18 The methodology used for both LAC and MGE to determine revenue and expense
19 lags was consistent for all common revenue and expense items.

20 **Q. PLEASE DESCRIBE THE RESULTS OF YOUR LEAD-LAG STUDY.**

21 A. Schedules TSL-D3 and TSL-D5 provide the calculations of the CWC for LAC
22 and MGE, respectively, based on the results of the lead-lag study. The Schedules
23 show the total number of revenue lag days and expense lag days during the test

1 year. The net difference between the computed revenue lag days and expense lag
2 days was then multiplied by the average daily revenue requirements to produce
3 the net cash working capital requirement.

4

5 i. **Revenue Lag**

6 **Q. PLEASE DESCRIBE THE CALCULATION OF THE REVENUE LAG.**

7 A. The calculation of the revenue lag is included in Schedules TSL-D2 and TSL-D4.
8 The revenue lag is measured from the time service is provided to customers until
9 the time payment is received from customers. The revenue lags are weighted by
10 the billed revenues at current rates. This approach is generally consistent with
11 LAC and MGE's most recent lead-lag studies that were filed with the
12 Commission

13 **Q. PLEASE DESCRIBE THE COMPONENTS OF THE REVENUE LAG.**

14 A. The revenue lag is based on invoices issued during the test year to customers.
15 The revenue lag consists of three components: (1) the service lag; (2) the billing
16 lag; and (3) the collection lag. The total number of days produced by the three
17 components represents the days from the time service is provided to customers
18 until payment is received from customers.

19 **Q. WHAT IS THE SERVICE LAG FOR THOSE CUSTOMERS?**

20 A. The service lag represents the number of days from the midpoint of the period
21 during which service is provided (i.e., the service period) to the end of the service
22 period. Since service is provided on a monthly basis over the year, the service lag

1 for both Laclede Gas and MGE is one-half of a calendar month, or on average
2 15.21 days.

3 **Q. WHAT IS THE BILLING LAG FOR THOSE CUSTOMERS?**

4 A. The billing lag represents the number of days from the end of the service period to
5 the time invoices are issued to customers.

6 **Q. HAVE YOU MEASURED THE BILLING LAG DURING THE TEST
7 YEAR?**

8 A. Yes. The billing lag during the test year was 2.17 days for both LAC and MGE,
9 as shown on Schedules TSL-D3 and TSL-D5.

10 **Q. WHAT IS THE COLLECTION LAG FOR THOSE CUSTOMERS?**

11 A. The collection lag represents the number of days from the time invoices are issued
12 to customers to when payment is received. Collection lag is calculated by
13 dividing the Company's monthly revenues over the test year by the average daily
14 accounts receivable balance to generate the turnover ratio. This ratio is then
15 divided into 365, the number of days in the year, to derive the average collection
16 lag days.

17 **Q. HAVE YOU MEASURED THE COLLECTION LAG DURING THE TEST
18 YEAR?**

19 A. Yes. The collection lag during the test year is 33.78 days and 30.53 days for LAC
20 and MGE, respectively, as shown on Schedules TSL-D3 and TSL-D5.

21 **Q. WHAT IS THE TOTAL REVENUE LAG IN THE LEAD-LAG STUDY?**

22 A. The total revenue lag in the lead-lag study is 51.16 days and 47.92 for LAC and
23 MGE, respectively, as shown on Schedules TSL-D2 and TSL-D4.

1

2 ii. **Expense Lag**

3 **Q. HOW DID YOU DETERMINE THE LAG DAYS FOR EXPENSES?**

4 A. The lag days for expenses were determined by first separating the expenses into
5 four groups: (1) Operations and Maintenance (“O&M”) expenses, separated
6 between purchased gas and non-gas O&M expenses; (2) Income Taxes; (3) Taxes
7 Other than Income Taxes; and (4) Interest Payments on long-term debt. The lag
8 days for each of these groups was measured independently.

9

10 **1. O&M Expenses**

11 **Q. HOW DID YOU DETERMINE THE LAG DAYS ASSOCIATED WITH**
12 **O&M EXPENSES?**

13 A. O&M Expenses were differentiated into the following categories: Regular
14 Payroll; Benefits; Missouri PSC Assessment; and Other O&M Expenses. The lag
15 days for each of these categories were measured separately and calculated as the
16 weighted lead-lag days for the O&M Expense category. Subtracted from this total
17 were uncollectible expense and non-cash payments, which were removed from
18 O&M expense to conform with the methodology used in prior cases.

19 **Q. HOW WERE THE LAG DAYS FOR THE REGULAR PAYROLL**
20 **EXPENSES DETERMINED?**

21 A. The lag days for regular payroll expenses were determined based on the salary
22 and wage payment schedule, which pays employees on a bi-weekly basis.
23 Employees are paid on the Friday following the end of the pay period. If the

1 Friday payday falls on a holiday, the payment is made one day earlier, on
2 Thursday. The lag days for regular payroll expenses were calculated by
3 determining the average number of days between the midpoint of the pay period
4 and the payment date to employees. The calculations were based on actual pay
5 periods during the test year. The calculations show that the lag days for regular
6 payroll expenses were 11.96 days for both LAC and MGE employees paid by
7 direct deposit.

8 **Q. DID YOU MAKE AN ADJUSTMENT FOR THOSE EMPLOYEES WHO**
9 **ARE PAID BY CHECK?**

10 A. It was unnecessary to make such an adjustment since all employees are paid by
11 direct deposit.

12 **Q. HOW WERE THE LAG DAYS FOR THE BENEFITS EXPENSES**
13 **DETERMINED?**

14 A. The lag days for Laclede Gas's Benefits Expenses were based on payments made
15 to the pension plan at various points throughout the test year. The lag days were
16 determined based on the days between the midpoint of the test period and the date
17 payments were made. The lag days for Benefits were determined by weighing the
18 amounts associated with those benefits – namely, Pension and Other Post-
19 Retirement Benefits, Group Insurance, 401(k) matching expense, and Other
20 Miscellaneous Benefits. Group Insurance is broken into five categories: Medical,
21 Dental, Vision, Prescriptions, and Administrative Services Only (“ASO”) Fees.
22 The lag days for each category were calculated and weighed by their respective

1 test year expense amounts to develop a composite lag for all Benefits Expenses of
2 14.42 for LAC and 13.56 for MGE

3 **Q. HOW WERE THE LAG DAYS DETERMINED FOR THE MISSOURI PSC**
4 **ASSESSMENT?**

5 A. The lag days for the Missouri PSC Assessment were calculated by taking the
6 midpoint of each quarterly payment due and adding it to the lag between the end
7 of the service period and the payment date. This amount was then weighed by the
8 billed amount to generate the expense lag. The lag days for the Missouri PSC
9 Assessment for both LAC and MGE were 38.93 days.

10 **Q. HOW WERE THE LAG DAYS DETERMINED FOR OTHER O&M**
11 **EXPENSES?**

12 A. The lag days for Other O&M expenses were based on a study of a stratified
13 sample of 413 invoices out of 47,986 invoices paid during the test year.
14 Transactions that included payments in other components of the study – e.g.
15 payroll, benefits, purchased gas – were removed. Invoices that had zero or
16 negative amounts were removed from the sample. Strata of \$0-\$10, \$10.01-\$100,
17 \$100.01-\$250, \$250.01-\$1,000, and \$1,000+ were established to ensure a
18 representative distribution across all Other O&M expenses. To generate a
19 statistically valid and random sample size, every 90th transaction from each
20 stratum greater than \$10 was used and every 500th from the stratum of
21 transactions less than \$10. The expense lag for each stratum was then calculated
22 and weighed in proportion to the count of transactions in the broader population

1 to generate a weighted expense lag for each strata. The sum of these weighted
2 expense lags represents the overall Other O&M expense lag.

3 **Q. DOES THIS METHODOLOGY DIFFER FROM THAT USED IN**
4 **LACLEDE'S PRIOR CASES?**

5 A. Yes, this methodology differs from that in the prior case, which used a three-
6 month sample from March, June, and October of the test year. By providing a
7 stratified sample drawn from the entire test year, the study is more representative
8 of Other O&M expenses for the test year. The study determined the lag days
9 between the date services were provided to Laclede and the payment date for
10 those services. If no information was available regarding the date services were
11 provided, then the date of the invoice was used. If no payment information was
12 available, the invoice was removed from the sample. The calculations show that
13 the lag days for Other O&M expenses for both LAC and MGE were 36.90 days,
14 which represents the sum of the service, check, and payment lags.

15 **Q. DID YOU MAKE AN ADJUSTMENT FOR CHECK FLOAT?**

16 A. Yes. An adjustment was made to total lag when necessary to reflect the "float"
17 associated with a non-electronic payment.

18

19 **2. Current Income Tax Expense**

20 **Q. HOW WERE THE LAG DAYS DETERMINED FOR CURRENT INCOME**
21 **TAXES?**

22 A. The lag days for federal and state income taxes were determined based on the
23 number of days between the midpoint of the applicable period and the payment

1 date. The applicable period is the fiscal year. Payment of estimated tax for the
2 year is made in quarterly payments on January 15, March 15, June 15, and
3 September 15. The Company also filed a payment associated with an extension
4 on December 15. If the scheduled payment date falls on a Saturday, Sunday, or
5 legal holiday, the payment is due on the next regular business day. The
6 calculations show that the lag days for Current Income Taxes for both LAC and
7 MGE were 31.90 days.

8
9 **3. Taxes Other than Income Taxes**

10 **Q. WHAT TAXES ARE INCLUDED IN TAXES OTHER THAN INCOME**
11 **TAXES?**

12 A. Taxes other than Income Taxes consists of: (1) Payroll Taxes (FICA, Federal
13 Unemployment, and State Unemployment); (2) Property Taxes; (3) Gross Receipt
14 Taxes; and (4) Other Taxes.

15 **Q. HOW WERE THE LAG DAYS DETERMINED FOR PAYROLL TAXES?**

16 A. Payroll taxes are paid at the time that payroll expense is recorded for each
17 employee. Therefore, the lag for all payroll taxes matches the payroll expense lag.

18 **Q. HOW WERE THE LAG DAYS DETERMINED FOR PROPERTY TAXES?**

19 A. The lag days for Property Taxes were determined based on the number of days
20 between the midpoint of the applicable period, and the due date, which was
21 December 31, 2016. The calculations show that the lag days for Property Taxes
22 for both LAC and MGE were 183.00 days.

1 **Q. HOW WERE THE LAG DAYS DETERMINED FOR GROSS RECEIPT**
2 **TAXES?**

3 A. The lag days for Gross Receipt Taxes were determined based on the number of
4 days between the midpoint of the applicable period and the payment date. Gross
5 Receipt Taxes for the previous calendar year are generally paid on a monthly,
6 quarterly, or annual basis. Based on discussions with the Company, there have
7 been no significant changes in either lead/lag numbers or the proportion of Gross
8 Receipt Taxes across the payment periods that would significantly impact the
9 results of the calculation. Consequently, we have utilized numbers from a prior
10 study. The calculations show that the lag days for Gross Receipt Taxes for both
11 LAC and MGE were 45.54 days.

12 **Q. HOW WERE THE LAG DAYS DETERMINED FOR OTHER TAXES?**

13 A. Other Taxes is composed of two components: Sales Tax and Use Tax. Sales Tax is
14 collected from customers and remitted to the state on a monthly basis. The
15 calculations show that the lag days for Other Taxes were 40.31 days and 40.49
16 days for LAC and MGE, respectively.

17

18 **4. Interest Expense**

19 **Q. HOW WERE THE LAG DAYS DETERMINED FOR INTEREST**
20 **EXPENSE?**

21 A. The lag days for interest expense payments were calculated based on actual
22 payments associated with long-term borrowings using the number of days
23 between the midpoint of the applicable period and the payment date. The

1 calculations show that the lag days for Interest Expense for both LAC and MGE
2 were 83.35 days. The methodology is consistent with that used in LAC's most
3 recent study but is a slight variation with MGE's most recent study.

4

5

CONCLUSION

6 **Q. WHAT WERE THE NET RESULTS OF THE LEAD-LAG STUDY?**

7 A. The lead-lag study is summarized in Schedules TSL-D2 and TSL-D4, and shows
8 that the net CWC is approximately \$21.6 million and \$7.1 million for LAC and
9 MGE, respectively, based on the test year January 1, 2016 through December 31,
10 2016. I have provided these results to Company witness Keathley for inclusion in
11 rate base.

12 **Q. DO THE RESULTS OF THE LEAD-LAG STUDY REPRESENT AN**
13 **ACCURATE ASSESSMENT OF THE COMPANY'S CWC**
14 **REQUIREMENT?**

15 A. Yes. The lead-lag study represents an accurate assessment of LAC and MGE's
16 actual CWC needs during the test year. Furthermore, the methods used to conduct
17 this lead-lag study are generally consistent with those previously filed with the
18 Commission.

19 **Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

20 A. Yes, it does.



Sponsor	Date	Docket No.	Subject
Regulatory Commission of Alaska			
ENSTAR Natural Gas Company	06/16	Docket No. U-16-066	Adopted testimony and sponsored lead-lag study.
Connecticut Public Utilities Regulatory Authority			
Yankee Gas Company	07/14	Docket No. 13-06-02	Sponsored report and testimony for review and evaluation of gas expansion policies, procedures and analysis.
Illinois Commerce Commission			
Liberty Utilities (Midstates Natural Gas)	07/15	Docket No. 16-0401	Sponsored testimony for cost of service, rate design and bill impact studies for a general rate case proceeding. The testimony includes proposal for new commercial classes and a decoupling mechanism.
Iowa Utilities Board			
Liberty Utilities (Midstates Natural Gas)	07/15	Docket No. RPU-2016-0003	Sponsored testimony for cost of service, rate design and bill impact studies for a general rate case proceeding. The testimony includes proposal for new commercial classes.
Maine Public Utilities Commission			
Northern Utilities, Inc. d/b/a Unitil Gas Limited	06/15	Case No. 2015-00146	Sponsored testimony for proposed gas expansion program, including a zone area surcharge.
Maryland Public Service Commission			
Sandpiper Energy, Inc.	12/15	Case No. 9410	Sponsored testimony for cost of service, rate design and bill impact studies for a general rate case proceeding. The testimony includes proposal for new residential and commercial classes.
Massachusetts Department of Public Utilities			
Boston Gas	03/88	Docket No. DPU 88-67-II	Sponsored testimony for rate reclassification of commercial and industrial customers for rate design proceeding.
Boston Gas	03/90	DPU 90-55	Sponsored testimony for weather and other cost of service adjustments, rate design and customer bill impact studies for general rate case proceeding.
Boston Gas	10/93	DPU 92-230	Sponsored testimony describing the Company's position regarding rate treatment of vehicular natural gas investments and expenses.
New Hampshire Public Utilities Commission			
Liberty Utilities d/b/a Granite State Electric Company	04/16	Docket No. DE 16-383	Adopted testimony and sponsored lead-lag study.
New Jersey Board of Public Utilities			
Pivotal Utility Holdings, Inc. d/b/a Elizabethtown Gas Company	8/16	GR16090826	Sponsored testimony for lead-lag study



Sponsor	Date	Docket No.	Subject
Rhode Island Public Utilities Commission			
Providence Gas Company	01/96	Docket No. 2076	Sponsored testimony for rate reclassification of customers into new rate classes, rate design (including introduction of demand charges), and customer bill impact studies for rate design proceeding.
Providence Gas Company	11/92	Docket No. 2025	Sponsored testimony supporting the Integrated Resource Plan filing, including a performance-based incentive mechanism.
Providence Gas Company	02/96	Docket No. 2374	Sponsored testimony for rate design, customer bill impact studies and retail access tariffs for largest commercial and industrial customers for rate design proceeding.
Providence Gas Company	04/97	Docket No. 2552	Sponsored testimony for rate design, customer bill impact studies and retail access tariffs for commercial and industrial customers, including redesign of cost of gas adjustment clause, for rate design proceeding.
Providence Gas Company	08/01 09/00 08/96	Docket No. 1673	Sponsored testimony for changes in cost of gas adjustment factor related to projected under-recovery of gas costs; Filed testimony and witness for pilot hedging program to mitigate price risks to customers; Filed testimony and witness for changes in cost of gas adjustment factor related to extension of rate plan.
Providence Gas Company	06/97	Docket No. 2581	Sponsored testimony for rate plan that fixed rates for three-year period; included funding for critical infrastructure investments in accelerated replacement of mains and services, digitized records system, and economic development projects.
Providence Gas Company	08/00	Docket No. 2581	Sponsored testimony for extension of rate plan that began in 1997 and included certain modifications, including a weather normalization clause.
Providence Gas Company	03/00	Docket No. 3100	Sponsored testimony for de-tariff and deregulation of appliance repair service, enabling the Company to have needed pricing flexibility.
Railroad Commission of Texas			
CenterPoint Energy – Texas Gulf Division	11/16	GUD No. 10567	Sponsored testimony for lead-lag study.
Atmos Pipeline – Texas	01/17	GUD No. 10580	Sponsored testimony for lead-lag study.
Vermont Public Service Board			
Vermont Gas Systems	02/11	Docket No. 7712	Sponsored testimony for market evaluation and analysis to support establishment of system expansion and reliability fund.
Vermont Gas Systems	12/12	Docket No. 7970	Sponsored testimony describing the customers to be served by a \$90 million natural gas expansion project to Addison County, Vermont; also describing the benefits of the project as well as the Company's programs and service offerings.

LEAD/LAG STUDY WORKPAPERS

TSL-D2 Summary

Laclede Gas Company
Lead-Lag Study
Cash Working Capital Requirement
Summary

Line	Description	Revenue Requirement Amount	Average Daily Amount	Revenue Lag	Ref.	Expense Lag	Ref.	Net (Lead)/Lag Days	Working Capital Requirement
	<u>Operation and Maintenance Expenses</u>								
1	Purchased Gas Costs	\$ 302,328,240	828,297	51.16	A	(39.44)	B	11.72	9,709,096
2	Non-Gas O&M Expenses	\$ 180,822,158	495,403	51.16	A	(18.84)	C	32.32	16,010,581
3	<u>Income Taxes</u>								
4	Current Federal Income Taxes	\$ 10,079,456	27,615	51.16	A	31.90	D	83.06	2,293,744
5	State Income Taxes	\$ 1,583,945	4,340	51.16	A	31.90	D	83.06	360,453
6	<u>Taxes Other Than Income Taxes</u>								
7	Payroll Taxes	\$ 5,281,239	14,469	51.16	A	(11.96)	C	39.20	567,193
8	Property Taxes	\$ 16,317,372	44,705	51.16	A	(183.00)	E	(131.84)	(5,893,848)
9	Gross Receipt Taxes	\$ 33,503,393	91,790	51.16	A	(45.54)	F	5.63	516,365
10	Other Taxes	314,901	863	51.16	A	(40.31)	G	10.85	9,358
11	Interest Payments	\$ 21,924,033	60,066	51.16	A	(83.35)	H	(32.19)	(1,933,468)
12	<u>Subtotal</u>	<u>\$ 572,154,737</u>	<u>1,567,547</u>						<u>\$ 21,639,474</u>

Laclede Gas Company
 Lead-Lag Study
 Revenue Collection Lag

Line	Description	Service Lag Service Period (365 days/ 12 months/ 2)	Billing Lag Transmission Date less Billing Date	Collection Lag Average Daily A/R Balance	Total Revenue Lag	Reference
1	Revenue Lag	15.21	2.17	33.78	51.16	WP A-1, A-2
2	<u>Composite Revenue Collection Days</u>	<u>15.21</u>	<u>2.17</u>	<u>33.78</u>	<u>51.16</u>	

LEAD/LAG STUDY WORKPAPERS

TSL-D3 (Tab B)

Laclede Gas Company
Lead-Lag Study
Purchased Gas

Line	Month	Service Period Start	Service Period End	Midpoint	Expense	(Lead)/Lag Days	Dollar Days	Composite (Lead)/Lag Days
1	January 2016	1/1/2016	01/31/16	(15.50)	\$ 34,303,876	(39.44)	\$ (1,352,859,483)	
2	February 2016	2/1/2016	02/29/16	(14.50)	\$ 27,622,535	(37.84)	\$ (1,045,299,777)	
3	March 2016	3/1/2016	03/31/16	(15.50)	\$ 20,480,845	(39.76)	\$ (814,268,154)	
4	April 2016	4/1/2016	04/30/16	(15.00)	\$ 10,541,920	(37.36)	\$ (393,883,900)	
5	May 2016	5/1/2016	05/31/16	(15.50)	\$ 13,845,021	(39.25)	\$ (543,348,090)	
6	June 2016	6/1/2016	06/30/16	(15.00)	\$ 16,847,800	(38.89)	\$ (655,225,556)	
7	July 2016	7/1/2016	07/31/16	(15.50)	\$ 22,098,269	(40.25)	\$ (889,465,847)	
8	August 2016	8/1/2016	08/31/16	(15.50)	\$ 23,207,788	(40.65)	\$ (943,387,765)	
9	September 2016	9/1/2016	09/30/16	(15.00)	\$ 21,523,543	(38.98)	\$ (839,031,479)	
10	October 2016	10/1/2016	10/31/16	(15.50)	\$ 19,478,209	(38.35)	\$ (747,024,172)	
11	November 2016	11/1/2016	11/30/16	(15.00)	\$ 15,801,303	(40.27)	\$ (636,309,040)	
12	December 2016	12/1/2016	12/31/16	(15.50)	\$ 55,651,729	(40.22)	\$ (2,238,407,092)	
13			Total		\$ 281,402,836		\$ (11,098,510,356)	(39.44)

Laclede Gas Company
Lead-Lag Study
O&M Expenses

Line	Description	Expense	(Lead)/Lag Days	Reference	Dollar Days
1	Regular Payroll Expenses	\$ 70,192,066	(11.96)	WP C-1	\$ (839,605,097)
2	Benefits Expenses	24,776,425	14.42	WP C-2	\$ 357,333,604
3	<u>Labor-Related - Subtotal</u>	<u>\$ 94,968,491</u>	<u>(5.08)</u>		<u>\$ (482,271,493)</u>
4	Missouri PSC Assessment	1,852,809	(38.93)	WP C-4	(72,129,089)
5	Other O&M	59,347,072	(36.90)	WP C-5	(2,189,933,821)
6	<u>Subtotal - Non-Labor O&M Expenses</u>	<u>\$ 61,199,880</u>	<u>(36.96)</u>		<u>\$ (2,262,062,910)</u>
7	Less: Uncollectible Expense	6,257,451			
8	Less: Other Non-Cash	4,272,025			
9	<u>Total O&M Expenses</u>	<u>\$ 145,638,895</u>	<u>(18.84)</u>		<u>\$ (2,744,334,403)</u>

Laclede Gas Company
Lead-Lag Study
Federal Income Taxes

Line	Description	Service Period Start	Service Period End	Midpoint of Service Period	Payment Date	Percent of Taxes Due	(Lead)/Lag Days		
							Days from Midpoint to Payment Date	(Lead)/Lag Days	
1	First Payment	1/1/2016	12/31/2016	7/1/2016	1/15/2016	22.50%	168.00	37.80	
2	Second Payment	1/1/2016	12/31/2016	7/1/2016	3/15/2016	22.50%	108.00	24.30	
3	Third Payment	1/1/2016	12/31/2016	7/1/2016	6/15/2016	22.50%	16.00	3.60	
4	Fourth Payment	1/1/2016	12/31/2016	7/1/2016	9/15/2016	22.50%	(76.00)	(17.10)	
5	Extension	1/1/2016	12/31/2016	7/1/2016	12/15/2016	10.00%	(167.00)	(16.70)	
6	<u>Federal Income Tax (Lead)/Lag Days</u>								31.90

Laclede Gas Company
Lead-Lag Study
State Income Taxes

Line	Description	Service Period Start	Service Period End	Midpoint of Service Period	Payment Date	Percent of Taxes Due	(Lead)/Lag Days		
							Days from Midpoint to Payment Date	(Lead)/Lag Days	
1	First Payment	1/1/2016	12/31/2016	7/1/2016	1/15/2016	22.50%	168.00	37.80	
2	Second Payment	1/1/2016	12/31/2016	7/1/2016	3/15/2016	22.50%	108.00	24.30	
3	Third Payment	1/1/2016	12/31/2016	7/1/2016	6/15/2016	22.50%	16.00	3.60	
4	Fourth Payment	1/1/2016	12/31/2016	7/1/2016	9/15/2016	22.50%	(76.00)	(17.10)	
5	Extension	1/1/2016	12/31/2016	7/1/2016	12/15/2016	10.00%	(167.00)	(16.70)	
6	<u>State Income Tax (Lead)/Lag Days</u>								31.90

LEAD/LAG STUDY WORKPAPERS

TSL-D3 (Tab E)

Laclede Gas Company
Lead-Lag Study
Property Taxes

Line	Description	Service Period Start	Service Period End	Midpoint of Service Period	Payment Due Date	Payment Lag	Amount	(Lead)/Lag Days		Composite Lead- Lag Days
								Total (Lead)/Lag Days	Dollar Days	
1	Butler	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 57,441	(183.00)	\$ (10,511,778)	
2	City of St. Louis	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 5,112,423	(183.00)	\$ (935,573,343)	
3	Crawford	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 922	(183.00)	\$ (168,662)	
4	Franklin	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 683,534	(183.00)	\$ (125,086,632)	
5	Iron	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 5,384	(183.00)	\$ (985,239)	
6	Jefferson	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 523,306	(183.00)	\$ (95,765,062)	
7	Madison	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 8,439	(183.00)	\$ (1,544,403)	
8	St. Charles	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 1,447,129	(183.00)	\$ (264,824,580)	
9	St. Francois	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 213,363	(183.00)	\$ (39,045,339)	
10	St. Genevieve	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 36,233	(183.00)	\$ (6,630,601)	
11	St. Louis County	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 7,550,255	(183.00)	\$ (1,381,696,672)	
12	Warren	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 2,046	(183.00)	\$ (374,491)	
							<u>\$ 15,640,474</u>		<u>\$ (2,862,206,802)</u>	<u>(183.00)</u>

LEAD/LAG STUDY WORKPAPERS

TSL-D3 (Tab F)

Laclede Gas Company
Lead-Lag Study
Gross Receipt Taxes

Line	Description	Midpoint of Service Period	Payment Amount	Days from Midpoint to Payment	Check Float	Total Lead-Lag Days	Weighted Dollar-Days	Composite (Lead)/Lag Days
1	Monthly	(15.21)	\$ 36,784	(30.42)	7.67	(37.96)	\$ (1,396,131)	
2	Quarterly	(45.63)	\$ 1,935	(30.75)	7.67	(68.71)	\$ (132,944)	
3	Semi-Annual	(91.25)	\$ 3,390	(31.00)	7.67	(114.58)	\$ (388,386)	
4	Total		\$ 42,108				\$ (1,917,461)	(45.54)

Laclede Gas Company
Lead-Lag Study
Other Taxes

Line	Description	Payment	Total (Lead)/Lag Days	Weighted Dollar- Days	Composite (Lead)/Lag Days
1	Sales Tax	\$ 8,204,103	(39.01)	\$(320,078,020)	
2	Use Tax	\$ 358,929	(70.04)	\$(25,139,601)	
3	Total	\$ 8,563,032		\$(345,217,621)	(40.31)

LEAD/LAG STUDY WORKPAPERS

TSL-D3 (Tab H)

Laclede Gas Company
Lead-Lag Study
Interest Expense Payment

Line	Description	Service Period Begin	Service Period End	Midpoint of Service Period	Payment Date	Amount	Payment Lag	Lead-Lag Days	Dollar-Days	Composite Lead-Lag Days
1	Int Accrd - FMB 2.0%, Due August 15, 2018	8/29/2015	2/29/2016	(92.50)	02/24/2016	\$ 1,000,000	5.00	(87.50)	\$ (87,500,000)	
2	Int Accrd - FMB 3.4%, Due August 15, 2023	8/29/2015	2/29/2016	(92.50)	02/24/2016	\$ 4,250,000	5.00	(87.50)	\$ (371,875,000)	
3	Int Accrd - FMB 4.625%, Due August 15, 2043	8/29/2015	2/29/2016	(92.50)	02/24/2016	\$ 2,312,500	5.00	(87.50)	\$ (202,343,750)	
4	Int Accrd - FMB 7 9/10% , Due Sep 15, 2030	9/30/2015	3/31/2016	(92.00)	03/15/2016	\$ 1,185,000	16.00	(76.00)	\$ (90,060,000)	
5	Interest Accrued 3.0% - FMB - Due March 15, 20	9/30/2015	3/31/2016	(92.00)	03/15/2016	\$ 825,000	16.00	(76.00)	\$ (62,700,000)	
6	Interest Accrued 3.40% - FMB - Due March 15, 20	9/30/2015	3/31/2016	(92.00)	03/15/2016	\$ 765,000	16.00	(76.00)	\$ (58,140,000)	
7	Int Accrd - FMB 5 1/2% , Due May 1, 2019	11/30/2015	5/31/2016	(92.00)	05/05/2016	\$ 1,375,000	26.00	(66.00)	\$ (90,750,000)	
8	Int Accrd - FMB 6% , Due May 1, 2034	11/30/2015	5/31/2016	(92.00)	05/05/2016	\$ 3,000,000	26.00	(66.00)	\$ (198,000,000)	
9	Int Accrd - FMB 7% , Due Jun 1, 2029	12/30/2015	6/30/2016	(92.00)	06/29/2016	\$ 875,000	1.00	(91.00)	\$ (79,625,000)	
10	Int Accrd - FMB 2.0%, Due August 15, 2018	2/29/2016	8/31/2016	(92.50)	09/02/2016	\$ 1,000,000	(2.00)	(94.50)	\$ (94,500,000)	
11	Int Accrd - FMB 3.4%, Due August 15, 2023	2/29/2016	8/31/2016	(92.50)	09/02/2016	\$ 4,250,000	(2.00)	(94.50)	\$ (401,625,000)	
12	Int Accrd - FMB 4.625%, Due August 15, 2043	2/29/2016	8/31/2016	(92.50)	09/02/2016	\$ 2,312,500	(2.00)	(94.50)	\$ (218,531,250)	
13	Int Accrd - FMB 7 9/10% , Due Sep 15, 2030	3/30/2016	9/30/2016	(92.50)	09/20/2016	\$ 1,185,000	10.00	(82.50)	\$ (97,762,500)	
14	Interest Accrued 3.0% - FMB - Due March 15, 20	3/30/2016	9/30/2016	(92.50)	09/20/2016	\$ 825,000	10.00	(82.50)	\$ (68,062,500)	
15	Interest Accrued 3.40% - FMB - Due March 15, 20	3/30/2016	9/30/2016	(92.50)	09/20/2016	\$ 765,000	10.00	(82.50)	\$ (63,112,500)	
16	Int Accrd - FMB 5 1/2% , Due May 1, 2019	5/30/2016	11/30/2016	(92.50)	11/17/2016	\$ 1,375,000	13.00	(79.50)	\$ (109,312,500)	
17	Int Accrd - FMB 6% , Due May 1, 2034	5/30/2016	11/30/2016	(92.50)	11/17/2016	\$ 3,000,000	13.00	(79.50)	\$ (238,500,000)	
18	Int Accrd - FMB 7% , Due Jun 1, 2029	6/30/2016	12/31/2016	(92.50)	12/14/2016	\$ 875,000	17.00	(75.50)	\$ (66,062,500)	
19	<u>Subtotal</u>					\$ 31,175,000			\$ (2,598,462,500)	(83.35)

Missouri Gas Energy
Lead-Lag Study
Cash Working Capital Requirement
Summary

Line	Description	Revenue Requirement Amount	Average Daily Amount	Revenue Lag	Ref.	Expense Lag	Ref.	Net (Lead)/Lag Days	Working Capital Requirement
	<u>Operation and Maintenance Expenses</u>								
1	Purchased Gas Costs	\$ 209,704,476	574,533	47.92	A	(36.37)	B	11.54	6,631,384
2	Non-Gas O&M Expenses	\$ 106,327,800	291,309	47.92	A	(21.01)	C	26.91	7,837,685
3	<u>Income Taxes</u>								
4	Current Federal Income Taxes	\$ 2,710,018	7,425	47.92	A	31.90	D	79.82	592,616
5	State Income Taxes	\$ 425,868	1,167	47.92	A	31.90	D	79.82	93,127
6	<u>Taxes Other Than Income Taxes</u>								
7	Payroll Taxes	\$ 3,894,460	10,670	47.92	A	(11.96)	C	35.96	383,633
8	Property Taxes	\$ 19,418,142	53,200	47.92	A	(183.00)	E	(135.08)	(7,186,484)
9	Gross Receipt Taxes	\$ 24,439,784	66,958	47.92	A	(45.54)	F	2.38	159,395
10	Other Taxes	-	-	47.92	A	(40.49)	G	7.42	-
11	<u>Interest Payments</u>	\$ 14,106,850	38,649	47.92	A	(83.35)	H	(35.43)	(1,369,490)
12	Subtotal	\$ 381,027,399	1,043,911						\$ 7,141,865

Missouri Gas Energy
Lead-Lag Study
Revenue Collection Lag

Line	Description	Service Lag Service Period (365 days/ 12 months/ 2)	Billing Lag Transmission Date less Billing Date	Collection Lag Average Daily A/R Balance	Total Revenue Lag	Reference
1	Revenue Lag	15.21	2.17	30.53	47.92	WP A-1, A-2
2	<u>Composite Revenue Collection Days</u>	<u>15.21</u>	<u>2.17</u>	<u>30.53</u>	<u>47.92</u>	

LEAD/LAG STUDY WORKPAPERS

Missouri Gas Energy
Lead-Lag Study
Purchased Gas

Line	Month	Service Period Start	Service Period End	Midpoint	Expense	(Lead)/Lag Days	Dollar Days	Composite (Lead)/Lag Days
1	January 2016	1/1/2016	01/31/16	(15.50)	\$ 16,272,532	(36.69)	\$ (597,057,004)	
2	February 2016	2/1/2016	02/29/16	(14.50)	\$ 17,260,013	(35.64)	(615,143,956)	
3	March 2016	3/1/2016	03/31/16	(15.50)	\$ 14,028,965	(34.41)	(482,731,461)	
4	April 2016	4/1/2016	04/30/16	(15.00)	\$ 15,950,257	(34.32)	(547,467,663)	
5	May 2016	5/1/2016	05/31/16	(15.50)	\$ 15,711,014	(35.99)	(565,363,077)	
6	June 2016	6/1/2016	06/30/16	(15.00)	\$ 13,568,108	(35.05)	(475,508,956)	
7	July 2016	7/1/2016	07/31/16	(15.50)	\$ 14,654,899	(36.17)	(530,075,571)	
8	August 2016	8/1/2016	08/31/16	(15.50)	\$ 14,316,577	(37.96)	(543,397,535)	
9	September 2016	9/1/2016	09/30/16	(15.00)	\$ 12,575,698	(35.93)	(451,843,636)	
10	October 2016	10/1/2016	10/31/16	(15.50)	\$ 13,673,129	(34.84)	(476,398,628)	
11	November 2016	11/1/2016	11/30/16	(15.00)	\$ 17,706,553	(37.25)	(659,585,368)	
12	December 2016	12/1/2016	12/31/16	(15.50)	\$ 33,028,647	(38.90)	(1,284,725,332)	
13			Total		\$ 198,746,394		\$ (7,229,298,186)	(36.37)

Missouri Gas Energy
Lead-Lag Study
O&M Expenses

Line	Description	Expense	(Lead)/Lag Days	Reference	Dollar Days
1	Regular Payroll Expenses	\$ 34,722,026	(11.96)	WP C-1	\$ (415,328,849)
2	Benefits Expenses	13,161,044	13.56	WP C-2	\$ 178,508,659
3	Labor-Related - Subtotal	\$ 47,883,070	(4.95)		\$ (236,820,190)
4	Missouri PSC Assessment	1,852,809	(38.93)	WP C-4	(72,129,089)
5	Other O&M	41,778,281	(36.90)	WP C-5	(1,541,637,509)
6	Subtotal - Non-Labor O&M Expenses	\$ 43,631,090	(36.99)		\$ (1,613,766,598)
7	Less: Uncollectible Expense	1,755,577			
8	Less: Other Non-Cash	1,684,278			
9	<u>Total O&M Expenses</u>	<u>\$ 88,074,305</u>	<u>(21.01)</u>		<u>\$ (1,850,586,788)</u>

Missouri Gas Energy
Lead-Lag Study
Federal Income Taxes

Line	Description	Service Period Start	Service Period End	Midpoint of Service Period	Payment Date	Percent of Taxes Due	(Lead)/Lag Days		
							Days from Midpoint to Payment Date	(Lead)/Lag Days	
1	First Payment	1/1/2016	12/31/2016	7/1/2016	1/15/2016	22.50%	168.00	37.80	
2	Second Payment	1/1/2016	12/31/2016	7/1/2016	3/15/2016	22.50%	108.00	24.30	
3	Third Payment	1/1/2016	12/31/2016	7/1/2016	6/15/2016	22.50%	16.00	3.60	
4	Fourth Payment	1/1/2016	12/31/2016	7/1/2016	9/15/2016	22.50%	(76.00)	(17.10)	
5	Extension	1/1/2016	12/31/2016	7/1/2016	12/15/2016	10.00%	(167.00)	(16.70)	
6	<u>Federal Income Tax (Lead)/Lag Days</u>								31.90

Missouri Gas Energy
Lead-Lag Study
State Income Taxes

Line	Description	Service Period Start	Service Period End	Midpoint of Service Period	Payment Date	Percent of Taxes Due	(Lead)/Lag Days		
							Days from Midpoint to Payment Date	(Lead)/Lag Days	
1	First Payment	1/1/2016	12/31/2016	7/1/2016	1/15/2016	22.50%	168.00	37.80	
2	Second Payment	1/1/2016	12/31/2016	7/1/2016	3/15/2016	22.50%	108.00	24.30	
3	Third Payment	1/1/2016	12/31/2016	7/1/2016	6/15/2016	22.50%	16.00	3.60	
4	Fourth Payment	1/1/2016	12/31/2016	7/1/2016	9/15/2016	22.50%	(76.00)	(17.10)	
5	Extension	1/1/2016	12/31/2016	7/1/2016	12/15/2016	10.00%	(167.00)	(16.70)	
6	<u>State Income Tax (Lead)/Lag Days</u>								31.90

LEAD/LAG STUDY WORKPAPERS

Missouri Gas Energy
Lead-Lag Study
Property Taxes

Line	Description	Service Period Start	Service Period End	Midpoint of Service Period	Payment Due Date	Payment Lag	Amount	(Lead)/Lag Days		Composite Lead- Lag Days
								Total (Lead)/Lag Days	Dollar Days	
1	Andrew	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 24,641	(183.00)	\$ (4,509,330)	
2	Barry	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 125,881	(183.00)	\$ (23,036,159)	
3	Barton	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 24,599	(183.00)	\$ (4,501,538)	
4	Bates	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 2,162	(183.00)	\$ (395,651)	
5	Buchanan	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 519,621	(183.00)	\$ (95,090,680)	
6	Carroll	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 21,963	(183.00)	\$ (4,019,275)	
7	Cass	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 471,097	(183.00)	\$ (86,210,828)	
8	Cedar	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 36,135	(183.00)	\$ (6,612,720)	
9	Christian	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 210,322	(183.00)	\$ (38,488,856)	
10	Clay	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 2,860,147	(183.00)	\$ (523,406,813)	
11	Clinton	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 122,688	(183.00)	\$ (22,451,922)	
12	Cooper	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 2,793	(183.00)	\$ (511,049)	
13	Dade	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 11,687	(183.00)	\$ (2,138,706)	
14	Dekalb	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 20,186	(183.00)	\$ (3,694,073)	
15	Greene	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 108,286	(183.00)	\$ (19,816,369)	
16	Henry	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 7,693	(183.00)	\$ (1,407,826)	
17	Howard	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 47,164	(183.00)	\$ (8,631,100)	
18	Jackson	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 4,640,855	(183.00)	\$ (849,276,536)	
19	Jasper	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 543,015	(183.00)	\$ (99,371,672)	
20	Johnson	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 162,207	(183.00)	\$ (29,683,921)	
21	Lafayette	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 59,872	(183.00)	\$ (10,956,576)	
22	Lawrence	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 58,540	(183.00)	\$ (10,712,750)	
23	Mcdonald	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 30,885	(183.00)	\$ (5,651,911)	
24	Moniteau	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 9,145	(183.00)	\$ (1,673,614)	
25	Newton	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 92,014	(183.00)	\$ (16,838,487)	
26	Pettis	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 4,500	(183.00)	\$ (823,546)	
27	Platte	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 600,398	(183.00)	\$ (109,872,782)	
28	Ray	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 16,411	(183.00)	\$ (3,003,259)	
29	Saline	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 62,208	(183.00)	\$ (11,384,005)	
30	Stone	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 7,491	(183.00)	\$ (1,370,910)	
31	Vernon	01/01/16	12/31/16	(183.00)	12/31/2016	-	\$ 1,943	(183.00)	\$ (355,600)	
							\$ 10,906,549		\$ (1,995,898,467)	(183.00)

LEAD/LAG STUDY WORKPAPERS

Missouri Gas Energy
Lead-Lag Study
Gross Receipt Taxes

Line	Description	Midpoint of Service Period	Payment Amount	Days from Midpoint to Payment	Check Float	Total Lead-Lag Days	Weighted Dollar-Days	Composite (Lead)/Lag Days
1	Monthly	(15.21)	\$ 36,784	(30.42)	7.67	(37.96)	\$ (1,396,131)	
2	Quarterly	(45.63)	\$ 1,935	(30.75)	7.67	(68.71)	\$ (132,944)	
3	Semi-Annual	(91.25)	\$ 3,390	(31.00)	7.67	(114.58)	\$ (388,386)	
4	Total		\$ 42,108				\$ (1,917,461)	(45.54)

LEAD/LAG STUDY WORKPAPERS

Missouri Gas Energy
Lead-Lag Study
Other Taxes

Line	Description	Payment	Payment (Lead)/Lag Days	Total (Lead)/Lag Days	Weighted Dollar-Days	Composite (Lead)/Lag Days
1	Sales Tax	\$ 6,313,130	(2.29)	(38.81)	\$(245,043,592)	
2	Use Tax	\$ 358,929	(83.98)	(70.04)	\$ (25,139,601)	
3	Total	\$ 6,672,059			\$(270,183,193)	(40.49)

LEAD/LAG STUDY WORKPAPERS

Missouri Gas Energy
Lead-Lag Study
Interest Expense Payment

Line	Description	Service Period Begin	Service Period End	Midpoint of Service Period	Payment Date	Amount	Payment Lag	Lead-Lag Days	Dollar-Days	Composite Lead-Lag Days
1	Int Accrd - FMB 2.0%, Due August 15, 2018	8/29/2015	2/29/2016	(92.50)	02/24/2016	\$ 1,000,000	5.00	(87.50)	\$ (87,500,000)	
2	Int Accrd - FMB 3.4%, Due August 15, 2023	8/29/2015	2/29/2016	(92.50)	02/24/2016	\$ 4,250,000	5.00	(87.50)	\$ (371,875,000)	
3	Int Accrd - FMB 4.625%, Due August 15, 2043	8/29/2015	2/29/2016	(92.50)	02/24/2016	\$ 2,312,500	5.00	(87.50)	\$ (202,343,750)	
4	Int Accrd - FMB 7 9/10% , Due Sep 15, 2030	9/30/2015	3/31/2016	(92.00)	03/15/2016	\$ 1,185,000	16.00	(76.00)	\$ (90,060,000)	
5	Interest Accrued 3.0% - FMB - Due March 15, 20.	9/30/2015	3/31/2016	(92.00)	03/15/2016	\$ 825,000	16.00	(76.00)	\$ (62,700,000)	
6	Interest Accrued 3.40% - FMB - Due March 15, 20.	9/30/2015	3/31/2016	(92.00)	03/15/2016	\$ 765,000	16.00	(76.00)	\$ (58,140,000)	
7	Int Accrd - FMB 5 1/2% , Due May 1, 2019	11/30/2015	5/31/2016	(92.00)	05/05/2016	\$ 1,375,000	26.00	(66.00)	\$ (90,750,000)	
8	Int Accrd - FMB 6% , Due May 1, 2034	11/30/2015	5/31/2016	(92.00)	05/05/2016	\$ 3,000,000	26.00	(66.00)	\$ (198,000,000)	
9	Int Accrd - FMB 7% , Due Jun 1, 2029	12/30/2015	6/30/2016	(92.00)	06/29/2016	\$ 875,000	1.00	(91.00)	\$ (79,625,000)	
10	Int Accrd - FMB 2.0%, Due August 15, 2018	2/29/2016	8/31/2016	(92.50)	09/02/2016	\$ 1,000,000	(2.00)	(94.50)	\$ (94,500,000)	
11	Int Accrd - FMB 3.4%, Due August 15, 2023	2/29/2016	8/31/2016	(92.50)	09/02/2016	\$ 4,250,000	(2.00)	(94.50)	\$ (401,625,000)	
12	Int Accrd - FMB 4.625%, Due August 15, 2043	2/29/2016	8/31/2016	(92.50)	09/02/2016	\$ 2,312,500	(2.00)	(94.50)	\$ (218,531,250)	
13	Int Accrd - FMB 7 9/10% , Due Sep 15, 2030	3/30/2016	9/30/2016	(92.50)	09/20/2016	\$ 1,185,000	10.00	(82.50)	\$ (97,762,500)	
14	Interest Accrued 3.0% - FMB - Due March 15, 20.	3/30/2016	9/30/2016	(92.50)	09/20/2016	\$ 825,000	10.00	(82.50)	\$ (68,062,500)	
15	Interest Accrued 3.40% - FMB - Due March 15, 20.	3/30/2016	9/30/2016	(92.50)	09/20/2016	\$ 765,000	10.00	(82.50)	\$ (63,112,500)	
16	Int Accrd - FMB 5 1/2% , Due May 1, 2019	5/30/2016	11/30/2016	(92.50)	11/17/2016	\$ 1,375,000	13.00	(79.50)	\$ (109,312,500)	
17	Int Accrd - FMB 6% , Due May 1, 2034	5/30/2016	11/30/2016	(92.50)	11/17/2016	\$ 3,000,000	13.00	(79.50)	\$ (238,500,000)	
18	Int Accrd - FMB 7% , Due Jun 1, 2029	6/30/2016	12/31/2016	(92.50)	12/14/2016	\$ 875,000	17.00	(75.50)	\$ (66,062,500)	
19	<u>Subtotal</u>					\$ 31,175,000			\$ (2,598,462,500)	(83.35)

**BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI**

In the Matter of Laclede Gas Company's)
Request to Increase its Revenues for Gas) File No. GR-2017-0215
Service)

In the Matter of Laclede Gas Company)
d/b/a Missouri Gas Energy's Request to) File No. GR-2017-0216
Increase its Revenues for Gas Service)

AFFIDAVIT

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

Timothy S. Lyons, of lawful age, being first duly sworn, deposes and states:

1. My name is Timothy S. Lyons. My business address is 1900 West Park Road, Suite 250, Westborough, MA 01581 and I am a Partner at ScottMadden Inc..

2. Attached hereto and made a part hereof for all purposes is my direct testimony on behalf of Laclede Gas Company and MGE.

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

Timothy S. Lyons

Timothy S. Lyons

Subscribed and sworn to before me this 29th day of March, 2017.

Marcia A. Spangler

Notary Public

