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June 26, 2002

***By Hand Delivery***
The Honorable Dale Hardy Roberts
Secretary/Chief Regulatory Law Judge
Missouri Public Service Commission
P.O. Box 360
Jefferson City, MO 65102-0360

Re: Laclede Gas Company, Case No. GR-2002-356

Dear Judge Roberts:

Enclosed for filing on behalf of the Missouri Industrial Energy Consumers in the above-referenced case are an original and eight (8) copies of the *Direct Testimony of John Mallinckrodt on Rate Design*. I would appreciate it if you would have the additional copies file-stamped and returned to me in the self-addressed, stamped envelope.

Thank you for your assistance in bringing this filing to the attention of the Commission

Very truly yours,

Diana Vuylsteke

Diana M. Vuylsteke

DMV:dv

cc: All Parties of Record

Enclosures

**Before the**
**Missouri Public Service Commission**
**Case No. GR-2002-356**

## LACLEDE GAS COMPANY

**STATE OF ILLINOIS** )
) **SS**
**COUNTY OF COOK** )

## Affidavit of John W. Mallinckrodt

John W. Mallinckrodt, being first duly sworn, on his oath states:

1. My name is John W. Mallinckrodt. I am a consultant with Brubaker & Associates, Inc., having its principal place of business at 1215 Fern Ridge Parkway, Suite 208, St. Louis, Missouri 63141-2000. My office address is 723 Gardner Road, Flossmoor, IL 60422. We have been retained by the Missouri Industrial Energy Consumers in this proceeding on their behalf.

2. Attached hereto and made a part hereof for all purposes is my direct testimony and schedules which were prepared in written form for introduction into evidence in Missouri Public Service Commission Case No. GR-2002-356.

3. I hereby swear and affirm that the testimony is true and correct and that the schedules show the matters and things they purport to show.

John W. Mallinckrodt

John W. Mallinckrodt

Subscribed and sworn before this 25th day of June, 2002.

Notary Public

OFFICIAL SEAL
Michele F. McClain
NOTARY PUBLIC. STATE OF ILLINOIS
My Commission Expires 8-4-04

| | |
|---|---|
| Exhibit No.: | |
| Witness: | John W. Mallinckrodt |
| Type of Exhibit: | Direct Testimony |
| Issues: | Class Cost of Service, and Distribution of Rate Increase |
| Sponsoring Party: | Missouri Industrial Energy Consumers |
| Case No.: | GR-2002-356 |

**Before the**
**Missouri Public Service Commission**
**Case No. GR-2002-356**

# LACLEDE GAS COMPANY

Direct Testimony and Schedules of

**John W. Mallinckrodt**

On Behalf of

**Missouri Industrial Energy Consumers**

June 2002
Project 7761

BAI
BRUBAKER & ASSOCIATES, INC.
ST. LOUIS, MO 63141-2000

**LACLEDE GAS COMPANY**

**Before the**
**Missouri Public Service Commission**
**Case No. GR-2002-356**

## Direct Testimony of John W. Mallinckrodt

**Q PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

A John W. Mallinckrodt; my business address is 723 Gardner Road, Flossmoor, IL 60422.

**Q WHAT IS YOUR OCCUPATION AND BY WHOM ARE YOU EMPLOYED?**

A I am a consultant in the field of public utility regulation. I am employed by the firm of Brubaker & Associates, Inc., energy, economic and regulatory consultants. The firm's main office is located at 1215 Fern Ridge Parkway, Suite 208, St. Louis, MO 63141.

**Q PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE.**

A This information is included in Appendix A to my testimony.

**Q ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS CASE?**

A I am appearing on behalf of a group of large customers of Laclede Gas Company (Laclede), collectively known as the Missouri Industrial Energy Consumers (MIEC). These customers purchase transportation and sales services from Laclede.

**Q ON WHAT SUBJECTS HAVE YOU BEEN ASKED TO TESTIFY?**

A I have been asked to testify in regard to class cost of service, and the distribution of any approved rate increase. I will also address the operation of the Laclede distribution system and discuss how the fact that individual customers are served by different pressure systems suggest that: (1) mains should be designated as high pressure mains, medium pressure mains, or low pressure mains; and (2) this designation should be utilized to allocate main costs.

**Q PLEASE SUMMARIZE THE PRINCIPAL POINTS OF YOUR TESTIMONY.**

A The principal points of my testimony are summarized below:

1. There are large differences among the customer classes in regard to the amount of usage and the pattern of usage, and the result is that the average costs per therm incurred by Laclede vary widely among customer classes. A variety of rates is needed because of these cost differences.

2. Laclede distributes gas through a gas distribution network consisting of six integrated systems, operating at different pressure levels.

3. Customer service lines are connected to a particular pressure level system main, and utilize part or all of the system to deliver service.

4. Customers should be allocated a share of the costs only for those parts of the gas distribution system they use.

5. The analysis of Laclede's system indicates that approximately 12% of the cost of mains is associated with high-pressure mains, 55% of the cost of mains is associated with medium pressure mains, and 33% is associated with the low-pressure mains.

6. A detailed class cost of service study (CCOSS) I present demonstrates that the Large Volume Transportation and Sales Service (LVTSS) rates are above cost and should be lowered.

7. Rates should be adjusted so that the non-gas revenues provided by the customer classes will more accurately collect the cost of providing service. After the cost adjustments, any increase or decrease approved in this proceeding should be spread among the customer classes in proportion to the non-gas revenues of each class.

## Gas Utility Cost Structure

**Q PLEASE EXPLAIN WHY THERE ARE DIFFERENT RATE SCHEDULES FOR DIFFERENT USERS.**

A The rates are different because the costs of providing service are different. The costs are different because customer size and usage patterns are different.

To analyze gas rates, we must first look at the operations of Laclede, as a gas distribution company. Laclede takes delivery of the natural gas it purchases for resale from Mississippi River Transmission Corporation (MRT), Missouri Pipeline Company (MPC), and Williams Gas Pipeline - Central (Williams). Laclede receives its system gas from the pipelines at various city gate receipt points and delivers and resells the gas to its sales customers. Since December 1989, Laclede has also taken delivery of customer-owned gas at the city gates for distribution to its transportation customers. From the city gate points, Laclede distributes both system gas and customer-owned gas within its service area.

Laclede's sales rates contain two principal components -- one amount to cover the cost of purchased gas and one amount (the "margin") to recover the cost of its distribution service. Under both sales and transportation rates, Laclede provides a delivery service -- it receives gas at the city gate and delivers it to homes, offices, schools, hospitals and factories. This rate case will focus primarily on how much it costs Laclede to provide that delivery service in total and under each rate schedule.

The distinction between gas cost and delivery cost is reflected in part by the Purchased Gas Adjustment (PGA) clause. Changes in the cost of purchased gas have been passed through to sales customers under the PGA, subject to periodic review. Gas cost changes, therefore, have not generally had an effect on earnings. Also, the cost of the customer-owned gas of transportation customers obviously does not affect Laclede's earnings. If average distribution costs increase and Laclede has not achieved either increased delivery volumes or increased efficiencies that offset the cost increases, Laclede must increase its margin if it is to maintain earnings. But to do so it must file, as it has in this proceeding, a rate case before this Commission. Concurrently, the cost of service under each rate schedule must also be determined. The distribution cost per therm is much more for some users than for others and such differences, along with gas cost differences, are important reasons for multiple rates. Finally, multiple rates are also needed because the requirements of some customers are firm while others are interruptible.

## Rates Should be Based on Costs

**Q HOW SHOULD LACLEDE'S GAS RATES BE DESIGNED?**

A Just as cost of service is the basis for the determination of Laclede's overall revenue requirement, it should also be the basis used to determine the revenues to be derived from each customer class, and to design the specific rate schedules for each customer class. The fundamental starting point and guideline should be the cost of serving each customer and each class. To the extent rates for a class deviate from cost of service, movement of the rates to cost of service is essential considering factors such as simplicity, gradualism, and ease of administration.

**Q WHY SHOULD COST BE USED FOR THESE PURPOSES?**

A The basic reasons for adhering to the cost of service principle throughout the rate design process may be summarized as stability, conservation, engineering efficiency (cost minimization), and equity.

With respect to stability, when rates are closely tied to costs, and when customer use patterns change, the earnings impact on the utility will be minimized as changes in revenues will tend to track changes in the level of costs. From the customer's perspective, cost-based rates provide a more stable basis for determining future levels of energy costs. If rates are based on factors other than cost, it is much more difficult to translate expected utility-wide cost changes into changes in the rates charged to particular customer classes. This reduces the attractiveness of expansion by new and existing industries because of the lessened ability to plan.

With respect to conservation, which is properly defined as the avoidance of wasteful or inefficient use (and not just less use), only when rates are based on costs do customers receive an accurate price signal against which to make their consumption decisions. If rates are not based on costs, then the choices will be distorted.

In terms of engineering efficiency, when rates are designed so that demand, customer and commodity costs are properly reflected in the rate structure, customers are provided with the proper incentive to minimize their costs, which will in turn minimize the costs to the utility.

With respect to equity, when rates are based on costs, each customer pays what it costs the utility to serve him, no more and no less. To the extent rates are not based on costs, some customers are required to pay part of the costs associated with service supplied to other customers, which clearly violates the principle of equity.

Also, to the extent that rates do not reflect costs, multi-plant firms will be encouraged to shift production from high energy cost plants to lower energy cost plants in order to remain competitive. Such a shifting of production would reduce employment and the overall contribution of the manufacturing concern to the state and local economies. This would require that the rates to the remaining customers be increased if Laclede's fixed cost coverage were to be maintained, which, in turn, would be self-defeating to the presumed beneficiaries of below-cost rates. To the extent that industrial customers are intentionally overcharged in an attempt to extract from them a higher contribution to fixed costs, a potential for load loss is greatly increased.

## Analysis of Costs

**Q WHY ARE COSTS DIFFERENT FOR THE VARIOUS TYPES OF USERS?**

A Laclede's costs – and those of any gas utility – are not all directly related to the number of therms sold. Indeed, other than the cost of purchased gas, most of Laclede's costs do <u>not</u> vary with the annual volumes sold.

For example, there are customer costs – the costs of attaching and maintaining customers on the system. Customer-related costs do not change from month-to-month, regardless of how much or how little gas a particular customer uses. The customer costs include such things as the investment in, and maintenance of, the service line (the pipe from the street to the customer's premises) and the meter and regulator, a portion of the cost of distribution mains, the monthly cost of meter reading, billing, accounting, and so on. To recover a portion of the customer costs, Laclede's rates contain a "customer charge" – a fixed charge per month. In the General Service (GS) rate, that charge is currently $12.00 per month for residential customers. (This amount does not recover the full monthly costs.) On the other hand, the Large Volume rates have a monthly customer charge of $565.00 for sales customers and $900.00 for transportation customers.

Next are the fixed capacity-related costs incurred to meet seasonal demands. Most of Laclede's sales are made during the winter season. As a result, the system must be sized to meet the winter load. Customers who use gas primarily for heating use very little gas outside of the winter season. Accordingly, the cost of facilities required to meet the heating demand of those customers must be recovered from sales that occur only in the winter season. In the case of customers who use gas at a relatively steady rate, the fixed costs can to be spread over a greater number of units, resulting in a lower average cost.

**Q ARE THERE LARGE DIFFERENCES IN CUSTOMER USAGE PATTERNS?**

A Yes. The usage of GS customers drops off sharply during the summer, while the usage of large customers served under Large Volume and Interruptible Sales rates and the LVTSS rate is not nearly so seasonal. This difference is reflected in the annual load factor, the ratio of average daily usage to peak design day usage. With a load factor of only 23%, GS customers purchase about 85 therms annually for each therm of peak day demand. (The load factors of all classes are set forth on Schedule 1-1.) Therefore, the fixed costs of meeting one therm of winter demand are spread over only 85 therms [797,828,746/9,373,065] of sales. In contrast, transportation customers use about 175 therms [183,833,727/1,048,724] annually for each therm of peak day demand. Thus, the fixed costs of meeting seasonal and peak day capacity requirements are spread over many more therms, resulting in a lower amount per therm.

**Q YOU POINTED OUT THAT CUSTOMER-RELATED COSTS ARE REFLECTED IN LACLEDE'S RATE SCHEDULES. IS THIS ALSO TRUE OF DEMAND-RELATED COSTS?**

A Yes, although in different ways. For the firm Large Volume and LVTSS rates, this component of Laclede's cost is reflected in a demand charge. In addition to the volumetric charge that the LVTSS customer pays each month, he must also currently pay 48¢ per therm for his maximum daily usage during the winter. For example, if a customer's maximum daily demand in January is 1,000 therms, he must pay an additional charge of $480 (1,000 therms x 48¢) for each of the next eleven months over and above the charge for volumes of gas actually used. This means that a large customer who uses gas heavily during the winter, but not during the summer, will pay more than a customer who uses the same total amount of gas annually, but at a much steadier rate from month to month. This is appropriate in concept for firm customers although the demand charges are, in total, too high for LVTSS customers.

In contrast, the GS rate has no explicit demand charge and, therefore, the commodity charge must include demand-related costs. Because both demand-related and commodity-related costs are recovered in the commodity charge, the commodity charge in the GS rate must be higher than the commodity charges in the Large Volume and LVTSS rates.

**Q ARE THERE ANY OTHER COST DIFFERENCES AMONG USERS?**

A Yes. There are also significant economies of scale in gas distribution mains. An eight-inch main can carry more than forty times as much load as a two-inch main, but the cost is not nearly forty times as much to install. Laclede has a very extensive system of two-inch mains covering the St. Louis area, primarily to serve residential and small commercial users. For the most part, all large volume customers are served from larger mains – mostly four-inch and larger, and do not require the use of smaller mains.

The average LVTSS customer uses as much gas as about 1,000 GS customers [101,960/105] (see Schedule 1-2 for the average usage of each customer class). This illustrates that the per therm investment in mains required to serve one large customer is much less than the amount required to deliver gas to 1,000 separate locations because (1) the smaller mains are of no use (value) in providing large volume service, and (2) the economy of the larger mains produces a lower unit cost.

## Laclede's Class Cost of Service Study

**Q HAS LACLEDE PREPARED A CLASS COST OF SERVICE STUDY?**

A No, Laclede did not prepare a class cost of service study.

## MIEC Class Cost of Service Study

**Q HAVE YOU PREPARED A CLASS COST OF SERVICE STUDY?**

A Yes. I began with the Class Cost of Service Study format that Laclede used the last time it filed a CCOSS in a rate case. The current rate base, revenues and expenses were inserted into the Laclede format to develop a CCOSS. The information to update the study was provided by Laclede in its rate filing and in response to MIEC's Data Requests.

**Q PLEASE DESCRIBE THE PREPARATION OF YOUR CCOSS.**

A The first step was to functionalize costs into functions such as production or gas supply, distribution, etc. The next step was to classify all rate base components and expenses into categories. Laclede's investments and expenses fall into three basic categories. These cost categories are (a) customer-related costs, (b) demand-related costs, and (c) commodity-related costs, all of which are described in detail below.

Customer-related Costs are those costs that result from the existence of a customer and include the costs of meter reading, billing, etc.

Demand-related Costs are those costs that are incurred in order to meet the maximum gas demand imposed by customers. The capacity of Laclede's distribution system, and the investment related thereto, is a function of the non-coincident demand of each rate class.

Commodity-related Costs are those costs that are a function of the actual volume of gas used. The major cost component in this category is the commodity cost of gas purchased by Laclede.

**Q PLEASE DESCRIBE THE CLASSIFICATION OF MAJOR RATE BASE COMPONENTS.**

A Certain rate base components are assignable to a single classification. For example, Laclede's underground storage plant is clearly demand-related. However, other rate base components, such as mains, services, and meters and regulators, are properly assigned to more than one category. Mains, for example, have a dual use – one is to distribute gas to customers, which is a customer-related activity; the other is to meet the customer's peak demand, which is a demand-related activity. Meters are rate base components that also perform two functions. The customer-related portion of the cost of meters was based on the minimum size of the meters used in the Laclede system. The balance of the cost of meters is demand-related costs. Regulators perform similar functions as meters and are customer-related and demand-related costs.

**Q HOW WERE EXPENSE ITEMS CLASSIFIED?**

A In general, expenses that are directly related to a particular plant were classified in the same manner as that plant item. For example, maintenance of mains was classified using the same percentages as the classification of main investment. However, certain other expenses were classified by applying the relationship of customer-related, demand-related, and commodity-related expenses to certain previously established expense categories. For example, most administrative and general expenses were classified in proportion to the previously established customer, demand and commodity components of expenses that are primarily payroll-related (Distribution Operations, Sales, and Maintenance, etc.).

**Q WHAT WAS THE NEXT STEP IN THE PREPARATION OF THE CLASS COST OF SERVICE STUDY?**

A The next step was to allocate the classified rate base components and operation and maintenance (O&M) expenses to the various rate classes. Rate base components and expenses were allocated to the rate classes as described in more detail in the testimony below.

**Q HOW WERE THE COINCIDENT PEAK DAY DEMANDS OF THE VARIOUS RATE CLASSES DETERMINED?**

A The total system peak day sendout was increased by unaccounted-for and Company use gas, thus establishing the total system coincident peak day customer usage. In the case of both the Large Volume Service and LVTSS rate classes, billing demand or reservation therms provided the basis for determining class coincident demands. Other rate class coincident demands were based on the average day customer usage of the rate class. The balance of the total system coincident peak day demand was assigned to the GS rate class.

**Q HOW WAS THE NON-COINCIDENT DEMAND OF THE VARIOUS RATE CLASSES DETERMINED?**

A The non-coincident class demands are generally the same as the coincident class demands, with the exception of Interruptible Service customers, which are normally not assigned coincident demand due to the likelihood of curtailment on peak usage days. However, in this study demand costs were allocated to Interruptible Service.

The non-coincident demand of this Interruptible Service rate class was estimated using a 100% load factor.

**Q WHAT WAS DONE AFTER ALL RATE BASE COMPONENTS AND EXPENSES WERE ALLOCATED TO THE VARIOUS RATE CLASSES?**

A In order to determine the total cost of providing service to each rate class, it was then necessary to determine the utility operating income and income taxes applicable to each rate class. Under the assumption that each rate class should produce the same rate of return on rate base, utility operating income was allocated to each rate class proportional to the net original cost rate base allocated to such class. Income taxes, which are a function of utility operating income before income taxes reduced by certain deductions related to rate base, were also allocated to each rate class. After determining income taxes and utility operating income for each rate class, these amounts were added to all other costs, thus establishing the total cost of service by rate class.

**Q DOES YOUR CLASS COST OF SERVICE STUDY DIFFER FROM THE TYPE OF STUDY LACLEDE HAS FILED IN THE PAST?**

A Yes. While my CCOSS is similar to the type of study Laclede has filed in the past, my study addressed certain important aspects in a different manner to more accurately reflect cost of service.

**Q EXPLAIN HOW YOUR CLASS COST OF SERVICE STUDY MORE ACCURATELY REFLECTS COST OF SERVICE.**

A The following items were addressed to better reflect cost of service:

1. The Cost of Service Analysis addressed only non-gas costs.

2. The differences in the service provided by the low, medium and high-pressure mains in the distribution system were accounted for.

3. The allocation of supervision and "all other" expenses within the distribution operation and maintenance functions was based on a subtotal of these allocated costs.

4. The investments in mains, service lines, and meters and regulators were classified to demand and customer.

5. The interruptible sales demand used in cost allocation reflects a 100% load factor.

6. The coincident and non-coincident peak demands reflect design day conditions.

**Q PLEASE DESCRIBE THE DEMAND ALLOCATION FACTORS USED IN YOUR CLASS COST OF SERVICE STUDY.**

A Laclede in previous CCOSS has developed the demand for the interruptible sales class based on an estimated 50% load factor. I have computed the demand to reflect an assumed 100% load factor. This approach gives better recognition to the interruptible nature of the service that is provided to these customers, and provides a reasonable target for rate design at this time. It must be stressed that even the 100% load factor approach is not generally appropriate as a demand allocator for interruptible service. The demand assigned to interruptible capacity should be zero for defining cost. Also, a load factor significantly higher than 100%, perhaps 200% or more, could be more appropriate for rate design purposes in other circumstances. With respect to interruptible sales customers, the assumption of a 100% load factor was used to create a demand.

Like interruptible customers, basic transportation customers are not apt to receive gas sales service under system design conditions and the cost incurred to provide this component of service is therefore zero. For the purpose of defining a contribution to the fixed costs on behalf of these non-firm gas supply customers, I adopted a 120% load factor assumption. Since the actual load factor of basic customers (based on throughput as opposed to sales) is generally above 50% (50% to 60%), the 120% load factor represents a contribution to the fixed costs that is again approximately 50% of what it would be if Laclede were to provide the service on a firm basis and actually incur fixed cost. As with interruptible sales service, it would also be reasonable to assume higher load factors that would have the affect of lowering the contribution to fixed costs that have not been incurred on behalf of these customers.

## <u>Gas System Operations</u>

**Q COULD YOU PLEASE EXPLAIN YOUR UNDERSTANDING OF LACLEDE'S SYSTEM OPERATIONS?**

A As previously noted, Laclede is a gas distribution company and takes delivery of gas from MRT, MPC, and Williams. Laclede receives its system gas from the pipelines at various city gate receipt points and delivers and resells the gas to its sales customers. Since December 1989, Laclede has also taken delivery of customer-owned gas at the city gates for distribution to its transportation customers. From the city gate points, Laclede distributes gas within its service area.

Laclede distributes this gas to its sales customers and to its transportation customers through a gas distribution network. The network consists of six integrated systems, all operating at different pressure levels. Those systems and their normal pressure ranges are identified in Schedule 2, which is Laclede's Response to MIEC's First Data Request, Item No. 17. These systems consist of pipe of various diameters and various types of materials consistent with the pressure level and capacity requirements of the respective systems.

Gas received at the pipeline city gates is distributed to downstream points through the Transmission Feeder System, the Supply Feeder System and/or the Commercial Feeder System. The Supply Feeder and Commercial Feeder Systems then deliver gas to the Intermediate Pressure and/or Medium Pressure Systems, which, in turn, deliver gas to the Low Pressure System. The gas flows from higher-pressure systems to lower pressure systems (see Schedule 3, Laclede's Response to MIEC's First Data Request, Item No. 20).

**Q HOW ARE CUSTOMERS SERVED BY THE DISTRIBUTION SYSTEM?**

A Gas is delivered to sales and transportation customers via service lines fed by these different pressure systems mains. Some customer service lines come directly off the Supply Feeder System mains, others come off the Commercial Feeder System mains, and still others come off other pressure system mains. Thus, each customer is served from a system main of specific pressure.

If a customer is served from the higher pressure, Supply Feeder System, this is the only system that is utilized in providing service to the customer. If a customer is served by the Intermediate Pressure System, the gas will flow through the Supply Feeder and/or Commercial Feeder Systems and through the Intermediate Pressure System before the gas is delivered. However, if a customer is served by the Low Pressure System, the gas will flow through the Supply Feeder and/or Commercial Feeder Systems and probably also through the Intermediate and/or Medium Pressure Systems and the Low Pressure System before the gas is delivered. The many miles of mains that comprise the medium and low-pressure systems are of no direct use and provide no benefit to the customers served from the high-pressure mains.

**Q PLEASE EXPLAIN YOUR STATEMENT THAT CUSTOMERS SERVED FROM HIGH PRESSURE MAINS DO NOT USE ALL THE MAINS ASSIGNED TO THEM IN A TRADITIONAL LACLEDE CLASS COST OF SERVICE STUDY.**

A Large Volume customers, because of their relatively large load requirements, are served from larger diameter mains that operate at higher pressures. The smaller, low-pressure mains in Laclede's system are simply not needed to serve large volume customers and are not used to serve them. In response to a MIEC data requests (MIEC's First Data Request, Item No. 16), Laclede indicated that almost all MIEC customers were served by either Supply Feeder or Intermediate Pressure services, which means that they are served from similar pressure mains. Because the mains operating at lower pressures do not serve large volume customers, the cost of these mains should not be allocated to these large volume customers.

## <u>Main Cost Allocation</u>

**Q SHOULD ALL CUSTOMERS BE ALLOCATED SOME OF THE COST OF EACH PORTION OF THE SIX SYSTEMS COMPRISING THE DISTRIBUTION MAINS?**

A No. Customers connected to high pressure mains (which are defined as the Supply Feeder System) use less of the system than customers connected to the medium pressure mains, consisting of the Commercial Feeder, Intermediate, and Medium Pressure Systems. Customers connected to the medium pressure mains use less of the system than customers connected to the Low Pressure System. Therefore, customer classes served by high-pressure mains should be allocated only a share of the costs of the Supply Feeder System, and none of the cost of the medium and low-pressure mains. Customers connected to the high pressure mains do not receive service from the rest of the system and do not benefit from the medium and low-pressure mains. Customers who utilize part of the system only should be required to pay for the part of the system used in providing service. Likewise, customer classes served by medium pressure mains should be allocated a share of the costs of the Supply Feeder System (high pressure) and a share of the costs of the Commercial Feeder, Intermediate and Medium Pressure Systems (medium pressure), but none of the cost of the low pressure mains. Customers connected to the medium pressure mains do not receive any service via the low-pressure mains.

**Q IS IT A FUNDAMENTAL PRINCIPAL OF COST OF SERVICE ANALYSIS THAT COSTS SHOULD BE ALLOCATED CONSISTENT WITH FACILITIES USED TO PROVIDE SERVICE?**

A Yes. The American Gas Association's Fourth Edition of *Gas Rate Fundamentals* recognizes this in its discussion of development of allocation factors and states:

> "By identifying the points of attachment of all loads, allocation factors can be developed for each functional level. Because customers may be served at various pressure levels, some customers may not share the cost responsibility for all facilities." (American Gas Association, Fourth Edition, *Gas Rate Fundamentals*, Page 137)

Thus, customers should not be allocated costs of facilities that do not (and cannot) provide service to them.

**Q HAS THE OFFICE OF PUBLIC COUNSEL (OPC) SUGGESTED SOMETHING SIMILAR IN A PREVIOUS CASE?**

A Yes. In Laclede's rate cases, Case No. GR-98-374, OPC Witness Barry F. Hall, and Case No. GR-2001-629, OPC Witness Hong Hu, suggested that for distribution mains, a reasonable distinction can be drawn between mains that serve predominantly the smaller usage customers and the mains that serve all customer classes in common. Thee went on to suggest that the costs of mains two inches or less in diameter that account for almost 60% of the total length be allocated to small usage customers, namely residential and other GS customers.

**Q DO YOU AGREE WITH THE OPC'S ALLOCATION OF MAIN COSTS?**

A No. While its proposal was a step in the right direction, by not allocating the cost of mains to customers who do not use these mains, it is not as accurate as it could be because the allocation is based on main size instead of on main pressure. This would be similar to basing the allocation of the cost of an electric system on the size of the wire that serves a customer instead of on the parts of the system that serve each type of customer, which vary by voltage. Voltage in electricity is equivalent to pressure in gas distribution.

**Q PLEASE EXPLAIN HOW YOU DETERMINED THE SIZE, TYPE AND AMOUNT OF MAIN IN EACH PRESSURE SYSTEM.**

A The information was obtained from several sources. Laclede, in its Response to MIEC's First Data Request, Item No. 27, provided a copy of the main databases used to run its system flow studies. In its Response to MIEC's First Data Request, Item No. 24, Laclede provided a copy of the 2001 Annual Report, which Laclede files with the Department of Transportation, Office of Pipeline Safety. In its Response to MIEC's First Data Request, Item No. 30, Laclede provided the work papers that show the data used to complete the 2001 Department of Transportation Annual Report. From this data, I developed the total miles of main in the Laclede system in each pressure system, by pipe size. The results of the analysis are shown on Schedule 4.

**Q DID YOU DETERMINE THAT LARGE CUSTOMERS ARE SERVED BY VARIOUS PRESSURE SYSTEMS?**

A Yes. Laclede provided information pertaining to the service lines that serve members of the MIEC and the pressure system that serves each service location: Supply Feeder (S.F.), Commercial Feeder (C.F.), Intermediate Pressure (I.P.), and Medium Pressure Systems (M.P.). These service types indicate the type of pressure system main that services the service line connected to each service address.

In addition, in response to MIEC's First Data Request, Item No. 15, Laclede made system maps available for inspection at their office. My inspections of the system maps in a number of previous rate cases confirmed the different pressure systems that exist and the specific areas served by the different pressure systems and revealed how the different pressure systems are connected and how gas feeds from one system to another.

**Q HOW WAS THE INVESTMENT FOR THE HIGH PRESSURE, MEDIUM PRESSURE AND LOW PRESSURE MAINS DETERMINED?**

A First, the feet and miles of main were determined for the S.F. pressure system that constitutes the high pressure mains, as I have defined high pressure; for the C.F., I.P. and M.P. pressure systems that constitute the medium pressure mains, as I have defined medium pressure; and for the L.P. pressure systems, the low pressure mains. The miles of main of each diameter were totaled by high pressure, medium pressure and low pressure, and the percentage of the total system was calculated. Approximately 3% of the line mileage of mains is high pressure, 73% is medium pressure and 24% is low pressure.

Second, the miles of main by pressure system and main diameters were utilized to calculate a diameter-mile weighted number. This captures for each pressure system the higher cost per mile of a larger diameter main, as compared to a smaller diameter main and weights the miles of main relative to cost. The diameter-mile numbers were summed for the high, medium and low-pressure mains, and the percentage of the total system was calculated. This indicated that 12% of the diameter weighted miles of main are high pressure, 55% are medium pressure and 33% are low pressure. Thus, 12% of the investment in main is allocated to the high-pressure mains, 55% is allocated to the medium pressure mains, and 33% is allocated to the low-pressure mains. These calculations are shown on Schedule 4.

**Q PLEASE EXPLAIN THE CLASSIFICATION OF DISTRIBUTION MAINS.**

A A significant portion of the cost of distribution mains does not depend on either capacity requirements or the volume of gas that is moved through the system over a period of time. That portion is properly classified as customer-related and allocated among rate schedules based on the number of customers served under each. The remaining cost of distribution mains depends upon the capacity requirements that must be met to provide service to customers.

Many of the large customers are served from high-pressure mains that account for only 3% of the total miles of mains that are installed in the Laclede system. As previously noted, 33% of the cost is associated with the lower pressure mains, 55% of the cost associated with the medium pressure mains and 12% with the high pressure mains. This breakdown is applied to the 70% of main cost which is demand-related and yields a total classified cost of distribution mains, which is 30% customer-related, 23% lower pressure demand-related, 39% medium pressure demand-related and 8% high pressure demand-related.

**Q ARE THE LOWER PRESSURE MAINS USED IN ANY WAY IN SERVICE TO LARGE VOLUME CUSTOMERS?**

A No. Therefore, none of the demand-related costs of the lower pressure mains are allocated to large volume customers.

**Q HOW HAVE YOU ALLOCATED DISTRIBUTION OPERATION AND MAINTENANCE EXPENSES ASSOCIATED WITH SUPERVISORY COST AND WITH ALL OTHER?**

A The category of distribution operation and maintenance expenses associated with supervisory cost and a category that consists of "all other" was allocated using a procedure explained here. As an example of the procedure followed, I will discuss the supervisory cost associated with distribution operations. As a first step, the accounts within distribution operations were allocated based on the principle of cost causation. A subtotal of these allocated costs was created and that subtotal was used to allocate the supervisory costs associated with distribution operations. The same subtotal was used for the allocation of "all other" distribution operation expense. An analogous procedure was followed with respect to the distribution maintenance expense.

**Q HOW DID YOU CLASSIFY THE COSTS ASSOCIATED WITH THE SERVICE LINES THAT ARE USED TO CONNECT INDIVIDUAL CUSTOMERS TO THE DISTRIBUTION MAINS?**

A The cost of service lines is not a variable cost and is not related to the volume of gas moving through a service line at any point in time. Consequently, there is no good reason for allocating any portion of these costs based on customer class throughput. Instead, these costs are directly related to the number of service line installations and the capacity of the service lines. I have allocated 68% of the cost of service lines based on customer-related cost and 32% of the cost based on the demand of the class. These two factors primarily lead to the creation of these costs. The customer-related cost is based on the total cost of a minimum system of services. The demand-related cost reflects the balance of the total cost of services installed on Laclede's system. This classification method is the same method that Laclede has used in its previously filed CCOSS.

**Q HOW DID YOU CLASSIFY THE COSTS ASSOCIATED WITH METERS AND REGULATORS THAT ARE USED TO SERVE INDIVIDUAL CUSTOMERS?**

A The cost of meters and regulators is not a variable cost and is not related to the volume of gas moving through a meter and regulator at any point in time. Consequently, there is no good reason for allocating any portion of these costs based on customer class throughput. Instead, these costs are directly related to the number of meter and regulator installations and there capacity. I have allocated 49% of the cost of meters and regulators based on customer-related cost and 51% of the cost based on the demand of the class. These two factors primarily lead to the creation of these costs. The customer-related cost is based on the total cost of a minimum system of meters. The demand-related cost reflects the balance of the total cost of meters installed on Laclede's system. Regulators were allocated on the same basis as meters as their function is similar to that of meters. This classification method is similar to the method that Laclede has used in its previously filed CCOSS.

## Cost of Service Results

**Q PLEASE EXPLAIN HOW THE VARIATION FROM COST IS MEASURED FOR EACH RATE SCHEDULE.**

A The variation from cost is the dollar amount by which the revenues from a customer class either fall short of, or exceed, the revenues required to produce the system average rate of return. These deviations are shown on line 19 on my Schedule 5.

**Q WHAT ARE THE RESULTS OF THE MIEC RECOMMENDED CLASS COST OF SERVICE STUDY?**

A The MIEC study shows that the GS non-gas rates are below cost, while the rates for the large volume customers, including LVTSS, are priced above cost.

**Q HOW DO THE PRESENT REVENUES OF THE CLASSES RELATE TO THE COST RESPONSIBILITIES INDICATED BY THE MIEC STUDY?**

A Schedule 5 is a summary of the MIEC study, including the class variations from cost under present rates. This study shows that the Interruptible Sales and large volume customers are providing total revenues that substantially exceed cost. While the GS class is less than cost, the amount of variation is not nearly so large in percentage terms (0.9% of present revenue). While the percentage variation is 13.8% for transportation customers, a substantial adjustment of the large volume classes to reflect the cost of service will not create any significant impact problems for the GS class. That occurs simply because the GS class non-gas cost is approximately $212 million while LVTSS (transportation) non-gas cost is approximately $9 million.

**Company Proposed Increase**

**Q WHAT INCREASE HAS BEEN PROPOSED BY THE COMPANY AND HOW HAS THE PROPOSED INCREASE IN REVENUES BEEN SPREAD AMONG THE CUSTOMER CLASSES?**

A Laclede has proposed an overall increase of $36 million and the proposed overall increase is spread as an equal percentage of non-gas revenues to all classes. The increases to the major customer classes are shown in Table 1 below:

**TABLE 1**

**Company Proposed Increase**

| | Percent of Total Revenue | Percent of Non-Gas Revenue |
|---|---|---|
| General Service | 6.16% | 16.12% |
| Industrial Classes | | |
| Large Volume | 3.67% | 16.12% |
| INT | 3.43% | 16.12% |
| LVTSS | 9.64% | 16.12% |

Schedule 6 quantifies the proposed dollar increase for each customer class.

**Q DO YOU HAVE A RECOMMENDATION THAT WILL REDUCE THE VARIATIONS FROM COST OF SERVICE FOR THE LARGE VOLUME CUSTOMERS?**

A Yes. It is my recommendation that the rates for all of the large volume services provided by Laclede be adjusted to better reflect the cost of providing the services. It is important that the rates be moved to a cost basis as soon as possible to resolve the inequities that are created by rates that are not based upon costs. With respect to other classes, I also recommend cost based adjustments.

More specifically, I recommend adjustment of the rates to remove 100% of the variation from the cost of service, as illustrated on Schedule 7.

**Q WHAT WOULD BE THE IMPACT IF THE FULL COST OF SERVICE ADJUSTMENTS WERE MADE?**

A The impact of the proposed Company increase on each rate class is shown in Table 2 below and in column 6 of Schedule 8, which shows the dollar increase for each customer class. The schedule also shows the percent increase based on total revenues and non-gas costs.

**TABLE 2**

**Results of MIEC's Recommended Spread of Company Proposed Increase**

| | Percent of Total Revenue | Percent of Non-Gas Revenue |
|---|---|---|
| General Service | 6.48% | 16.97% |
| Industrial Classes | | |
| Large Volume | 1.95% | 8.56% |
| INT | (4.33)% | (20.36)% |
| LVTSS | 1.40% | 2.35% |

**Q WHAT IS YOUR RECOMMENDATION WITH RESPECT TO SPREADING OF THE COMPANY'S PROPOSED INCREASE IF LACLEDE'S FULL PROPOSED INCREASE IS NOT APPROVED?**

A The increase should be spread to the rate classes by scaling the increase shown in column 5 of Schedule 8 and adding to it column 3 of Schedule 8. For example, if 50% of the increase is allowed, then one-half of the amounts shown in column 5 of

Schedule 8 plus the class adjustment shown in column 3 should be allocated to each class.

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

A Yes, it does.

## Qualifications of John W. Mallinckrodt

**Q PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

A John W. Mallinckrodt. My business mailing address is 723 Gardner Road, Flossmoor, IL 60422.

**Q WHAT IS YOUR OCCUPATION?**

A I am a consultant in the field of public utility regulation and am employed by Brubaker & Associates, Inc., energy, economic and regulatory consultants.

**Q PLEASE STATE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE.**

A I hold a Bachelor's degree in Engineering from the University of Missouri, and a Master of Business Administration degree from the University of Chicago.

From 1969 through 1989, I was employed by Natural Gas Pipeline Company of America (NGPL), a subsidiary of MidCon Corporation. At NGPL, the positions I held included Assistant Vice President of Engineering and Assistant Vice President of Planning. My responsibilities as AVP of Engineering included system design, storage reservoir engineering, code compliance and environmental matters. As AVP of Planning, I was responsible for strategic and business planning for the Company. During my years with MidCon/Peoples Energy, I also worked for The Peoples Gas Light and Coke Company as Field Superintendent of Distribution and Administrative Assistant to the President. I also have experience in pipeline design, construction and operations.

In 1989, I was employed by K&W Design/Construction as General Manager of Engineering and Construction. I directed the engineering, design and construction of projects for major food, pharmaceutical and petrochemical client companies.

I joined the firm of Drazen-Brubaker & Associates, Inc. (DBA) in June of 1991. In April 1995 the firm of Brubaker & Associates, Inc. was formed. It includes most of the former DBA principals and staff. Since 1991, I have been engaged in the preparation of studies relating to utility rate matters and have participated in interstate pipeline, intrastate pipeline, oil pipeline, gas distribution and electric rate cases.

In addition to our main office in St. Louis, the firm also has branch offices in Denver, Colorado; Chicago, Illinois; Asheville, North Carolina; Kerrville, Texas; and Plano, Texas.

**Q HAVE YOU PREVIOUSLY APPEARED BEFORE A REGULATORY COMMISSION OR A PUBLIC AUTHORITY?**

A I have submitted testimony and appeared before the Federal Energy Regulatory Commission, the Delaware Public Service Commission, the Iowa Utilities Board and the Public Utility Commission of Texas. In addition, I have submitted testimony in cases before the Colorado Public Utilities Commission, the Illinois Commerce Commission, the Louisiana Public Service Commission, the Missouri Public Service Commission and the New York State Public Service Commission.

**Q ARE YOU A REGISTERED PROFESSIONAL ENGINEER?**

A I am a registered professional engineer in the State of Illinois.

# LACLEDE GAS COMPANY

**Load Factors by Customer Class**
**Based on Design Day Conditions**
**Twelve Months Ended November 2001**

| Line | Customer Class | Annual Usage Therms (1) | Average Daily Usage Therms (2) | Design Day Usage Therms (3) | Load Factor (4) |
|---|---|---|---|---|---|
| 1 | General Service | 797,828,746 | 2,185,832 | 9,373,065 | 23% |
| 2 | Air Conditioning | 1,269,629 | 3,478 | - | - |
| 3 | Large Volume | 23,238,996 | 63,668 | 196,761 | 32% |
| 4 | Interruptible | 3,819,133 | 10,463 | - | N/A |
| | Transportation: | | | | |
| 5 | Firm | 64,914,773 | 177,849 | 426,530 | 42% |
| 6 | Basic | 118,918,954 | 325,805 | 622,194 | 52% |
| 7 | Total Transportation | 183,833,727 | 503,654 | 1,048,724 | 48% |
| 8 | Vehicular Fuel | 50,493 | 138 | 138 | 100% |
| 9 | L.P. Gas | 109,240 | 299 | 1,197 | 25% |
| 10 | Unmetered Gas Light | 127,805 | 350 | 350 | 100% |

# LACLEDE GAS COMPANY

**Average Monthly Usage per Customer**
**Twelve Months Ended November 2001**

| Line | Customer Class | Annual Usage Therms (1) | Average Number of Customers (2) | Average Monthly Usage per Customer Therms (3) |
|---|---|---|---|---|
| 1 | General Service | 797,828,746 | 631,445 | 105 |
| 2 | Air Conditioning | 1,269,629 | 110 | 960 |
| 3 | Large Volume | 23,238,996 | 110 | 17,579 |
| 4 | Interruptible | 3,819,133 | 13 | 23,870 |
| | Transportation: | | | |
| 5 | Firm | 64,914,773 | 57 | 94,490 |
| 6 | Basic | 118,918,954 | 93 | 106,558 |
| 7 | Total Transportation | 183,833,727 | 150 | 101,960 |
| 8 | Vehicular Fuel | 50,493 | 4 | 1,074 |
| 9 | L.P. Gas | 109,240 | 173 | 52 |
| 10 | Unmetered Gas Light | 127,805 | 115 | 93 |

**MIEC's First Data Request, Item No. 17**

**No. 17 Question**

Please refer to Laclede's response in Case No. GR-94-220 to MIEC's Second Data Request, Question No. 3; response in Case No. GR-96-193 to MIEC's First Data Request, Question No. 18; response in Case No. GR-98-374 to MIEC's First Data Request, Question 19; response in Case No. GR-99-315 to MIEC's First Data Request, Question No. 18; and response in Case No. GR-2001-629 to MIEC's First Data Request, Question No. 17, which provided documentation which indicates all the different levels of pressure of gas utilized by Laclede in the transmission and distribution of gas in the Laclede system and explaining if low pressure gas is utilized within the City of St. Louis and, in general, how the system operates. Please update this response for any changes that may have occurred since that response was provided.

**No. 17 Response**

Laclede's gas distribution network consists of six integrated systems, all operating at different pressure levels. Those systems and their normal operating pressure ranges are as follows:

| SYSTEM | NORMAL OPERATING RANGE |
|---|---|
| Transmission Feeder | 275 psig to 850 psig |
| Supply Feeder | 70 psig to 300 psig |
| Intermediate Pressure | 10 psig to 60 psig |
| Medium Pressure | 4 psig to 25 psig |
| Low Pressure | 5" W.C. to 9.5" W.C. |

Laclede's Low Pressure System, principally within the City limits of St. Louis, is supplied by some 137 non-remote controlled regulator stations. The outlet pressure of these stations is adjusted from 6.5 to 8.5 inches of water column, depending on the season of the year. There are no service regulators installed at L.P. customer meters since delivery pressure is at utilization pressure.

**MIEC's First Data Request, Item No. 20**

**No. 20 Question**

Please list all the different pressures utilized by Laclede in the operation of its system, and explain the operation of Laclede's system with respect to the change in gas pressures and the reason for the existence of and changes in gas pressures.

**No. 20 Response**

See response to Item No. 17, above, for listing of different pressure levels utilized by Laclede. Laclede's distribution system is a "downhill" system, i.e. there is no compression used. Pressure differentials are a function of customer demand. The resultant flow of gas creates pressure drop. Moreover, pressure changes are effected at regulator stations and metering stations in response to customer load requirements.

**LACLEDE GAS COMPANY**
**Case Nos. GR-2002-356**

| | | S.F. (Supply Feeder) | | | System Study (Intermediate Pressure) | | | C.F. (Commercial Feeders) | | | Special I.P. (Tower Grove, Downtown & Catalan) | | | Medium Pressure | | | Low Pressure | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Diameter Size | D.O.T. Footage Subtotal(1) | S.F. Footage(2) | Calculated Miles | Diameter Miles | System Study(2) | Calculated Miles | Diameter Miles | C.F. Footage(3) | Calculated Miles | Diameter Miles | I.P. Footage(4) | Calculated Miles | Diameter Miles | M.P. Footage(4) | Calculated Miles | Diameter Miles | L.P. Footage(5) | Calculated Miles | Diameter Miles | Calculated Miles | Diameter Miles |
| 1 " | 59,643 | - | - | - | 50,483 | 9.561 | 9.561 | 877 | 0.166 | 0.166 | 3,737 | 0.708 | 0.708 | - | - | - | 4,546 | 0.861 | 0.861 | 11.296 | 11.296 |
| 2 " | 25,148,657 | 7,398 | 1.401 | 2.802 | 25,073,097 | 4,748.693 | 9,497.385 | 8,618 | 1.632 | 3.264 | 7,730 | 1.464 | 2.928 | - | - | - | 51,814 | 9.813 | 19.627 | 4,763.003 | 9,526.007 |
| 3 " | 759,304 | - | - | - | 637,595 | 120.757 | 362.270 | 2,360 | 0.447 | 1.341 | 11,679 | 2.212 | 6.636 | 14,787 | 2.801 | 8.402 | 92,883 | 17.591 | 52.774 | 143.808 | 431.423 |
| 4 " | 6,669,678 | 4,415 | 0.836 | 3.345 | 852,175 | 161.397 | 645.587 | 27,278 | 5.166 | 20.665 | 20,627 | 3.907 | 15.627 | 4,204 | 0.796 | 3.185 | 5,760,979 | 1,091.095 | 4,364.378 | 1,263.197 | 5,052.786 |
| 5 " | 16,549 | - | - | - | 15,860 | 3.004 | 15.019 | - | - | - | - | - | - | - | - | - | 689 | 0.130 | 0.652 | 3.134 | 15.671 |
| 6 " | 4,767,562 | 1,998 | 0.378 | 2.270 | 1,884,665 | 356.944 | 2,141.665 | 12,280 | 2.326 | 13.955 | 26,255 | 4.973 | 29.835 | 54,558 | 10.333 | 61.998 | 2,787,806 | 527.994 | 3,167.962 | 902.947 | 5,417.684 |
| 8 " | 2,569,949 | 248,749 | 47.112 | 376.892 | 1,808,592 | 342.536 | 2,740.291 | 22,005 | 4.168 | 33.341 | 42,296 | 8.011 | 64.085 | 5,110 | 0.968 | 7.742 | 443,197 | 83.939 | 671.511 | 486.733 | 3,893.862 |
| 10 " | 239,057 | - | - | - | 36,885 | 6.986 | 69.858 | 14,044 | 2.660 | 26.598 | 6,801 | 1.288 | 12.881 | 8,253 | 1.563 | 15.631 | 173,074 | 32.779 | 327.792 | 45.276 | 452.759 |
| 12 " | 1,154,769 | 200,638 | 38.000 | 455.995 | 152,450 | 28.873 | 346.476 | 23,845 | 4.516 | 54.193 | 50,425 | 9.550 | 114.602 | 215,797 | 40.871 | 490.448 | 511,614 | 96.897 | 1,162.760 | 218.706 | 2,624.475 |
| 13 " | 5,308 | - | - | - | 2,760 | 0.523 | 6.795 | - | - | - | - | - | - | - | - | - | 2,548 | 0.483 | 6.273 | 1.005 | 13.069 |
| 14 " | 119 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 119 | 0.023 | 0.316 | 0.023 | 0.316 |
| 16 " | 505,159 | 299,732 | 56.767 | 908.279 | - | - | - | 3,105 | 0.588 | 9.409 | 11,651 | 2.207 | 35.306 | 85,690 | 16.229 | 259.667 | 104,981 | 19.883 | 318.124 | 95.674 | 1,530.784 |
| 18 " | 6,352 | 6,000 | 1.136 | 20.455 | - | - | - | - | - | - | - | - | - | - | - | - | 352 | 0.067 | 1.199 | 1.203 | 21.654 |
| 20 " | 358,597 | 255,658 | 48.420 | 968.402 | - | - | - | - | - | - | - | - | - | 39,105 | 7.406 | 148.126 | 63,834 | 12.090 | 241.794 | 67.916 | 1,358.322 |
| 22 " | 27,151 | 27,151 | 5.142 | 113.128 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 5.142 | 113.128 |
| 24 " | 230,536 | 91,135 | 17.260 | 414.250 | - | - | - | - | - | - | - | - | - | 109,133 | 20.669 | 496.059 | 30,268 | 5.733 | 137.581 | 43.662 | 1,047.890 |
| 26 " | 26,754 | 26,754 | 5.067 | 131.741 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 5.067 | 131.741 |
| 30 " | 99,521 | 67,791 | 12.839 | 385.176 | - | - | - | - | - | - | - | - | - | 24,870 | 4.710 | 141.307 | 6,860 | 1.299 | 38.977 | 18.849 | 565.460 |
| **Total** | 42,644,664 | 1,237,418 | 234.360 | 3,782.736 | 30,514,562 | 5,779.273 | 15,834.908 | 114,412 | 21.669 | 162.933 | 181,201 | 34.318 | 282.607 | 561,507 | 106.346 | 1,632.564 | 10,035,563 | 1,900.675 | 10,512.581 | 8,076.641 | 32,208.328 |

| | Calculated Miles | Diameter Miles |
|---|---|---|
| SF | 234.360 | 3,782.736 |
| CF | 21.669 | 162.933 |
| I.P. | 5,813.591 | 16,117.515 |
| MP | 106.346 | 1,632.564 |
| LP | 1,900.675 | 10,512.581 |
| Total | 8,076.641 | 32,208.328 |
| | | |
| SF | 2.90% | 11.74% |
| CF | 0.27% | 0.51% |
| I.P. | 71.98% | 50.04% |
| MP | 1.32% | 5.07% |
| LP | 23.53% | 32.64% |
| Total | 100.00% | 100.00% |

| | Calculated Miles | Diameter Miles |
|---|---|---|
| SF | 234.360 | 3,782.736 |
| CF, I.P. & MP | 5,941.606 | 17,913.011 |
| LP | 1,900.675 | 10,512.581 |
| Total | 8,076.641 | 32,208.328 |
| | | |
| SF | 2.90% | 11.74% |
| CF, I.P. & MP | 73.57% | 55.62% |
| LP | 23.53% | 32.64% |
| Total | 100.00% | 100.00% |

Notes:
(1) Total Divisions Main Report 2001 (Laclede, St. Charles & Midwest; excl. UGS); From Response to MIEC First Data Requests #30.
(2) From Response to MIEC First Data Request #27 (BAI Analysis of 2001 System Studies).
(3) From Response to MIEC First Data Request #27. Includes Mackenzie footage from system study.
(4) From Response to MIEC First Data Request #27.
(5) From Response to MIEC First Data Request #27.

**LACLEDE GAS COMPANY**
**COST OF SERVICE SUMMARY**
**(Dollars in Thousands)**

| Line | Description | General Service (1) | A/C (2) | UMGL (3) | Vehicular Fuel (4) | Large Volume (5) | Inter-rupitible (6) | Firm Trans-portation (7) | Basic Trans-portation (8) | L.P. Gas (9) | Total (10) | Total Transportation (11) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **NON GAS COST OF SERVICE** | | | | | | | | | | | |
| 1 | Peaking Expense - Excluding Cost of Gas | $ 2,573 | $ - | $ 0 | $ 0 | $ 54 | $ 3 | $ 117 | $ - | $ 0 | $ 2,748 | $ 117 |
| 2 | Distribution Operation Expense | 30,676 | 3 | 2 | 4 | 398 | 29 | 635 | 936 | 6 | 32,690 | 1,571 |
| 3 | Customer Accounts Expense | 37,144 | 15 | 6 | 7 | 415 | 54 | 267 | 257 | 9 | 38,173 | 524 |
| 4 | Sales Expense | 3,558 | 6 | 1 | 0 | 104 | 17 | 27 | 7 | 0 | 3,720 | 34 |
| 5 | Administrative & General Expense - Net | 43,089 | 8 | 6 | 7 | 476 | 43 | 722 | 1,058 | 10 | 45,419 | 1,780 |
| 6 | Maintenance Expense | 19,007 | 2 | 2 | 2 | 265 | 18 | 471 | 581 | 4 | 20,352 | 1,052 |
| 7 | Decr Rev Req Due to Inventory Carrying Cost Tariff | (5,097) | - | (0) | (0) | (107) | (6) | (232) | - | (1) | (5,443) | (232) |
| 8 | Depreciation and Amortization | 28,454 | 3 | 3 | 4 | 352 | 27 | 576 | 762 | 6 | 30,187 | 1,338 |
| 9 | Taxes Other than Income Taxes - Excl GRT | 19,009 | 3 | 2 | 3 | 242 | 19 | 408 | 586 | 4 | 20,275 | 994 |
| 10 | Income Taxes | 8,211 | 1 | 1 | 1 | 118 | 9 | 154 | 164 | 2 | 8,661 | 319 |
| 11 | Total Utility Operating Income | 51,222 | 8 | 5 | 6 | 736 | 56 | 961 | 1,026 | 10 | 54,029 | 1,987 |
| 12 | Deduct Other Income | - | - | - | - | - | - | - | - | - | - | - |
| 13 | Deduct Forfeited Disc and Misc Revenue | 25,445 | 28 | 3 | 0 | 348 | 44 | 397 | 608 | 5 | 26,879 | 1,005 |
| 14 | NonGas Cost of Service | 212,400 | 21 | 24 | 35 | 2,704 | 225 | 3,710 | 4,768 | 45 | 223,932 | 8,478 |
| 15 | NonGas Revenue Excluding GRT | 210,598 | 156 | 25 | 3 | 2,926 | 354 | 3,843 | 5,989 | 39 | 223,932 | 9,832 |
| 16 | NonGas Revenue above (below) Cost of Service | $ (1,802) | $ 135 | $ 1 | $ (33) | $ 221 | $ 129 | $ 133 | $ 1,221 | $ (5) | $ - | $ 1,354 |
| 17 | Percent of Present Revenue | -0.9% | 86.8% | 2.7% | -1290.4% | 7.6% | 36.4% | 3.5% | 20.4% | -13.7% | 0.0% | 13.8% |
| 18 | Revenue per therm | $ (0.0023) | $ 0.1065 | $ 0.0053 | $(0.6576) | $ 0.0095 | $ 0.0337 | $ 0.0021 | $ 0.0103 | $(0.0496) | $ - | $ 0.0074 |

# LACLEDE GAS COMPANY

**Company Proposed Increase**
**Twelve Months Ended November 2001**

| Line | Customer Class | Present Total Revenues (1) | Present Non-Gas Revenues (2) | Company Proposed Increase (3) | Percent of: Total Revenues (4) | Percent of: Non-Gas Revenues (5) |
|---|---|---|---|---|---|---|
| 1 | General Service | $ 551,215,509 | $ 210,597,964 | $ 33,941,217 | 6.16% | 16.12% |
| 2 | Air Conditioning | 590,519 | 155,868 | 26,303 | 4.45% | 16.88% |
| 3 | Large Volume | 12,846,969 | 2,925,529 | 471,511 | 3.67% | 16.12% |
| 4 | Interruptible | 1,661,085 | 353,624 | 56,993 | 3.43% | 16.12% |
| | Transportation: | | | | | |
| 5 | Firm | 9,785,429 | 3,843,094 | 620,723 | 6.34% | 16.15% |
| 6 | Basic | 6,648,223 | 5,989,394 | 964,017 | 14.50% | 16.10% |
| 7 | Total Transportation | 16,433,652 | 9,832,488 | 1,584,740 | 9.64% | 16.12% |
| 8 | Vehicular Fuel | 24,105 | 2,548 | 411 | 1.71% | 16.13% |
| 9 | L.P. Gas | 84,910 | 39,286 | 6,332 | 7.46% | 16.12% |
| 10 | Unmetered Gas Light | 79,610 | 25,046 | 4,038 | 5.07% | 16.12% |
| 11 | Total | $ 582,936,359 | $ 223,932,353 | $ 36,091,545 | 6.19% | 16.12% |

# LACLEDE GAS COMPANY

**MIEC NonGas Cost of Service Adjustment**
**Twelve Months Ended November 2001**
**(Dollars in Thousands)**

| Line | Customer Class | Present NonGas Revenues (1) | Cost of Service Adjustment (2) | Percent of NonGas Revenues (3) | Recom-mended NonGas Revenues (4) |
|---|---|---|---|---|---|
| 1 | General Service | $ 210,598 | $ 1,802 | 0.86% | $ 212,400 |
| 2 | Air Conditioning | 156 | (135) | -86.61% | 21 |
| 3 | Large Volume | 2,926 | (221) | -7.55% | 2,705 |
| 4 | Interruptible | 354 | (129) | -36.48% | 225 |
| | Transportation: | | | | |
| 5 | Firm | 3,843 | (133) | -3.46% | 3,710 |
| 6 | Basic | 5,989 | (1,221) | -20.39% | 4,768 |
| 7 | Total Transportation | 9,832 | (1,354) | -13.77% | 8,478 |
| 8 | Vehicular Fuel | 3 | 33 | 1295.13% | 36 |
| 9 | L.P. Gas | 39 | 5 | 12.73% | 44 |
| 10 | Unmetered Gas Light | 25 | (1) | -3.99% | 24 |
| 11 | Total | $ 223,932 | $ - | 0.00% | $ 223,932 |

Note: Totals may not add due to rounding.

## LACLEDE GAS COMPANY

**Company Proposed Increase with**
**MIEC NonGas Cost of Service Adjustment**
**Twelve Months Ended November 2001**
**(Dollars in Thousands)**

| Line | Customer Class | Present Total Revenues (1) | Present Non-Gas Revenues (2) | MIEC Cost of Service Adjustment (3) | Adjusted Present Non-Gas Revenues (4) | Company Proposed Increase (5) | Total Adjusted Increase (6) | Adjusted Increase as a Percent of: Total Revenues (7) | Adjusted Increase as a Percent of: Non-Gas Revenues (8) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | General Service | $ 551,216 | $ 210,598 | $ 1,802 | $ 212,400 | $ 33,941 | $ 35,743 | 6.48% | 16.97% |
| 2 | Air Conditioning | 591 | 156 | (135) | 21 | 26 | (109) | -18.41% | -69.74% |
| 3 | Large Volume | 12,847 | 2,926 | (221) | 2,705 | 472 | 251 | 1.95% | 8.56% |
| 4 | Interruptible | 1,661 | 354 | (129) | 225 | 57 | (72) | -4.33% | -20.36% |
| | Transportation: | | | | | | | | |
| 5 | Firm | 9,785 | 3,843 | (133) | 3,710 | 621 | 488 | 4.98% | 12.69% |
| 6 | Basic | 6,648 | 5,989 | (1,221) | 4,768 | 964 | (257) | -3.87% | -4.29% |
| 7 | Total Transportation | 16,434 | 9,832 | (1,354) | 8,478 | 1,585 | 231 | 1.40% | 2.35% |
| 8 | Vehicular Fuel | 24 | 3 | 33 | 36 | 0 | 33 | 138.61% | 1311.26% |
| 9 | L.P. Gas | 85 | 39 | 5 | 44 | 6 | 11 | 13.35% | 28.84% |
| 10 | Unmetered Gas Light | 80 | 25 | (1) | 24 | 4 | 3 | 3.82% | 12.13% |
| 11 | Total | $ 582,936 | $ 223,932 | $ - | $ 223,932 | $ 36,092 | $ 36,092 | 6.19% | 16.12% |