BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

Case No. GO-96-243

MISSOURI GAS ENERGY
RELIABILITY REPORT
JULY 1, 1996 THROUGH JUNE 30, 1997

NONPROPRIETARY

May 1, 1996

NP

Schedule DWE-2

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OF THE STATE OF MISSOURI

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SYSTEM DEMAND PROJECTIONS

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The use per customer element of the forecast is a critical one. It is difficult to estimate, however, because the heat load is greatly influenced by temperature. Forecasting these independent variables with accuracy is not possible. Therefore, forecasts of natural gas loads (except where space heating is inconsequential) are made on the assumption that "average" or "normal" temperature conditions will prevail. The Company has reviewed available heating degree days on the basis of both 30-year and 10-year periods. Since, when compared to actual weather experienced over the last seven to ten years utilizing 30-year data has tended to overstate consumption, the Company is updating its models to use 10-year weather as "normal" for projecting future demand.

Past use per customer is adjusted to what it would have been had normal temperature conditions been experienced. Historical sales and daily temperatures are used to determine the statistical relationship between these two time series. This relationship is used to adjust actual temperature sensitive loads to what they would have been under "normal" conditions.

In the natural gas industry, the term "degree day" or "heating degree day" is used to describe the temperature conditions that affect heating loads. The assumption is that above some temperature level, usually 65 degrees Fahrenheit, there is no significant heating load. Heating degree days (HDDs) are the number of degrees on any one day that the average temperature is less than 65 degrees Fahrenheit. For example, if the average of the high and low temperatures over a twenty-four hour period is 40 degrees Fahrenheit, that would be 25 "heating degree days" (65 - 40 = 25). Adding up the heating degree days in a year or winter season measures the severity of the weather.

Space heating loads are separated from total loads and a forecast is made using two parts: a base load and a heating load. The base load is the average use per customer during the summer months when there are no heating degree days. The heating load is the difference between the base load and the total load. The Company refines this Y-intercept technique by using linear regression analysis whereby the statistical correlation can be measured. The base and heat loads are then added together to arrive at the monthly and annual load forecasts.

The Company's load forecasts are 10 year projections of anticipated requirements on both an annual and peak day basis. Because the Company continually strives to improve forecasting accuracy, the methods described herein are subject to, and will change over time. The data used in developing these forecasts is that which is made available to the Company, by its pipeline suppliers, through the course of regular business. If this data changes due to prior period adjustments or other similar circumstances, the Company will update its forecasts accordingly.

PEAK DAY PROJECTIONS

A key consideration in the forecasting process is the firm demand during extreme weather conditions. This information is necessary to allow the Company to ensure adequate supplies to meet all of its firm sales obligations under such conditions.

Because they account for a small portion of total sales, peak day loads have a modest revenue impact. Nevertheless, they are important because of the operating and fixed costs that are incurred in providing a system to meet peak loads. Such costs include activating peaking supply contracts and purchasing additional volumes on the open market, as well as those associated with providing adequate transmission and distribution capacity to meet peak demand.

As in the annual load forecast, the peak day load is calculated based on an analysis of the relationship between daily weather and daily sales requirements. The data is developed from firm sales and historic weather information. The design peak day forecast is calculated by averaging the heating degree days generated by the peaks that occurred during the four (most recent) coldest winter days and is based on usage per heating degree day. The historic peak day forecast is based on the single, coldest 24-hour period for which there are verifiable records. A series of regression analyses is performed on the historical data described above to determine the base (constant) and the heat load (weather sensitive) factors. These factors can then be applied to degree day figures and projected customer growth patterns to approximate load requirements for a peak day.

The historic peak day is based on the lowest temperatures that might be expected in a service area. The Company's predecessor for its Missouri operations advised MGE that this peak occurred on December 23, 1989, at a level of 89 HDDs. Through independent research the Company verified that the actual peak was 85 HDDs and that it occurred in the Kansas City market area on December 21, 1989. This represents an average daily temperature of -18 degrees Fahrenheit. Because it is weather that was actually experienced, the Company believes that 85 HDDs is the extreme that should be used for planning purposes. The Company does not believe this weather is likely to occur regularly. Conversely, it may not be the coldest weather the region will ever experience. The Company believes that failure to plan for actually experienced extreme cold weather would leave it vulnerable to meeting its firm service obligations.

The four (most recent) peaks experienced in the Missouri service area occurred on January 10, 1982 with 76 HDDs, December 24, 1983 with 77 HDDs, December 21, 1989 with 85 HDDs, and February 2, 1996 with 73 HDDs. The average of these winter peak days is 77 HDD. The Company uses 77 HDD for its design peak day and has determined that at this point 99 percent of Missouri's peak demand will be met. This is one of the Company's key points for capacity planning purposes.

Attached is the "Peak Day Chronology" that outlines the history of the Company's peak day analyses and the results. Included in the study is an updated peak day forecast covering a time horizon beginning in 1997 and ending in 2006.

The following pages have been deemed Highly Confidential and have been omitted.

PEAK DAY CHRONOLOGY

MISSOURI GAS ENERGY

Updated: March 24, 1996

ANNUAL LOAD PROJECTIONS

Annual load forecasts are maintained on a twelve month rolling basis (short term). Long term (ten year) forecasts are developed by calculating and applying an average annual escalation factor to the short term totals. Three separate forecasts are developed for the Company's planning purposes. A description of each follows:

Base Case

The base case forecast is a "most likely" scenario. The 'base load" component of this forecast is arrived at by calculating an average daily volume for the summer months of July and August and applying it to each month of the forecast period. Notwithstanding the addition of incremental load that would necessitate an immediate adjustment, this component remains constant and is updated once each year for the prior 12 month period. The 'heat load" component of this forecast is developed by "weather normalizing" delivery volumes from the most recent 12 months ended. Once weather and delivery volumes are known for a month, a 'normalization" factor is calculated by dividing the actual heating degree days by the normal heating degree days. The monthly heat load is arrived at by subtracting the base load (see above) from the total delivered volume. The normalized 'heat load" is calculated by dividing this remainder by the 'normalization" factor. The 'base case" totals are the sum of the normalized heat load and the base load for each month, multiplied by an average annual escalation factor.

High Case

The high case scenario is developed using the coldest weather that has occurred, on a month-by-month basis, during the preceding 15 year period. A "high case" factor is calculated by dividing actual heating degree days (for the coldest month) by the normal heating degree days for the same month. The weather normalized volumes calculated in the "base case" are divided by the "high case" factor to establish the adjusted heat load. The "high case" totals are the sum of the adjusted heat load and the base load for each month, multiplied by an average annual escalation factor.

Low Case

The low case scenario is developed using a similar methodology, but uses the warmest weather that has occurred, on a month-by-month basis, during the preceding 15 year period. A "low case" factor is calculated by dividing actual heating degree days (for the warmest month) by the normal heating degree days for the same month. The weather normalized volumes calculated in the "base case" are divided by the "low case" factor to establish the adjusted heat load. The "low case" totals are the sum of the adjusted heat load and the base load for each month, multiplied by an average annual escalation factor.

When all months are combined, the high and low cases represent unlikely annual periods. The purpose of these scenarios is to identify a range of demand that could occur during any given month included in the study horizon. "Likely" high and low annual forecasts are arrived at by adjusting the base case scenario by a percent of normal weather (e.g., 105 percent high and 95 percent low).

Attached are two Annual Load Forecasts for fiscal year 1997. The first study, see Table 1, utilizes 30-year weather data and is the basis for the Company's current projections. The second study utilizes 10-year weather data, see Table 2. Since projections based on 30 years result in a more conservative forecast, for reliability purposes, we will utilize it for fiscal 1997 planning. During this time frame, MGE will monitor the actual results and may base future plans wholly on 10-year weather. In any event, for reliability purposes, the differences appear slight. Monthly weather-induced variations in demand can be viewed as the difference between the "low," "base," and "high" case scenarios.

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PROJECTED SUPPLY/TRANSPORTATION REQUIREMENTS

Introduction

Accurate forecasting of demand over short (one year) and long (ten year) time horizons provides the Company with the planning tool it needs to contract for additional gas supplies and transportation capacity in a timely and cost effective manner. Attached are the Company's projections of supply and transportation requirements for the forecast period.

Supply Requirements

The following Figure 1, Table 3, and Table 4 show the system demand requirements as compared to the available supply on a monthly and daily basis for the forecast period. The demand requirements include the forecasted customer demand plus the storage injection. The available supply consist of the monthly contract quantity and the storage withdrawal. The difference between these two totals is the additional supply needed.

The Company's supply needs are also discussed in Section II. B., "Additional Supplies To Be Contracted For" and Section III. B., "Additional Actions Taken to Ensure Reliability."

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The Company's supply needs are also discussed in Section II. B., "Additional Supplies To Be Contracted For" and Section III. B., "Additional Actions Taken to Ensure Reliability."

Pages 12 through 14 are deemed Highly Confidential

Transportation Requirements

As previously described, forecasts are developed for both annual and peak day requirements. However, it is the peak day forecast that drives what level of firm transportation service will be necessary in a given year. The planning process must result in a transportation portfolio that meets firm customers' peak day requirements during the period of the study.

The planning cycle of a pipeline company is substantially longer than for a local distribution company (LDC). This is due to the longer lead times and economics associated with pipeline construction and capacity expansion projects. For this reason, the LDC must contract capacity in longer blocks, usually five to ten years. The timing of pipeline expansion projects do not necessarily match the needs of the LDC and may result in a temporary surplus of firm capacity. Because MGE's capacity is contracted for in longer blocks and added periodically over a five to ten year time horizon, capacity may be lower or higher than the historical peak day at any given point in time. There is, however, sufficient capacity to meet the design peak day, which ensures 99 percent of Missouri's peak demand will be met. The Company endeavors to maintain a reasonable reserve margin above the design day minimum to meet the historical peak.

The projected demand and transportation requirements for the forecast period are shown on the following tables and figures.

Pages 16 through 21 are deemed Highly Confidential

SUPPLY/DELIVERY RESOURCES

Introduction

An increased number of gas supply and capacity resource options are emerging as a result of a general move toward competition brought about by the unbundling of gas services. The best options may be the ones that perform best in terms of satisfying multiple objectives, including reliability, under realistic alternative forecast scenarios. A gas procurement plan defines a course of action for the near-term that is consistent with the Company's long-term goals. Continuous monitoring will ensure that it is still the appropriate plan as conditions change over time.

Pipeline transportation facilities are designed, installed, and dedicated to a certified capacity. Firm transportation resources may be acquired by way of contracting for available capacity, relinquishment of existing capacity from a pre-existing holder, or through short- or long-term release programs. Interruptible transportation is inexpensive compared to firm transportation. It does not provide firm capacity on a contractual basis and therefore lacks the reliability of firm transportation.

Storage provides additional deliverability during the heating season. Because of filling constraints and limited availability, underground storage is suitable for heating season loads, peak day, or daily balancing.

Demand growth or the expiration of supply resources will necessitate the need for new resources. Resources can be screened according to their ability to best meet the needs of the area(s) to be filled, e.g., daily, monthly, or peaking supply. A sound gas supply portfolio satisfies diverse evaluation criteria (e.g., cost, reliability, risk, efficiency, and competitiveness) by performing well across all these criteria and for a range of alternative futures. The Company's goal is to provide a commodity that is reliable over a broad range of possible outcomes while maintaining service at a price that provides value to the customer.

The following information relating to pipeline and storage capacity reviews existing transportation capacity and storage deliverability and any areas where additional capacity needs have been identified for the reporting period. Regarding supply resources, the following information reviews existing gas supply contract information as to the various terms affecting the reliability of supply. Additionally, it covers the diversity of supplies, supplier performance data, and identifies additional supply requirements needed to meet forecasted demand during the reporting period.

PIPELINE TRANSPORTATION/STORAGE CAPACITY

Pipeline Capacity

The Company currently holds firm transportation contracts on three interstate pipelines that have a combined deliverability of **_____** Dekatherms per day. This level of service is adequate to cover the design peak of **_____** Dth projected for the 1996-1997 heating season, but falls **_____** Dth short of meeting the projected historical peak day of **_____** Dth. As discussed earlier under the "Transportation Requirements" section on page 15 of this report, capacity is typically contracted for in five to ten year blocks and added periodically over a five to ten year time horizon. Because of this phenomenon, the contracted capacity in any given year may be lower or higher than the projected historical peak day demand. The Company does assure that it has adequate firm capacity under contract to meet its design peak day.

In addition to the firm capacity described above, the Company holds interruptible contracts on two of the three pipelines with a total deliverability of **_____** Dth/day. Based on experience gained during the 1995-1996 heating season, the Company believes that some level of interruptible transportation will be available on a peak day and this service can be utilized to help meet peak demand until such time as additional firm service is added. Table 9, "Pipeline Capacity and Storage Deliverability" on page 26, shows the breakdown of current capacity by pipeline and contract.

Storage Deliverability

The Company currently owns storage rights totaling **_____** Bcf on two interstate pipelines, Williams Natural Gas and Panhandle Eastern Pipe Line. The combined deliverability of **_____** Dth/day is utilized to augment flowing gas during the withdrawal months of November through March, and represents approximately two-thirds of the total supply used to meet peak day demand. See Table 9 on page 26, for the breakdown of current capacity by pipeline and contract.

Identified Needs for Transportation or Storage Capacity

As described above, peak day projections drive the need to add firm pipeline capacity. As a result of its forecasting efforts, the Company has identified the need and is currently negotiating to add **_____** Dth/day of deliverability into the Kansas City market area prior to the 1997 - 1998 heating season. The Company is also negotiating to add incremental firm capacity on certain WNG line segments that are currently capacity constrained. There is no identified need to add storage deliverability at this time.

In addition, MGE has held discussions with Missouri Pipeline Company, a subsidiary of Utilicorp, to interconnect with a converted crude oil pipeline, which is the subject of MPSC Case No. GA-96-130. MGE has also held discussions with Pony Express Pipeline, another converted crude oil facility owned by KN Energy that will operate as an interstate system. At this time there are no agreements in place for these interconnects.

Page 26 has been deemed Highly Confidential

GAS SUPPLY RESOURCES

Supplies Under Contract

Attached are contract briefs that identify all firm supplies currently under contract. They are in numerical order by MGE's contract number and are considered highly confidential by the Company.

The briefs summarize the various provisions of the contract such as the contract date, length of the term, contract quantity; and terms that affect reliability, which include warranties regarding performance, force majeure provisions, and receipt point data.

Receipt point information can also be found on the "Supplier Delivery Points," see Table 12 on page 35 of this report. The table groups these contracts into geographical areas.

The following pages are deemed Highly Confidential and have been omitted

ADDITIONAL SUPPLIES TO BE CONTRACTED FOR

Demand

To determine new supply requirements, the Company reviewed demand and developed a Base Case, High Case, and Low Case scenario as described in Section I. B., page 6, of this report. Projected monthly demand was calculated as the "Base Case" scenario because it is the "most likely" to occur. Daily demand was calculated by profiling the design day requirements across the annual period. Supply contracts were reviewed to determine the Company's present level of commitment. Supply and demand were then compared to identify monthly and daily supply needs. The difference between the current level of supply and projected demand, on a monthly and daily basis, became the additional supplies needed.

Supply

After reviewing the difference between current supply commitments and projected demand, a range was identified between the low and high case demand scenarios that established levels of commitment that could be used for supply planning. Monthly weather patterns were evaluated to further define commitment levels for purposes of prudence and reliability. Table 10 and Table 11 shows the results.

Pages 29 and 30 are deemed Highly Confidential

Request For Proposal

Based on the foregoing review of demand and supply, the following Request For Proposal (RFP), Figure 4, was developed for the forecast period. The supply requirements identified in the RFP were categorized into three levels of commitment; baseload, variable, and peaking.

A portion of the supply requirements, which was not addressed in the RFP, will be purchased on a firm, monthly basis on the spot market. Also, that portion of supply for the period April 1997 through June 1997 was not addressed in the RFP as it is necessary to review storage levels at the end of the withdrawal season. This allows the Company to make prudent decisions as to the proper level of supply requirements needed during the fill cycle.

Page 32 has been deemed Highly Confidential

GEOGRAPHICAL DIVERSITY OF SUPPLIES

The following map (Figure 5) and table (Table 12) show the contract receipt points grouped together by area. The areas are represented by letters on the map. The maximum daily contract volumes were summed by area on the table. The numbers will not add up due to multiple access rights. For example, one contract may have a maximum of 15,000 MMBtu/day and all or a portion of it may be taken at one or several receipt points. Table 12 shows the maximum contract volume available in each geographical area.

Pages 34 and 35 have been deemed Highly Confidential

SUPPLIER PERFORMANCE
During the Arctic Front in Missouri on January 31, 1996 through February 6, 1996

Introduction

Since the acquisition of Missouri Gas Energy, the only severe weather that has been experienced by the Company occurred during the January 31 through February 6, 1996 time period. The Company has assessed the performance of its suppliers during this arctic front.

Pages 37 through 44 concerning supplier performance during this period are deemed Highly Confidential and have been omitted.

SUPPLY FREEZE-OFF CONSIDERATIONS

February 1996 has been the first significant arctic blast since the industry's restructuring under Order 636 and the acquisition of MGE. As such, this has been the first opportunity for MGE to evaluate its suppliers' performance and their ability to deal with wellhead freeze-offs, a force majeure condition.

MGE purposely contracts for its supplies to diversify away from the dependence on a single production area. The Company's portfolio has supplies under contract that are from major basins; the Kansas Hugoton, the Oklahoma Hugoton, the Wamsutter field in Wyoming, the Texas Panhandle basins, and a few supplies in Kansas and Oklahoma outside these major basins.

Although there were freeze-offs in both Oklahoma and Kansas, the majority of problems were experienced in Oklahoma. **

_____

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_____

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The success of the Company's diversity is substantiated by the survey of supplier performance discussed in the previous section. Although the Company's plan served it well, future opportunities to expand its supply options to other geographic regions will be explored.

The Mid-Continent/Rocky Mountain regions of the United States are seeing many new pipeline projects get under way to meet new requirements of moving gas to more lucrative northern and eastern markets. These projects could ultimately result in a larger diversity of supply options available from additional geographic regions. Because the majority of these regions have colder climates, the engineering and wellhead equipment are designed to prevent freeze-offs. MGE will position itself to take advantage of these new opportunities as they become available.

III.

SUMMARY AND CONCLUSIONS

Introduction

This section summarizes projected system demand and supplies. It also discusses additional actions the Company has taken or will take to ensure reliability of supply, including the administration of the emergency curtailment tariff provisions if needed.

DISCUSSION OF PROJECTED DEMAND AND SUPPLY NEEDS

Projected Demand

Accurate projections of system demand are vital to ensuring that MGE can meet its sales obligations in a cost efficient and reliable manner. The Company's short- and long-term forecasts are the product of continuously collecting, analyzing, and modeling the best available weather, volume, and customer data. As a result of these efforts, Missouri Gas Energy has been identified by its largest pipeline supplier as the benchmark by which other customers should set their forecasting standards.

Historically, MGE's operational forecasts of daily and monthly demand have consistently been within two to five percent of actual usage. Given this track record, the Company places a great deal of confidence in its forecasting ability and believes it has developed the proper foundation on which to base transportation capacity and supply planning. The Company constantly endeavors to improve its forecasting techniques and stays abreast of new and improved technologies to aid in this effort.

Projected Supply

The basic approach MGE follows in developing supply to meet anticipated requirements begins with an examination of the various sources of supply that are available on a daily, monthly, seasonal, and annual basis, recognizing the contractual obligations for delivery, while simultaneously attempting to meet projected demand for every day throughout the forecast period at the best possible cost. Once these calculations

are made and requirements are stated on a calendar year basis, it is possible to begin to match the supply to the projected requirements. The result of this process for the upcoming forecast period has been summarized in the Request For Proposal as discussed on page 31 and shown on page 32 of this report. The RFP has been sent to all potential suppliers.

Further discussion of the Company's supply needs is included in the following Section III. B., "Additional Actions Taken to Ensure Reliability."

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ADDITIONAL ACTIONS TAKEN TO ENSURE RELIABILITY

Supply

The supply options of MGE's portfolio consist of various components. These include firm and non-firm supplies contracted for on either a long- or short-term basis, firm and interruptible transportation on two interstate pipelines, and two storage services. The utilization of these components varies depending on demand and operating conditions, but the following descriptions provide a basic understanding of the current and potential future elements of the Company's supply options.

The Company's firm gas requirements are weather sensitive. That is, loads are high during the winter heating months and low during the warmer spring, summer, and fall months. Contracting for supplies year-round when they are needed for only a few months results in a surplus during periods of low demand. This surplus is affected by the amount of storage fill gas that is needed in each region. At the same time, natural gas production is a year-round operation and producers could be affected negatively if they sell gas only during times of high demand.

In response to this dilemma, the natural gas industry has developed what is known as the spot market. This allows producers to sell on a short-term basis (30 days or less), those supplies that are not committed to a firm contract or for which no demand is currently being made under firm contracts to which the producers are committed. The spot market allows producers to sell their gas at market sensitive prices year-round. It

also allows marketers and consumers, both large end use customers and local distribution companies, to purchase supplies at competitive prices.

Spot market supplies are short-term agreements that are usually interruptible. These agreements are balanced by reduced performance obligations on both sides of the transaction. Prices are market driven, which means that at any given time they may be either lower or higher than longer term contract prices. Spot supplies may be used to supplement firm contracts during times of peak demand or to displace contracted volumes when it is cost effective. These spot supplies may be transported under firm or interruptible transportation agreements, depending on availability.

MGE will purchase spot gas to displace and/or supplement other supplies and will continue to be active in the spot market. Should the assumed spot volumes be unavailable, the Company will compensate, if necessary, through curtailments of interruptible customers. MGE plans to minimize its cost of gas by injecting spot gas into storage at the maximum levels allowed. Spot gas will also be transported by firm transportation. The risk is the supplies purchased this way may not be available in large quantities during times of high demand since they are subject to being called on under firm contracts.

For MGE, a balanced supply portfolio attempts to maximize the benefits and minimize the risks associated with purchasing spot market gas. At the same time, it is important to minimize the costs of firm supply contracts, while ensuring a sufficient gas

supply to meet peak day requirements. The Company is committed to providing reliable, reasonably priced natural gas service to its customers today and in the future. Judicious negotiation of various supply and transportation contracts is the method by which this commitment will be achieved.

Firm supplies are contractually guaranteed to be available when called upon by the Company, absent force majeure occurrences, which means beyond the control of the supplier or pipeline. This reliability of service is a component of the cost and, therefore, commensurately higher priced than similar non-firm spot supplies. The reliability of service factor is frequently reflected in a demand charge or minimum payment that is not dependent upon the supply being used. Firm supply contracts may also have a minimum take requirement with associated economic penalties for not taking what the Company is obligated to purchase. This provides the supplier with a guaranteed market for the gas, making the production more cost effective.

MGE has contracted for several types of firm resources. These include both firm transportation service and firm gas supplies. Contract specifics vary by contract with the common denominator being firm supplies, except for force majeure. Some supplies are for fixed prices and some are indexed to spot prices. Some contracts are assessed fixed reservation charges while others have minimum daily or monthly take requirements. Most contracts contain provisions for symmetrical penalties for failure to use or supply the gas according to contract terms. Contract terms governing reliability and covering damages on baseload 30-day spot transactions will be renegotiated, where possible, to enhance the

supplier's performance under such contracts. Contract details will vary from year to year, depending on the Company's and supplier's needs and the general trends in the market.

An amount of firm gas is contracted for on a year-round basis. The Company's ability to contract for these cost effective supplies is increased because of the relatively low summer demand on the system and the ability to inject gas into storage during the summer. Storage gas is assumed to be cycled to its capacity level each year. This means that the Company will inject 100 percent of its storage volume during the year and then withdraw it later that same year. Storage services, thereby, become an avenue in providing firm gas supplies. The Company currently has access to two storage services.

MGE will continue to contract for supplies from a variety of geographic regions. The diversity of supply basins was discussed in Section II. B., "Geographical Diversity of Supplies." The Company will also continue to keep a mix of suppliers in its portfolio to prevent a heavy reliance on any one supplier.

The natural gas futures market may provide the Company with a hedge against severe price increases. The futures market only deals with pricing and avoided costs and is not a physical gas market. The futures market is based on price and supply at the Henry Hub in southern Louisiana as traded on the New York Mercantile Exchange. This gas cannot be physically delivered to the Williams or Panhandle Pipeline systems. Pricing pressures in the East, Midwest, and Northeast can move futures prices in opposite

directions. MGE is continuing to evaluate the dynamics of the futures market and whether or not it can provide a benefit to the Company and its ratepayers.

Nevertheless, during winter periods, MGE forecasts sufficient supplies to meet all firm requirements assuming the availability of new supplies and the renewal or replacement of existing contracts.

Transportation

MGE's service territory is located in western Missouri, with service primarily in the St. Joseph, Joplin, and Kansas City, Missouri areas. The St. Joseph and Joplin areas are served only by Williams Natural Gas Company (WNG) and the Kansas City area is served by, or has access to, three interstate pipeline systems: 1.) the WNG interstate system; 2.) the Riverside interstate pipeline system, affiliated with the Bishop Group; and 3.) the Panhandle Eastern Pipe Line system (Panhandle Eastern).

Focusing on the Kansas City area, which consumes the majority of the gas supplies, MGE has primary interconnects with WNG's system in two locations: 1.) the Riverside Station, located in Riverside, Missouri; and 2.) the South Glavin Station, located in the southwestern portion of Kansas City, Missouri on the state line between Missouri and Kansas. These two stations feed into a high pressure loop system that provides essential feed into the downtown area and the surrounding suburban communities, providing primary deliveries in the Kansas City metropolitan area.

The Riverside pipeline system currently delivers at a single point, the Riverside Station, with such deliveries parallel to those made by WNG in the same area. While the Panhandle Eastern system primarily serves small farming communities located east of Kansas City, Missouri, it also has a small, isolated interconnect on the western side of Kansas City that provides limited delivery capability into the Kansas City, Missouri area.

Given that approximately 90 percent of MGE's current capacity is provided by WNG, MGE has explored capacity replacement and incremental expansion opportunities on pipelines other than WNG in order to gain greater diversity, flexibility, bargaining power, and peak day reliability.

MGE was successful in finalizing an agreement with KPOC to construct lateral expansion facilities that permit it to interconnect with Panhandle Eastern. MGE has requested service from Panhandle Eastern to flow through this interconnect. Because Panhandle has been unwilling to provide this, the Company is currently pursuing the granting of this additional transportation service by filing a complaint with FERC

In addition to pursuing increased Panhandle transportation services, MGE is continually reviewing new construction projects that could provide transportation services to its service areas. This includes two crude line conversions that would move gas from Wyoming to Missouri and expansion projects by Rocky Mountain - Mid-Continent pipelines.

The serious efforts undertaken by MGE to review, meet, and discuss with those companies developing alternative transportation that could serve MGE's service territory, may eventually allow MGE to obtain alternative expanded facilities in the future.

EMERGENCY CURTAILMENT PLAN

Attached is the revised Section 13 of the Company's General Terms and Conditions as filed in Case No. GR-96-285. This section addresses the Priorities of Service under which the Company will curtail service during periods of supply deficiencies or limitation of pipeline capacity. The amended rule contains fewer categories, treats sales and transportation equally, and provides for quicker implementation as a result of simplifying the notification process. The Company stands ready to execute this plan as conditions warrant.

MGE believes this report verifies that adequate steps have been taken to ensure the reliability of supply for its resale customers. The inability to control volumes delivered for end use by MGE's transport customers may lead to the implementation of this plan in the event there are major failures in third party supplies.

13. PRIORITY OF SERVICE

13.01 PURPOSE: The purpose of this Rule is to establish the priority of service during periods of supply deficiencies or limitation of pipeline capacity.

13.02 CURTAILMENT: During periods of supply deficiencies or limitation of pipeline capacity, the Company will curtail or limit gas service to its customers (or conversely, allocate its available supply of gas) as in this Rule provided. Curtailment may be initiated due to a supply deficiency, limitation of pipeline capacity, weather, or other operating conditions, or a combination thereof. For purposes of this Rule, interruption of service due to the failure of a customer's transportation volumes to be delivered to Company does not constitute a curtailment.

13.03 PRIORITY CATEGORIES: Each customer's requirements shall be classified into priority categories. The priority categories, to be utilized by the Company for allocating available gas service, listed in descending order of priority, are as follows:

Priority 1 (Highest Priority - Firm Sales or Firm Transportation)

Requirements of persons using natural gas in a dwelling for residential purposes, including apartment buildings and other multi-unit buildings, and other requirements, the curtailment of which the Secretary of Energy determines would endanger life, health, or maintenance of physical property (plant protection), including all requirements:

(1) In a school, defined as a facility the primary function of which is to deliver instruction to regularly enrolled students in attendance at such facility;

(2) In a hospital, defined as a facility the primary function of which is delivering medical care to patients who remain at the facility, including nursing and convalescent homes; and

(3) For police and/or fire protection, and in sanitation and correctional facilities.

Priority 2 (Second Highest Priority - Firm Sales or Firm Transportation)

Any use of natural gas which has been certified by the U.S. Secretary of Agriculture as an essential agricultural use under Section 401 (b) of the Natural Gas Policy Act unless the Commission in consultation with the Secretary of Agriculture determines, by rule or order that the use of an alternative fuel is economically practicable and reasonably available. The definition of "alternative fuel" shall be that stated in 18 CFR 281.202(b) as amended from time to time.

Peak day volumes shall be based on current requirements unless such volumes exceed contract or certificate limitations.

Priority 3 (Third Highest Priority - Firm Sales or Firm Transportation)

(a) All commercial requirements not designated as human needs, except for boiler fuels used by commercial consumers having requirements of more than three thousand (3,000) Dth per month, or peak day requirements of more than three hundred (300) Dth.

(b) All requirements for industrial process and feedstock needs having requirements of not more than three thousand (3,000) Dth per month, or peak day requirements of not more than five hundred (500) Dth.

(c) For ignition fuel and flame stabilization for boilers when fired by other fuels. A consumer requiring gas for ignition fuel and flame stabilization shall not take more gas for this purpose than is required for safe operation of its plant, but shall not take more gas on any day than the volume shown in this Priority 3 as its peak day requirement.

Priority 4 (Fourth Highest Priority - Firm Sales or Firm Transportation)

(a) Essential Industrial Process and Feedstock uses of consumers having a monthly requirement of more than three thousand (3,000) Dth, or a peak day requirement of more than five hundred (500) Dth.

(b) Firm service for which there is no end use information, or firm service not specified in any other priority.

Priority 5 (Fifth Highest Priority - Interruptible Sales or Interruptible Transportation)

(a) Receipts, transportation, and deliveries for boiler fuel use by industrial and commercial consumers having requirements of more than three thousand (3,000) Dth per month, or peak day requirements of more than three hundred (300) Dth.

(b) Receipts, transportation, and deliveries for other (non-essential) industrial processes having requirements of more than three thousand (3,000) Dth per month, or peak day requirements of more than five hundred (500) Dth.

(c) Any service provided on an interruptible basis.

For the purpose of this rule, the definitions of "essential agricultural requirements" and "essential industrial process and feedstock requirements" shall be those

specified from time-to-time by the responsible federal agencies under the Natural Gas Policy Act of 1978.

The volumes utilized in classifying customer's requirements into priority categories shall be customer's maximum monthly requirement, or customer's peak day requirement as determined by actual recorded measurement.

13.04 CURTAILMENT PROCEDURES: Monthly allocations or curtailment shall be based on a period beginning on the first day of any month and extending through the last day of the month. Notice shall be given to all affected customers in categories five (5) and four (4), by telephone or in writing, or via mass media (radio and television). Notice shall be given to all affected customers in categories three (3), two (2), and (1) strictly via mass media (radio and television). Notice shall be given as far in advance as practicable and may be changed by the company as conditions warrant.

Curtailment shall be assigned initially to those best efforts or as-available sales and transportation arrangements where the Company is not responsible for providing continuous service except to the extent that curtailment of such services would not be useful in maintaining deliveries to other customers in accordance with these rules. Additional curtailment shall be assigned initially to the lowest priority category (Category 5) and successively to each higher priority category as required. Should partial service only be available to an affected category, deliveries to individual customers shall be limited to the customer's pro rata share of available supply, such allocation to be based on the ratio of the customer's requirements in the category for which partial service is available to the aggregate requirements of all the Company's customers in the same category.

13.05 UNAUTHORIZED OVERRUN DELIVERIES: If during any curtailment period, any customer takes, without the Company's advance approval, a volume of gas in excess of the volumes authorized to be used by such customer, said excess volumes shall be considered unauthorized overrun deliveries.

If cumulative unauthorized overrun delivery quantities taken by any customer during a continuous curtailment period exceed 5% of authorized daily delivery levels, said customer shall pay to the Company an Overrun Penalty for each MCF of unauthorized overrun delivery quantities as follows:

> $5 for each MCF which exceeds authorized delivery levels by more than 5% through 10%.
>
> $10 for each MCF which exceeds authorized delivery levels by more than 10% through 15%.

$15 for each MCF which exceeds authorized delivery levels by more than 15%.

All revenues received from unauthorized overrun charges that exceed the amounts the Company was charged from its suppliers due to unauthorized overruns, shall be refunded to the residential, general service and unmetered gaslight customers in accordance with the Purchased Gas Cost Adjustment Sheet No. 21, Section V. Refund Provision.

13.06 EMERGENCY EXEMPTION: Emergency exemption from any curtailment order or procedure may be requested by a customer where supplemental deliveries are required to forestall substantial damage to physical property, risk of life or injury to plant personnel, to prevent the threat of a plant production shutdown due to the failure of alternate fuel facilities, or a customer's inability, for reason other than price, to obtain an alternate fuel, or other emergency situations involving the occurrence of unforeseen or extraordinary circumstances, including emergencies involving the protection of air quality. The Company may, at its sole discretion, grant requests for emergency exemptions only if it is satisfied that the customer has, to the maximum extent possible, scheduled the use of all alternate sources of supply available during the emergency period involved and otherwise meets the conditions imposed for emergency exemption. Request for such exemptions may be submitted by telephone, but must immediately be followed by written request setting forth details of the nature, cause and expected duration of the emergency. Where supplemental volumes are delivered to a customer under this provision, the customer must act with dispatch to eliminate the cause of the emergency, and may be required to pay back such supplemental deliveries from future allocations.

13.07 RELIEF FROM LIABILITY: The Company shall be relieved of all liabilities, penalties, charges, payments and claims of whatever kind, contractual or otherwise, resulting from or arising out of the Company's failure to deliver all or any portion of the volumes of gas desired by any particular customer or group of customers to the extent that such failure results from the implementation of the priority of service plan or curtailment procedures herein prescribed or from any other orders or directives of duly constituted authorities, including, but not limited to, all regulatory agencies having jurisdiction in the premises.

13.08 PRECEDENCE: To the extent that this Rule 13, or any provisions(s) hereof, conflict with any other provision(s) of the Company's filed tariff, General Terms and Conditions for Gas Service, or contracts, this Rule shall take precedence.

MEMORANDUM

TO: Missouri Public Service Commission Official Case File
Case No. GO-96-243, Missouri Gas Energy

FROM: Warren Wood
Procurement Analysis Department

Utility Services Division/Date

General Counsel's Office/Date

SUBJECT: Staff's Recommendation in Case No. GO-96-243, Missouri Gas Energy's Reliability Report

DATE: June 28, 1996

The Staff has reviewed the July 1, 1996 through June 30, 1997 Missouri Gas Energy (MGE) Reliability Report as provided by MGE on May 28, 1996. This report was provided by MGE in accordance with the Commission's order of May 21, 1996. The Commission was concerned that the use of the gas cost incentive mechanism that MGE has been approved to participate in has the potential of causing MGE to modify its purchasing strategy too much in favor of short term supply and, thus, potentially jeopardizing gas supply reliability. The purpose of MGE's Reliability Report is to ensure that MGE procures natural gas in a manner consistent with the goal of maintaining gas supply reliability.

GENERAL

Before the Staff provides its recommendation on the substance of the "supply reliability data" that was provided by Missouri Gas Energy (MGE), the Staff believes that it is important to provide some background data associated with the concept of supply reliability. The discussion that follows relates to supply reliability to the firm customers that are dependent upon their Local Distribution Company (LDC) to provide natural gas every day of the year, especially those days in mid-winter when the temperature never rises above 0 degrees Fahrenheit.

It is important to remember that natural gas supply reliability to LDC firm customers is quite different from reliability of service in the telecommunications or electric industry. The consequence of an outage is not usually as extreme in the telecommunications industry. Furthermore, maintaining reliability is a much more dynamic process in the gas industry, involving the coordinated efforts of a diverse group of participants. The differences between natural gas and electricity are more subtle. One of the most important things to remember is that natural gas demand has to be anticipated and ordered (nominated) several days in advance of actual usage to assure delivery when natural gas is needed. This can be attributed to the fact that natural gas in transmission pipelines generally travels at 10 to 20 miles per hour from the production basins in Oklahoma, Texas, and Louisiana.

Electricity in a transmission line travels at a speed of over 670,000,000 miles per hour. Another important difference between natural gas and electricity is the level of interconnection between transmission systems. Many of Missouri's LDCs receive their natural gas from only one interstate pipeline (or one major interstate pipeline and a secondary pipeline of much smaller capacity). This puts the LDC at the mercy of the reliability of that interstate pipeline that they depend upon. Transmission lines in the electric industry have a significantly higher degree of interconnection that permits ready bypass of problems and immediate delivery of power from distant sources. Basically, the natural gas in your home came from a relatively well defined source and was produced several days, weeks, or months ago. Electricity in your home was generated only seconds ago and could have come from a power plant hundreds of miles away.

Natural gas supply reliability to LDC firm customers can be broken down into the following two primary topics:

I. System Demand Projections
   A. Peak Day Projections
   B. Annual Load Projections
   C. Projected Supply/Transportation Requirements

II. Supply/Delivery Resources
   A. Pipeline Transportation/Storage Capacity
   B. Gas Supply Resources

The focus of the supply reliability data that has been provided by MGE follows along these primary topics. At this point it is important to note that MGE's supply reliability data only deals with areas of supply reliability that MGE has some ability to control. The following three significant factors that impact supply reliability are, to a large degree, beyond MGE's ability to control:

1. Extreme Weather Conditions

Obviously, LDCs look at historical weather to forecast future demand. How they do this depends on the individual LDC's philosophy. Some LDCs are quite lean (i.e., very low reserve margin) in that they only design for the worst weather they have observed in the last 5 to 10 years. Other LDC's are quite conservative in that they design for the worst historical weather observed in the last 100 years. How lean or conservative an LDC chooses to be has cost and reliability implications. Generally, the more conservative an LDC chooses to be, the higher the peak day capability per customer will be. Peak day capability per customer has direct fixed cost implications in supply and transportation contract requirements. Extreme weather conditions that go beyond an LDC's designed-for-weather are what cause reliability problems. When extreme weather conditions that go beyond the LDC's designed-for-weather occur, reserve margins in the LDC's portfolio will become apparent and adequacy of emergency curtailment plans will become critical. Weather extremes beyond even the most conservative LDC's designed-for-weather can occur and it must be

understood by all who review reliability data that no absolute guarantee of supply can be granted by any LDC.

2. Extensive Supply Well Freeze-Offs and/or Storm Damage
A prudent LDC reviews the historical performance of its potential suppliers. Extensive and severe cold weather and/or hurricane damage in Texas, Oklahoma, and/or Louisiana could result in many supply contract force-majeure occurrences and the associated supply deficiencies. To the degree that these occurrences cannot be anticipated and designed for, an LDC is "without blame" if it has been prudent in its review of the historical performance of its suppliers.

3. Transmission Pipeline and/or Compressor Station Failures
Where possible and cost effective, an LDC is prudent to contract for supply from several interstate pipelines, not only to avoid dependency on one interstate pipeline, but to encourage competition among interstate pipelines and enhance their diversity of supplies. Where access to several interstate pipelines is not an option, transmission pipeline and/or compression station failures could result in immediate supply deficiencies that would be beyond the LDC's control.

INTRODUCTION

Pursuant to the Case No. GO-94-318, Phase II, Report and Order issued on January 31, 1996, Docket No. GO-96-243 was created for the receipt of gas supply reliability and financial incentive mechanism filings. Pursuant to the same Report and Order, a "technical workshop" was held on February 26, 1996. Representatives of Missouri Gas Energy (MGE), the Staff of the Commission (Staff), Union Electric Company (UE), the Office of the Public Counsel (OPC), and the City of Kansas City met on this date and discussed the components of both reliability and gas cost incentive monitoring reports. As a result of these discussions, an outline for MGE's reliability report was agreed to by all parties. Pursuant to the order issued on May 21, 1996, MGE provided a Reliability Report that follows the same outline as was agreed to by all parties on February 26, 1996. MGE's draft of this outline was largely preserved as proposed by MGE. The Staff appreciated the "LDC Procurement and Reliability Standards" report that was prepared for MGE by Reed Consulting Group and which MGE provided to the Staff during the "technical workshop". The Staff's response to MGE's Reliability Report follows.

RESPONSES TO SUBSTANCE OF RELIABILITY REPORT

MGE followed the outline that was agreed to in the February 26, 1996 "technical workshop" to convey the information that the Staff requested. The Staff's responses to the information provided in MGE's Reliability Report follow the order of this outline.

I. System Demand Projections

I.A Peak Day Projections

This information reviews the historic weather induced peak day gas demand and the criteria utilized for estimating peak demand during the forecast period.

Staff Response: Adequate

I.B Annual Load Projections

This information reviews the historic gas purchase volumes and forecasted monthly gas load. Also covered is the volume variance expected each month for weather-induced variations.

Staff Response: Adequate

I.C Projected Supply/Transportation Requirements

This section discusses overall expected demand by month for the forecast period.

Staff Response: Adequate

II. Supply/Delivery Resources

II.A Pipeline Transportation/Storage Capacity

This information reviews existing transportation capacity and storage deliverability and any areas with identified additional capacity needs.

Staff Response: Adequate

II.B Gas Supply Resources

This information reviews existing gas supply contract information as to various terms affecting reliability. Also covered are diversity of supplies, supplier performance data, and identified additional supply needs to meet forecasted demand. Supplier performance data was of particular interest.

Staff Response: Adequate

III. Summary and Conclusions

This section summarizes projected system demand and supplies, and discusses additional actions the Company has taken or will take to ensure reliability of supply, including the administration of the emergency curtailment tariff provisions as needed.

III.A Discussion of Projected Demand and Supply Needs

Staff Response: Adequate

III.B Additional Actions Taken to Ensure Reliability

Staff Response: Adequate

III.C Emergency Curtailment Plan

Staff Response: Adequate

SUMMARY

The Reliability Report that MGE has provided to the Commission generally follows the same type of documentation required by the Iowa Utilities Board. The Iowa Utilities Board refers to this as a procurement plan and it is part of their annual review of gas procurement practices. Michigan, Minnesota, and Wisconsin also conduct similar reliability assurance reviews.

The Staff's review of the Reliability Report provided by MGE did not indicate that MGE has modified its purchasing strategy to favor short term supply. Although the Staff cannot guarantee the supply reliability of MGE's system, it does appear that MCE has taken extensive steps to ensure that its system provides reliable service to its customers. As the ACA period from July 1, 1996 to June 30, 1997 passes, the Staff is hopeful that MGE will follow the concepts outlined in its Reliability Report and that actual performance at the end of the mentioned ACA period will closely match planned utilization as outlined in this report.

RECOMMENDATIONS

The Reliability Report that MGE provided to the Staff appears to fulfill the purpose of ensuring that MGE procures natural gas in a manner consistent with the goal of maintaining gas supply reliability. It is important to note that actual purchasing practices can be different than planned and, for that reason, the Staff intends to perform an analysis which includes, but may not be limited to, a comparison of planned vs. actual performance.

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