BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

Case No. GO-96-243

MISSOURI GAS ENERGY
RELIABILITY REPORT
JULY 1, 1998 THROUGH JUNE 30, 1999

HIGHLY CONFIDENTIAL

This report contains material that has been classified HIGHLY CONFIDENTIAL under the terms of a Protective Order issued in Case No. GO-96-243. Only authorized persons are entitled to view the HIGHLY CONFIDENTIAL portions.

May 1, 1998

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Schedule DNK-4

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I. PROJECTIONS

SYSTEM DEMAND PROJECTIONS

Introduction

A traditional forecast projects monthly requirements by customer class (e.g., residential, commercial and industrial). The residential and commercial class forecasts are broken down to show space heating (heat sensitive load) and base load separately. Forecasts of heat sensitive loads are made on a use per customer basis, recognizing the effect of temperature (or weather conditions) on consumption.

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 (HDD) 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 there 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.

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. Missouri Gas Energy (the Company) has reviewed available heating degree days on the basis of both 30-year and 10-year periods. When compared to actual weather experienced over the last seven to ten years, the 30-year data has tended to overstate consumption. For this reason the Company has updated its models to consider 10-year weather for projecting future demand.

The customer forecast is made on a simple trend projection based on actual historical data. The volume data used in developing these forecasts is that which is made available to the Company by its suppliers through the regular course of business. If this data changes due to prior period adjustments or other similar circumstances the Company will update its forecasts accordingly. This is sufficient unless a significant customer growth pattern is anticipated.

Past use per customer is adjusted to what it would have been had normal temperature conditions been experienced. Historical volume data and daily temperatures are used to determine the statistical relationship between consumption and weather. This relationship is then used to adjust actual temperature sensitive loads to what they would have been under "normal" conditions.

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.

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 and pipeline capacity 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 are developed from firm sales and historic weather information. The design peak day forecast is calculated by averaging the heating degree days of the four most recent coldest winter days and applied to 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 are performed on the historic data described above to determine the base (constant) and weather sensitive or heat load (variable) factors. These factors can then be applied to degree day figures and projected customer growth patterns to approximate load requirements for a peak day.

Historic 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 the Company that this peak occurred on December 23, 1989 at a level of 89 HDD. Through independent research the Company verified that the actual peak was 85 HDD and that it occurred in the Kansas City market area on December 21, 1989. This represents an average daily temperature of -20 degrees Fahrenheit. Because it is weather that was actually experienced, the Company believes that 85 HDD 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 may limit its ability to meeting its firm service obligations.

Design Peak Day

The four most recent peak days experienced in the Company's service area occurred on January 10, 1982 with 76 HDD, December 24, 1983 with 77 HDD, December 21, 1989 with 85 HDD, and February 2, 1996 with 73 HDD. 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 supply and capacity planning purposes.

Peak Day/Heating Degree Day Analysis

1998

The peak day for the 1997-1998 heating season occurred on March 11, 1998. The market area experienced 56 HDD with an average wind speed of 9 mph for the 24 hour period. Because wind speeds of less than 10 miles per hour are not considered to have any substantial impact on system demand, the Company used 56 HDD for purposes of forecasting peak system loads. The following table illustrates how the current projections for the historic and design peak day demands were extrapolated.

March 11, 1998
56 HDD (Recorded at MCI) **

** MCI - Kansas City International Airport
Williams - Williams Gas Pipelines Central, Inc.
PEPL - Panhandle Eastern Pipe Line Company
KPOC - Kansas Pipeline Operating Company
PXP - Pony Express Pipeline
T-P-T - Third Party Transportation

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Notwithstanding the unusually warm weather generated by a strong El Nino this winter, the slight difference of 0.37 percent in historic peak day projections between the 1997 and 1998 forecasts—**[redacted]** Dth for 1997 compared to **[redacted]** Dth for 1998—provides added confidence in the Company's forecasting methodologies. This indicates that The Company's average annual escalator continues to be substantially accurate. The results of the revised peak day projections are shown in Figure I-1, "Transportation Capacity Compared To Historic Peak Day" and Figure I-2, "Transportation Capacity Compared To Design Peak Day." This newest study covers a time horizon of 1999 through 2009, and continues to indicate a need for incremental capacity to cover the historic peak day prior to the 2003-2004 winter season.

The "Peak Day Chronology," which outlines the history of the Company's peak day analyses and the results, is found in Appendix A. Also included in the study is the above updated peak day forecast covering the time horizon beginning in 1999 and ending in 2009.

HC in its entirety

HC in its entirety

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. The Company develops three separate forecasts for planning purposes; a base case, high case, and low case forecast. 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.

Monthly Peak/Heating Degree Day Analysis

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. The "most 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 for high and 95 percent for low).

Included are two annual load forecasts for fiscal year 1998. The first study shown in Table I-1 utilizes 30-year weather data and is the basis for the Company's current projections. The second study shown in Table I-2 utilizes 10-year weather data. Since projections based on 30 years result in a more conservative forecast, for reliability purposes, the Company will use it for fiscal 1999 planning. During this time, the Company will monitor the actual results and may base future plans wholly on 10-year weather data. In any event, the differences appear slight. Monthly weather-induced variations in demand can be viewed as the difference between the "low," "base," and "high" case scenarios.

HC in its entirety

HC in its entirety

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. The following are the Company's projections of supply and transportation requirements for the forecast period.

Supply Requirements

The system requirements include the forecasted customer demand, including fuel, plus the storage injection. The available supply consist of the monthly contract quantity plus the storage withdrawal. The difference between these two totals is the additional supply needed. Table I-1, and Figure I-1, "Projected Monthly Supply Requirements," show the system demand requirements as compared to the available supply on a monthly basis for the forecast period. Table I-2, "Projected Supply Requirements, Design Day By Month," shows the system demand requirements as compared to the available supply on a daily basis for the forecast period.

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

HC in its entirety

HC in its entirety

HC in its entirety

Transportation Requirements

As previously described, forecasts are developed for both annual and peak day requirements. However, it is the peak day forecast that drives the level of firm transportation service that 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 of time, 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 or temporary deficiency of firm capacity. Because The Company'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 historic peak day at any given point in time. There is, however, sufficient capacity to meet the design peak day over the 10-year forecast horizon, which ensures 99 percent of the Company's peak demand will be met. The Company endeavors to maintain a reasonable reserve margin above the design day minimum to meet the historic peak.

A comparison of projected peak day demands to transportation capacity is shown in Figure I-1 on page 8. Transportation capacity compared to projected design day demands is shown in Figure I-2 on page 9. Tables I-1 and I-2 on pages 13 and 14 show the annual

demand for the forecast period. A detailed discussion of transportation requirements can be found in Section III., "Additional Actions Taken To Ensure Reliability."

II. SUPPLY/DELIVERY RESOURCES

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.

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PIPELINE TRANSPORTATION/STORAGE CAPACITY

Pipeline Capacity

The Company currently holds firm transportation contracts on four interstate pipelines; Williams Gas Pipelines Central (Williams), Panhandle Eastern Pipe Line (PEPL), Kansas Pipeline Operating Company (KPOC), and KN Interstate Gas Transmission Company's Pony Express Pipeline (PXP). The combined firm deliverability on the four pipelines is **[redacted]** Dekatherms per day (Dth/day). This level of service is adequate to cover the design peak day of **[redacted]**, and is **[redacted]** Dth above the historical peak day of **[redacted]** Dth projected for the 1998-1999 heating season. This should ensure reliable delivery of gas in the coming heating seasons for the Company's high priority customers. As discussed previously in Section I, "Transportation Requirements" on page 19 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.

In addition to the firm capacity described above, the Company holds interruptible contracts on two of the four pipelines with a total deliverability of **[redacted]** Dth/day. The Company believes that some level of interruptible transportation may be available on a peak day. Maintaining these interruptible contracts for service provides an additional alternative to meet peak demand although they cannot be relied upon.

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Storage Deliverability

The Company currently owns storage capacity rights totaling **17,749,623** Dth on two interstate pipelines, Williams Gas Pipelines Central and Panhandle Eastern Pipe Line. The combined deliverability of **[redacted]** Dth/day is utilized to augment flowing gas during the withdrawal months of November through March and represents approximately 54 percent of the total supply used to meet the peak day demand.

Identified Needs for Transportation or Storage Capacity

As described above, peak day projections drive the need to add firm pipeline transportation capacity. As a result of previous peak day forecasts and the need to alleviate capacity constraints on certain Williams Gas Pipelines Central line segments, the Company has added **[redacted]** Dth/day of deliverability on KN Interstate's Pony Express Pipeline into the Kansas City market area and an incremental **[redacted]** Dth/day of deliverability on the Williams system in southwest Missouri for the 1997-1998 heating season. This additional capacity will cover the Company's projected design day through the 10-year planning horizon (1999-2009). There is an identified need to add capacity prior to the 2003-2004 heating season to cover the projected historic peak day. The peak day forecasts and transportation capacity are shown in Figures I-1 and I-2 on pages 8 and 9. A detailed discussion of transportation capacity is in Section III, "Additional Actions Taken To Ensure Reliability." There is no identified need to add storage deliverability at this time.

GAS SUPPLY RESOURCES

Supplies Under Contract

Contract briefs that identify all firm supplies currently under contract can be found in Appendix B. They are in numerical order by the Company's contract number and are considered highly confidential by the Company.

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

Receipt point information can also be found on Table II-3, "Supplier Receipt Points," on page 31 of this report. The table groups these contracts into geographic areas.

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, "Annual Load Projections," on page 10. 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. The following Table II-1, "Additional Supplies To Be Contracted For, Average Monthly Demand" and Table II-2, "Additional Supplies To Be Contracted For, Design Day By Month" show the results.

HC in its entirety

HC in its entirety

Request For Proposal

Based on the foregoing review of demand and supply, a Request For Proposal (RFP) is currently being developed for the forecast period. The supply requirements to be identified in the RFP will be categorized into four levels of commitment; baseload, variable, swing, and peaking.

A portion of the supply requirements, which will not be addressed in the RFP, will be purchased on a firm, monthly basis. The portion of supply for the period April 1998 through October 1998 will not be included in the RFP as well. Storage levels were reviewed at the end of March and the balance was found to be above the planned level. The Company also negotiated a favorable and flexible supply arrangement to cover a large portion of its storage fill requirements. Any additional storage fill needs will be purchased on a monthly basis during the April through October time period. Review of the storage level at the end of the withdrawal season allows the Company to make prudent decisions as to the proper level of supply requirements needed during the fill cycle and to capitalize on market pricing. The winter supply needs will be bid.

GEOGRAPHIC DIVERSITY OF SUPPLIES

The following Table II-3 shows the supplier receipt points grouped together by geographic area. Each geographic area is represented by a letter. Figure II-1 on page 32 illustrates the diversity of the Company's supplies. The groups listed on Table II-3 correspond with the letters on the map in Figure II-1.

Table II-3

HC in its entirety

HC in its entirety

SUPPLIER PERFORMANCE

Introduction

Since acquisition, the only severe weather that the Company has experienced occurred during the January 31 through February 6, 1996 time period. On February 2, 1996, the Company experienced a peak day of 73 HDD as recorded at MCI, with no required adjustment for wind speed. The Company assessed the performance of its suppliers during this arctic front in the July 1, 1996 through June 30, 1997 Reliability Report.

On March 11, 1998, the Company experienced a peak day for the 97-98 heating season of 56 HDD. The following Table II-4 shows the suppliers' level of performance on the March 11th peak day.

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Table II-4

HC in its entirety

SUPPLY FREEZE-OFF CONSIDERATIONS

The Company purposely contracts for its supplies to diversify away from dependence on a single production area as illustrated on page 32, Figure II-1, "Geographic Diversity of Supplies." The Company's portfolio has had and will continue to have supplies under contract that have been sourced from the following major basins: the Kansas Hugoton, the Oklahoma Hugoton, and the Wamsutter field in Wyoming. The Company also contracts for supplies from basins in the Texas Panhandle and in Kansas and Oklahoma outside the major areas.

The success of the Company's diversity is substantiated by a survey of supplier performance, which is shown on Table II-4. The Company's plan continues to prove to be effective in securing adequate gas supplies from reliable sources. Nevertheless, the Company continues to explore opportunities to expand its supply options to other geographic regions.

The Mid-continent and Rocky Mountain regions of the United States are seeing new pipeline projects get under way to meet new requirements of transporting gas to more lucrative markets. These projects could ultimately result in an even larger diversity of supply options available to the Company from various geographic regions, including the Colorado DJ Basin, various basins in the southern half of Utah and northern Wyoming. Questar, KNI and CIG pipelines are leading in the development of the projects in the Rockies.

There are three major projects to increase gas supplies from Canada to portions of the northern Mid-continent (Minnesota, Wisconsin, Michigan, and Illinois). Alliance Pipeline L. P. wants to build an 1,860-mile, 1.4 billion cfd pipeline from northeastern British Columbia to

the Chicago, Illinois area at a cost of $2.7 billion. Canada's regulatory body, the National Energy Board (NEB), is expected to decide in November whether or not to approve the construction. If approved the project would be completed in mid-2000.

The Viking Voyager Gas Transmission project (Viking Voyageur) is a proposed 800-mile pipeline originally designed to carry 1.2 Bcf per day from Emerson, Manitoba to markets in Minnesota, Wisconsin and the northern Illinois/Chicago area and terminating in Joliet, Illinois. Delivery of gas from Viking Voyageur is presently scheduled for November 1999. The project is currently being evaluated to be increased to a 2 Bcf per day pipe. This pipeline system is the first half of TransCanada's west to east transportation option to bring western Canadian natural gas to multiple North American pipeline hubs and markets. At this time it is not anticipated that both of these Canadian pipeline projects would be constructed even if both were approved by Canada's NEB.

The third project is by Northern Border Pipeline and Foothills Pipe Lines and will add approximately 700 million cfd of capacity to the existing system serving the Chicago area by the end of 1998.

These Canadian transportation options will offer competitive rates and flexible terms. The Mid-continent's access to western Canadian supplies will improve supply reliability and will have an impact on Mid-contenient regional pricing.

Potentially there will be 700 million cfd of incremental supply available in the Chicago area by the winter of 1998-99 and an additional 1.2 to 2 billion cfd by the winter of 1999-2000. If both the Alliance and Viking Voyager projects are constructed, there will be an additional 1.4 billion cfd in mid-2000. This supply will displace supplies moving from the Rockies and Mid-continent, which is currently serving the northern Mid-continent and Chicago areas. During the winter of 1998-99, after the first pipeline project is scheduled to be in service, pricing should be forced downward. Each succeeding year that one of these pipeline projects deliver supplies, the same should hold true.

The Mid-continent region has been in the past year and looks to be for the next two years one of the most volatile arenas in natural gas marketing. The biggest question is not whether pricing will be affected by the new Canadian pipeline projects, but how and when.

Canadian gas producers have wanted additional export capacity into the U.S. because pipeline capacity constraints meant that U.S. wellhead gas was selling for as much as $1/Mcf more than Canadian well head gas in the same market areas. The mere announcement of the construction of these Canadian pipeline projects has already reduced the spread to fifty cents. By way of comparison, increased capacity out of the U. S. Rockies region may be one reason why Rocky Mountain prices have recently held at higher than historical levels. The widest held theory on pricing in the Mid-continent is that until there is price parity at the Chicago hubs the Rocky Mountain prices will continue to rise and the Mid-continent prices will begin to decline as incremental Canadian supplies flow into the lower 48 states.

Because of these new pipeline construction projects, this supply diversity will potentially become accessable and could possibly provide supplies to the Company. These northern regions have colder climates and wellhead equipment is designed to prevent freeze-offs. Therefore, the Company could further increase reliability of supply by using supply from these regions. The Company, as always, is in a position to take advantage of new opportunities as they become available.

III. SUMMARY AND CONCLUSIONS

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 the Company 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.

Historically, the Company'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 the Company 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 is to develop a Request For Proposal that is then sent to all potential suppliers.

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

ADDITIONAL ACTIONS TAKEN TO ENSURE RELIABILITY

Supply

The supply options of the Company's portfolio consist of various components. These include firm and nonfirm supplies contracted for on either a long- or short-term basis, firm or interruptible transportation on four 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.

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 nonfirm 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 production more cost effective.

The Company 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 may be for fixed prices and some may be indexed to spot prices. Some contracts may be assessed fixed

reservation charges while others may 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.

A portion of the Company's supply portfolio is contracted for on a firm, year-round basis. The Company's ability to contract for these cost effective supplies is increased due to the relatively low summer demand on the system and its 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 close to 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.

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.

The Company will purchase spot gas to displace and/or supplement other supplies and will continue to be active in the spot market. The Company plans to minimize its cost of gas by injecting spot gas into storage at the maximum levels allowed. The risk is that gas supplies purchased on the spot market may not be available in large quantities during periods of high demand because they are subject to being called on under firm contracts.

For the Company, a balanced supply portfolio maximizes the benefits and minimizes the risks associated with purchasing spot market gas. At the same time, it is important to minimize the cost 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.

The Company will continue to contract for supplies from a variety of geographic regions. The diversity of supply basins was discussed in Section II., "Geographic 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.

Transportation

The Company'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 exclusively by Williams Gas Pipelines Central, Inc. The Kansas City area is currently served by four interstate pipeline systems including: 1.) Williams, 2.) Riverside Pipeline, 3.) Panhandle Eastern Pipe Line, and 4.) Pony Express Pipeline.

Focusing on the Kansas City area, which consumes the majority of the gas supplies, the Company has primary interconnects with the Williams system in four locations: 1.) Riverside Station located in Riverside, Missouri, 2.) 47th & Belinder Station located on the west side of Kansas City, Missouri, 3.) Glavin State Line Station located in southwest Kansas City,

Missouri on the Missouri and Kansas state line, and 4.) Grain Valley Station located on the eastern edge of the city. These four stations feed into a high-pressure loop system that provides essential feeds into the downtown area and the surrounding suburban communities. They also provide primary deliveries into the Kansas City metropolitan area.

The Riverside pipeline system currently delivers at a single point, the Riverside Station, with such deliveries paralleling those made by Williams in the same area. The Pony Express Pipeline system interconnects with the Company's distribution system at a single point located near 107th & Elm in south Kansas City. The Panhandle Eastern system provides exclusive service to small farming communities located east of Kansas City, Missouri. Panhandle Eastern also provides limited service to the Kansas City metropolitan area through two interconnects located on the southwest side of the city

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HC in its entirety

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The following table further illustrates the Company's pipeline capacity and storage deliverability. Table III-1 shows pipeline capacity and storage deliverability effective July 1, 1998.

Table III-1

HC in its entirety

EMERGENCY CURTAILMENT PLAN

The following is Section 13 of the Company's General Terms and Conditions as approved 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 Company stands ready to execute this plan as conditions warrant.

The Company 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 the Company'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.

IV. APPENDIX

APPENDIX A
PEAK DAY CHRONOLOGY

HIGHLY CONFIDENTIAL

PEAK DAY CHRONOLOGY

MISSOURI GAS ENERGY

Updated: April 7, 1998

HC in its entirety

HIGHLY CONFIDENTIAL

Attachment A

HC in its entirety

HIGHLY CONFIDENTIAL

Attachment B

HC in its entirety

HIGHLY CONFIDENTIAL

Attachment C

HC in its entirety

HIGHLY CONFIDENTIAL

Attachment D

HC in its entirety

HIGHLY CONFIDENTIAL

Exhibit A

HC in its entirety

HIGHLY CONFIDENTIAL

Exhibit B

HC in its entirety

HIGHLY CONFIDENTIAL

Attachment E

HC in its entirety

HIGHLY CONFIDENTIAL

Attachment F

HC in its entirety

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HIGHLY CONFIDENTIAL

Attachment G

HC in its entirety

APPENDIX B
CONTRACT BRIEFS

HC in its entirety

BRYDON, SWEARENGEN & ENGLAND P.C.

MEMORANDUM

TES & REGULATORY AFF

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

FROM: Randy Flowers RF
Procurement Analysis Department

Reviewed By: R.E. Schallenberg 5-28-98 Thomas R. Schwarz Jr. 5/28/98
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: May 28, 1998

On May 1, 1998, Missouri Gas Energy (MGE) filed its Reliability Report for the period of July 1, 1997 through June 30, 1998. This Reliability Report is being filed in order to comply with the Missouri Public Service Commission's (Commission's) Report and Order issued January 31, 1996 in Case No. GO-94-318. That Report and Order required, in part:

1. That Case No. GO-96-243 be established for the receipt of gas supply reliability data and monitoring reports;

2. That the parties to the case jointly file the recommended components of MGE's gas supply reliability data no later than March 5, 1996;

3. That MGE shall file gas supply reliability data no later than May 1, 1998 for the immediately subsequent Actual Cost Adjustment (ACA) period; and,

4. That the Commission Staff (Staff) shall file a response to MGE's gas supply reliability filling no later than June 1, 1998 for the immediately subsequent ACA period.

On March 5, 1996, the parties filed a Joint Recommendation, Motion to Modify Filing Deadline, and Motion for Protective Order which contained the format of the Reliability Report. The Commission approved the format of the Reliability Report in an order issued April 2, 1996.

MGE followed the format that was agreed to and approved by the Commission. The Staff's responses to the information provided in MGE's Reliability Report will follow the same format.

STAFF REVIEW

I. System Demand Projections

I.A. Peak Day Projections - This Section details MGE's design and historic peak day demands

and how MGE has accounted for these demands in the forecast period. MGE's most recent study covers a time horizon of 1998 through 2008 and indicates a need, based on projected annual growth, for additional capacity prior to the 2003-2004 winter season to be able to cover the historic peak day requirements.

Staff Response: **Adequate**

I.B. Annual Load Projections - This section details MGE's projected base, high, and low case monthly demands in the forecast period. MGE has provided both a 10 year and a 30 year forecast. The 30 year forecast is more conservative than the 10 year forecast and is used for fiscal planning.

Staff Response: **Adequate**

I.C. Projected Supply / Transportation Requirements - This section details MGE's total portfolio of projected demands and the supply, storage, and transportation requirements necessary to meet these demands. MGE has used the same methodology used in previous Reliability Reports to determine these requirements.

Staff Response: **Adequate**

II. Supply / Delivery Resources

II.A. Pipeline Transportation / Storage Capacity - This section details MGE's pipeline capacity and storage deliverability and identifies any needed changes to either during the forecast period. MGE has increased the number of interstate pipelines with firm transportation contracts from three to four since last year's Reliability Report. The fourth pipeline serving MGE is the KN Interstate Gas Transmission Company (Pony Express Pipeline). MGE has stated that contracts on the Pony Express Pipeline help alleviate constraints on certain Williams Gas Pipelines Central, Inc. (WNG) line segments. MGE is also increasing deliverability on WNG in southwest Missouri for the 1997-1998 heating season. This additional capacity should cover MGE's projected design day through the 10 year period of 1998-2008. Staff agrees that the availability of a fourth source for transportation enhances reliability. However, Staff would caution that the cost of this enhanced reliability may not necessarily be viewed as prudent. The current ACA case, Case No. GR-96-450, will not address the Pony Express Pipeline since it was not put into use until October of 1997, which was after the 1996-1997 ACA period.

Staff has further concerns that the design of MGE's incentive plan may encourage MGE to purchase less costly gas through the Pony Express Pipeline but at higher transportation costs. Staff has expressed these concerns in a currently pending complaint case, Case No. GC-98-335. For the purpose of this Reliability Report, however, Staff is not opposing MGE's contracts for the Pony Express Pipeline. Therefore, while Staff agrees that the Pony Express Pipeline enhances reliability, Staff is not necessarily agreeing that the contracts are prudent and retains the right to determine if these contracts are prudent during the ACA review of this period, during the review of the incentive plan monitoring report, or through other dockets which may be initiated or are currently open.

Staff Response: **Adequate**

II.B. Gas Supply Resources - This section details MGE's existing gas supply contract information as to various terms affecting reliability. Also covered is diversity of supplies, supplier performance data, and identified additional supply needs in the forecast period. MGE has also identified the incorporation of the Pony Express Pipeline into its supply portfolio.

Staff Response: **Adequate**

III. Summary and Conclusions - This section generally describes MGE's method of projecting system demands and contracting for needed supplies. It also discusses additional actions MGE 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 - This section is essentially unchanged from previous Reliability Reports.

Staff Response: **Adequate**

III.B. Additional Actions Taken to Ensure Reliability - MGE's previous Reliability Report included language in this section dealing with the natural gas futures market. This language has been removed from the present Reliability Report but Staff is aware that MGE continues to utilize multiple Commission approved hedging methods to reduce volatility. MGE has also included language detailing the gas supply revisions resulting from the initiation of contracts for the Pony Express Pipeline. Otherwise, this section is essentially unchanged from previous Reliability Reports.

Staff Response: **Adequate**

III.C. Curtailment Plan - This section includes a copy of tariff sheets numbered from SHEET No. R-81 through SHEET No. R-83. These sheets address the priorities of service under which MGE will curtail service during periods of supply deficiencies or limitation of pipeline capacity.

Staff Response: **Adequate**

SUMMARY

Staff's review of the Reliability Report indicates that MGE has not modified its purchasing strategy in favor of short term supply. This was the primary concern identified by the Commission which prompted the initiation of these Reliability Reports. Generally, it appears that MGE has taken extensive steps to continue to ensure reliable service to its customers. As previously stated, Staff expects to closely review the Pony Express Pipeline data for the 1997-1998 ACA period to be addressed in Case No. GR-98-167, but at this time does not dispute that it enhances system reliability.

Staff is hopeful that MGE will follow the concepts outlined in its Reliability Report and that actual performance at the end of the 1997-1998 ACA period will closely match planned utilization as

outlined in this report.

RECOMMENDATIONS

The Reliability Report provided by MGE 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 from planned and, for that reason, the Staff intends to perform an analysis which includes, but may not be limited to, a comparison of planned versus actual performance.

cc: Director - Utility Services Division
Director - Utility Operations Division
Director - Advisory & Public Affairs
General Counsel
Manager - Procurement Analysis Department
Missouri Gas Energy - Mike Langston
Gary Duffy - Attorney for Missouri Gas Energy
Office of the Public Counsel