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MISSOURI PUBLIC SERVICE COMMISSION

MISSOURI GAS ENERGY

CASE NOS. GR-2002-348/GR-2003-0330

SURREBUTTAL TESTIMONY

OF

JOHN J. REED

ON BEHALF OF MISSOURI GAS ENERGY

Jefferson City, Missouri

July 19, 2006

** Denotes Highly Confidential Material **

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SURREBUTTAL TESTIMONY OF

JOHN J. REED

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SURREBUTTAL TESTIMONY OF

JOHN J. REED

CASE NOS. GR-2002-348 and GR-2003-0330 (Consolidated)

July 19, 2006

I. INTRODUCTION

Q. ARE YOU THE SAME JOHN J. REED THAT FILED DIRECT AND REBUTTAL TESTIMONY IN THIS PROCEEDING?

A. Yes.

Q. PLEASE STATE THE PURPOSE OF YOUR SURREBUTTAL TESTIMONY.

A. The purpose of my surrebuttal testimony is to address two specific issues that Staff has raised in this proceeding: (i) the selection of the data for determining the design day heating degree day ("HDD"); and (ii) the appropriate data that should be utilized in a design day demand forecast (i.e., baseload and heat load demand on a design day). Specifically, my surrebuttal testimony will address these issues as addressed in the rebuttal testimony of Missouri Public Service Commission ("Commission") Staff ("Staff") Witness Lesa A. Jenkins. Prior to addressing these specific issues raised by Ms. Jenkins, I will first briefly summarize the issues in this proceeding and the LDC capacity planning process in general.

II. ISSUE SUMMARY

Q. PLEASE BRIEFLY SUMMARIZE THE MAJOR ISSUES IN THIS PROCEEDING AT THIS TIME.

A. Staff has questioned two pipeline capacity decisions that MGE executed prior to the first ACA period (i.e., July 2001 through June 2002), which is Case No. GR-2002-348 in this proceeding. Specifically, in 1996, MGE contracted for Pony Express capacity of ** ** MMBtu/day of which ** ** MMBtu/day was effective in 1997, increasing by ** ** MMBtu/day to ** ** MMBtu/day in 2001.[1] In addition, MGE renewed certain Southern Star Central capacity on June 1, 2001[2], which included a significant storage component.[3] As pointed out in Mr. Kirkland's rebuttal testimony, these decisions were made prior to the ACA periods that are the subject of this case.[4]

Q. DID MGE SUBMIT LONG-RANGE DEMAND FORECASTS DURING THE TIME PERIOD PRIOR TO THESE CAPACITY DECISIONS?

A. As discussed in the direct, rebuttal and surrebuttal testimony of David N. Kirkland, MGE submitted Reliability Reports on May 1, 1996; May 1, 1997; May 1, 1998; July 1, 2000;

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1 Rebuttal testimony of David N. Kirkland, p. 10.

2 Ibid, p. 11.

3 On February 24, 2006, a report was issued in Missouri PSC Case No. GW-2006-0110 titled, "Joint Report on Natural Gas Market Conditions, PGA Rates, Customer Bills & Hedging Efforts of Missouri's Natural Gas Local Distribution Companies", in which the value of storage was discussed, specifically: "[t]here are two main reasons why LDCs purchase and place natural gas in storage. In order to address the demand put on the system in the winter to meet the residential heating load, LDCs must use natural gas from storage because production facilities cannot produce enough natural gas to meet the demand at that time. This operational requirement is the primary purpose of storage....In addition, natural gas purchased for storage serves as a physical hedge...Storage has some costs; however, these costs generally pale in comparison to the benefits of storage." p. 8-9.

4 Rebuttal testimony of David N. Kirkland, p. 3.

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July 1, 2001; and July 1, 2002.[5] In each of these reports, MGE submitted certain information regarding historical peak day requirements over a ten-year time horizon. In addition, MGE utilized a consistent method for determining and forecasting historical peak day requirements. Specifically, MGE calculated baseload as usage during the summer months, which was then deducted from the highest usage experienced to develop the use per HDD. The calculated use per HDD was then applied to the planned HDD level to calculate the temperature sensitive load; and then baseload was added to that to determine total load.[6]

Q. WHY ARE THESE PRIOR DECISIONS AND STAFF FINDINGS OF ADEQUACY SO IMPORTANT?

A. The past Staff findings (i.e., the 1996, 1997, 1998, 2000 and 2001 "Staff Memos") are so important because these memorandums outlined and documented the regulatory feedback regarding the MGE capacity planning process. In conjunction with this regulatory perspective, MGE could apply its business experience to execute reasonable commercial decisions. The value of this type of environment (i.e., known regulatory rules) was recently discussed by the vice-chairman of the National Energy Board of Canada:

> Among the reasons why we need a decision-making process which is decisive, albeit not the only one, there is the need for investors to know the rules of the game. Knowing in advance how things will work, and how long it will take to get a « yes » or « no », is among the most important factors an investor looks at before deciding to invest or not. For the other participants in the regulatory

5 Rebuttal testimony of David N. Kirkland, p. 10-11.

6 As discussed in MGE's response to Staff's Data Request No. 238, this process is similar to how Cascade Natural Gas calculates design day load.

process also, knowing how things will work is very helpful in devising their strategies to learn about a project and to decide to support or oppose a project.[7]

Q. PRIOR TO THE START OF THIS CASE, WHAT WERE STAFF'S FINDINGS REGARDING MGE'S PEAK DAY PROJECTIONS?

A. As outlined in the 1996 Staff Memo, Staff found the criteria utilized by MGE for estimating peak demand to be "adequate". Specifically, as discussed in the rebuttal testimony of David N. Kirkland, Staff provided positive feedback to MGE regarding the MGE planning process on June 28, 1996 (i.e., 1996 Staff Memo); May 30, 1997 (i.e., 1997 Staff Memo); May 28, 1998 (i.e., 1998 Staff Memo); and August 1, 2000 (i.e., 2000 Staff Memo).[8] In other words, all of the MGE forecasts prior to the decisions that Ms. Jenkins is now questioning were stated as adequate in the opinion of Staff in documents filed with the Commission.

Q. PLEASE SUMMARIZE MS. JENKINS' RECOMMENDATION REGARDING MGE'S DESIGN DAY DEMAND FORECAST.

A. Ms. Jenkins, in memorandums submitted on December 18, 2003 and December 28, 2004, criticized the MGE peak day demand planning process with respect to design day HDD level, baseload calculation, and heat load calculation. As a result of this critique, Staff opined that MGE's reserve margin was too high and Staff recommended a volume disallowance of ** ** MMBtus.

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7 Gaétan Caron, "Legal Framework and Regulatory Process in Canada: Federal Government and Eastern Canadian Provinces", presentation at the 30th New England Governors – Eastern Canadian Province Conference, May 11-13, 2006.

8 Rebuttal testimony of David N. Kirkland, p. 10-11.

III. LDC CAPACITY PLANNING

Q. PLEASE BRIEFLY SUMMARIZE THE LDC CAPACITY PLANNING PROCESS.

A. The planning and acquisition of supply and capacity resources is a fundamental business and management responsibility of a natural gas local distribution company ("LDC"). As part of the capacity planning and acquisition process, the LDC will develop a design day demand forecast which will project the requirements of the LDC's customers during extreme conditions over a defined forecast horizon. However, it is important to note that the design day demand forecast is but one component of the overall capacity planning process. Specifically, the LDC planning process for capacity will include current and expected market circumstances, regulatory issues, and LDC specific issues.

Q. PLEASE BRIEFLY DISCUSS HOW THE CURRENT AND EXPECTED MARKET CIRCUMSTANCES WILL INFLUENCE THE LDC CAPACITY PLANNING PROCESS.

A. The demand for capacity is driven by the requirements of a variety of market participants, including LDCs, electric power generators, other end users, producers and marketers. In addition, the pipeline capacity addition process, from planning to contracting to environmental approvals through actual construction, is time consuming and therefore requires a significant lead time. All of this usually results in existing pipeline capacity being subscribed before new facilities are constructed. For example, capacity on Southern Star Central has been fully subscribed[9] for the relevant time frame. This

[9] Rebuttal testimony of David N. Kirkland, p. 40.

strongly suggests that any MGE capacity on Southern Star Central that MGE did not renew would be taken by another party (i.e., LDC, power generator, end user, producer or marketer). I will also discuss, at a later point, the general market issue of the planning horizon.

Q. PLEASE BRIEFLY DISCUSS HOW THE REGULATORY ENVIRONMENT CAN INFLUENCE HOW AN LDC PLANS FOR CAPACITY.

A. One specific influence of the regulatory environment is the rate design/cost allocation for new facilities. For example, let's assume MGE did not renew a certain level of capacity on Southern Star Central and that capacity was subsequently contracted by another entity as I indicated above. MGE, should it require additional capacity three years after that fact, could find itself having to wait for a Southern Star Central expansion (i.e., there is no existing capacity available). A Southern Star Central expansion (if available) may be approved by FERC conditioned upon the use of an incremental rate as opposed to a rolled-in rate, which could result in higher capacity costs for MGE.

Q. PLEASE BRIEFLY EXPLAIN THE DIFFERENCE BETWEEN INCREMENTAL AND ROLLED-IN RATE TREATMENT.

A. There are generally two approaches for the cost allocation of new pipeline facilities. In the first approach, the cost of a pipeline expansion is rolled (or averaged) into the rates for all the customers. In the second approach, the costs of the expansion would be allocated only to the incremental customers, i.e., paid only by the customers subscribing to the new capacity. Given the current rates on Southern Star Central and the cost of new pipeline facilities, any new expansion that is treated as an incremental rate will most

likely be higher than the current Southern Star Central rate. Under this scenario, by not renewing the full contract quantity and then contracting for new capacity (assuming that such new capacity is available); the LDCs' customers would be impacted.[10]

Q. COULD YOU NOW DISCUSS THE PLANNING HORIZON ISSUE YOU MENTIONED?

A. Yes. The last general market issue I will address is the time horizon for capacity planning decisions. Staff's analysis has focused on a very limited time horizon of five years in GR-2002-348 and four years in GR-2003-0330.

Staff has not expressly defined the appropriate time period for the analysis but, for this case, Staff has asserted that the appropriate time period is based on when MGE capacity expires, specifically: "Staff considered five-year planning for contracting of capacity as reasonable since the Company has **

**.[11,12] However, Staff also stated in its response to MGE's Data Request No. 194(e) in Case Nos. GR-2003-0330 and GR-2002-348 (Consolidated) that time periods other than a five-year period could be reasonable, specifically: "Staff did not state that all other periods are unreasonable."

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[10] As part of this proceeding, Missouri Gas Energy inquired about Staff's understanding of rolled-in versus incremental rates. In Staff's response to MGE's Data Request No. 196(d) in Case Nos. GR-2003-0330 and GR-2002-348 (Consolidated), Staff stated, "Ms. Jenkins has not been assigned to review pipeline rate design before the FERC, and has not studied the subject."

[11] Direct testimony of Lesa A. Jenkins, p. 29.

[12] Although Staff indicates that it has considered a five-year planning horizon, capacity contracts that expire in 2005 would result in a four-year planning horizon (i.e., July 2001 to Fall of 2005).

A long-term time horizon is a necessary component of the LDC capacity planning process as the pipeline capacity planning, regulatory and construction timeline is measured in years. As a result, the negotiations and discussions between a pipeline and its customers is also a time intensive process with a significant lead time. Recently, in Missouri PSC Case No. GW-2006-0110, a five-year period for capacity planning was recommended as the **minimum** period for capacity planning.[13] (Emphasis added)

Q. PLEASE BRIEFLY DISCUSS THE LAST ITEM YOU MENTIONED REGARDING THE CAPACITY PLANNING PROCESS, I.E., LDC SPECIFIC ISSUES.

A. As discussed in the direct and rebuttal testimony of David N. Kirkland, the LDC capacity planning and acquisition process consists of numerous LDC specific issues, including: the existing capacity portfolio; access and diversity of gas supply; the flexibility of the asset under consideration; the reliability of the overall portfolio and the specific asset; the future availability of other portfolio assets; and, therefore, the future bargaining position of the LDC.

Q. DOES MS. JENKINS ACKNOWLEDGE THESE VARIOUS ELEMENTS OF LDC CAPACITY PLANNING?

A. Although Ms. Jenkins acknowledges factors other than the peak day requirements for pipeline capacity contracting,[14] she has focused only on the result of the design day

[13] "Joint Report on Natural Gas Market Conditions, PGA Rates, Customer Bills & Hedging Efforts of Missouri's Natural Gas Local Distribution Companies", Feb. 26, 2006, filed in Missouri PSC Case No. GW-2006-0110, p. 5.

[14] Staff's response to MGE's Data Request No. 193(b) in Case Nos. GR-2003-0330 and GR-2002-348 (Consolidated).

demand forecast and has failed to consider the various other elements that an LDC must consider when developing and implementing a capacity plan.

IV. DESIGN DAY DEMAND FORECAST

Q. FOCUSING FOR A MOMENT ONLY ON THE DESIGN DAY DEMAND FORECAST COMPONENT OF CAPACITY PLANNING, WHAT IS THE OBJECTIVE OF THE DESIGN DAY DEMAND FORECAST?

A. The objective of the design day demand forecast is to predict the expected consumption of the firm customers under extreme weather conditions over a certain time horizon. This forecast, in conjunction with all the elements discussed above, would be used by the LDC to assemble a capacity portfolio. In the 1996 Staff Memo, Staff provided the following quote regarding reliability.

> 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.[15]

[15] Direct testimony of David N. Kirkland, Schedule DNK-2, p. 000137.

Q. WHAT ARE THE KEY ELEMENTS REGARDING RELIABLE SERVICE AS OUTLINED IN THE 1996 STAFF MEMO?

A. First, Staff, in the 1996 Staff Memo, recognized the importance of the LDC providing reliable service. Specifically, Staff properly noted that firm customers are dependent on the LDC for reliable service especially during extreme weather events, i.e., when temperature never rises above 0 degrees Fahrenheit. Second, Staff recognized the inherent reliability differences (i.e., the consequence of an outage) that a gas utility must recognize and address that are not necessarily encountered with other utilities. Third, Staff discussed how a gas LDC must uniquely manage and coordinate the delivery of reliable service among various participants (i.e., producer, pipeline, storage facilities). Finally, Staff properly identified the demand forecasting aspect (i.e., gas demand must be anticipated and gas ordered) that an LDC must manage in order to provide reliable service.

Q. PLEASE DISCUSS MS. JENKINS' OBJECTIVE FOR AN LDC CAPACITY PORTFOLIO.

A. Ms. Jenkins has provided various objectives for an LDC capacity portfolio. On one hand, she seems to agree with the objective discussed in the 1996 Staff Memo (i.e., reliable service during extreme weather events). Specifically, Ms. Jenkins has stated: "[t]he purpose of the reliability review is to assure that natural gas companies use current, reliable data and reasonable methods to determine the **maximum amount** of gas the company might need on a peak cold day."[16] (Emphasis added) However, on the other hand, Ms. Jenkins in this case has articulated an objective for an LDC capacity portfolio

[16] Rebuttal testimony of Lesa A. Jenkins, p. 5.

that is subjective, ill defined, and was not even communicated to MGE prior to the Pony Express and SSC capacity decisions. Specifically, she has stated: "[a] company should have the ability to transport enough, but not too much gas, to meet its peak day requirements.[17]

Q. PLEASE DISCUSS THE SUBJECTIVE NATURE OF MS. JENKINS' OBJECTIVE FOR THE DESIGN DAY DEMAND FORECAST.

A. Ms. Jenkins, while recognizing the LDC objective of planning for the maximum amount of natural gas on a peak cold day, also implies a standard of precision that is known only to her. In other words, Ms. Jenkins asserts that there is a correct volume of capacity that would allow an LDC "...an ability to transport enough, but not too much gas..."

Ms. Jenkins has suggested that, on one hand, there is no one best method for planning or forecasting design day demand;[18] however, on the other hand, Ms. Jenkins asserts that neither the approach utilized by MGE nor the approach I utilized in my independent analysis are reasonable. Her position seems to imply that Staff not only knows the exact balance between sufficient capacity and too much capacity, but also the relevant time line for the analysis and the specific methodology among many reasonable approaches that should have been used by MGE in 1995 and 2000 (i.e., the year prior to the specific capacity decisions). This is a position of particular concern for an event (i.e., design day

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17 Direct testimony of Lesa A. Jenkins, p. 2

18 "...the definition of adequate capacity and what constitutes peak day requirements can vary by Company." – Staff's response to MGE's Data Request No. 0181 in Case No. GR-2003-0330; "There is no one 'reasonable method' used by all Missouri LDCs." – Staff's response to MGE's Data Request No. 162(a) in Case Nos. GR-2003-0330 and GR-2002-348 (Consolidated); and "Staff has not proposed one standard for all Missouri LDCs." – Staff's response to MGE's Data Request No. 143 in Case No. GR-2003-0330.

demand forecast) that does not occur often; however, when it does occur, it is an extreme event that requires, in Ms. Jenkins' own words, essential service to captive customers.[19]

Q. HAS MS. JENKINS COMMUNICATED PRECISELY HOW SOMEONE CAN ACHIEVE THIS BALANCE OF ENOUGH BUT NOT TOO MUCH?

A. No. In fact, Staff has recognized that there is no capacity planning standard in Missouri.[20] Apparently, her position is that MGE should have known to use a methodology in 1995 and 2000 that she developed and communicated after the decisions were made.

Q. HAS THE ISSUE OF THE COMMUNICATION OF GUIDELINES OR STANDARDS BEEN RECENTLY DISCUSSED IN MISSOURI?

A. Yes. In Missouri PSC Case No. GW-2006-0110, the issue of guidelines was discussed with respect to natural gas hedging in the report issued on February 26, 2006 titled, "Joint Report on Natural Gas Market Conditions, PGA Rates, Customer Bills & Hedging Efforts of Missouri's Natural Gas Local Distribution Companies". I particularly note the following language from that Joint Report, to which the Staff was apparently a party:

> Problems with Current Hedging Rule
>
> - Does not give specific guidelines for natural gas utilities' upward price volatility mitigation program design. For example, what percentage should an LDC seek to price-protect of normal winter purchase volumes? Should an LDC seek to price protect prices for the next two seasons or more? Answers to these and other questions cannot be determined by

[19] Rebuttal testimony of Lesa A. Jenkins, p. 5.

[20] Staff's response to MGE's Data Request No. 0184 in Case Nos. GR-2003-0330 and GR-2002-348 (Consolidated).

reading the rule, and thus, **determining prudence becomes a matter of opinion**.[21] (Emphasis added)

In that same document, Staff provided the following specific comment, which also seems to suggest the need for agreement regarding specific elements of a natural gas supply plan.

> Missouri Public Service Commission Staff Comment:
>
> This report does not address whether each LDC should develop a comprehensive gas supply plan. This report does not reflect any agreement on what constitutes a comprehensive natural gas supply plan nor does it reflect an agreement on the elements of a comprehensive natural gas supply plan. The report also does not address any agreement on how or whether each LDC should document a comprehensive gas supply plan.[22]

Q. WHAT WAS THE OBJECTIVE OF YOUR DESIGN DAY DEMAND ANALYSIS?

A. Staff has suggested that the MGE analysis regarding design day demand projections was flawed. Therefore, in an attempt to test the reasonableness of what MGE did at the time, I conducted an independent analysis of MGE's design day forecast based on information available to MGE at that time and using an approach that was consistent with my knowledge and experience of LDC design day planning practices.

Q. PLEASE BRIEFLY SUMMARIZE THE RESULTS OF YOUR DESIGN DAY DEMAND ANALYSIS.

A. As discussed in more detail in my direct testimony, the results of my independent analysis produce a design day demand estimate that is equivalent to the demand

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[21] "Joint Report on Natural Gas Market Conditions, PGA Rates, Customer Bills & Hedging Efforts of Missouri's Natural Gas Local Distribution Companies", Feb. 26, 2006, filed in Missouri PSC Case No. GW-2006-0110, p. 34.

[22] Ibid, p. 44.

forecasted by MGE. Specifically, as shown in Schedule JJR-8 of my direct testimony, my independent analysis resulted in an estimated design day demand of approximately ** ** MMBtus as compared to MGE's estimate of ** ** MMBtus. Staff's design day demand estimate of ** ** MMBtus was well below the results of MGE's and my estimates.[23]

A. Design Day Heating Degree Day ("HDD") Selection

Q. PLEASE SUMMARIZE MS. JENKINS' POSITION REGARDING YOUR SELECTION OF A DESIGN DAY HDD LEVEL.

A. Ms. Jenkins has opined that the process that I used to select the design day HDD level is flawed since the data set was limited. Specifically, Ms. Jenkins states:

> Mr. Reed's consideration of only the single coldest day in each year includes winters with relatively warm HDD and ignores data from winters that have numerous cold days. This is unreasonable because Mr. Reed limits his data set and this limited data set will have a larger standard deviation that, in this analysis, results in an unreasonable expectation of a cold day, especially for the Joplin area.[24]

[23] For comparison purposes, I have summarized the year five estimates for all forecasts; but it is important to note that the year ten design day demand estimate produced by MGE was ** ** MMBtus; my year ten design day demand estimate was ** ** MMBtus; and Staff's ten year design day estimate was ** ** MMBtus. (Staff's ten-year value is a calculation.) As discussed by Mr. Kirkland, the ten-year demand forecast is more relevant to long-term LDC capacity planning.

[24] Rebuttal testimony of Lesa A. Jenkins, p. 8.

Q. PLEASE DESCRIBE THE BASIS AND SUPPORT PROVIDED BY MS. JENKINS FOR HER CRITICISM.

A. MGE requested that Staff provide support for the assertion that my approach to design day HDD selection was flawed and Staff responded, "Ms. Jenkins relies on her education and training related to statistical analysis."[25]

Q. PLEASE SUMMARIZE THE HDD LEVELS USED IN YOUR ANALYSIS AND THE HDD LEVELS UTILIZED BY STAFF IN ITS ANALYSIS.

A. For the Kansas City region (which includes St. Joseph) design day demand analysis, I utilized a HDD of 81.9 while Staff utilized a HDD of 81.5. For the Joplin region, I utilized a HDD of 76.3 HDD while Staff utilized a HDD of 72.1. As discussed in my direct and rebuttal testimony, I utilized a probability approach to develop the design day HDD level while Staff utilized a coldest observed approach. However, it is important to note that regardless of the approach, Staff and I have a very similar HDD level (81.9 and 81.5) for the Kansas City and St. Joseph regions, which represent 86% of the MGE design day demand forecast. Therefore, I will focus on the different HDD levels proposed for the Joplin design day demand analysis.

[25] Staff's response to MGE's Data Request No. 174(c) in Case Nos. GR-2003-0330 and GR-2002-348 (Consolidated).

Q. HAS STAFF EVER DISCUSSED THE SELECTION OF THE HDD LEVEL FOR DESIGN DAY DEMAND PLANNING?

A. Yes. On June 28, 1996, Staff submitted a memorandum (the "1996 Staff Memo") to the Commission in which it summarized Staff's recommendations with respect to the MGE 1996 Reliability Report.[26] Specifically,

> 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 LDCs 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.

Q. DO YOU AGREE WITH STAFF'S DISCUSSION OF EXTREME WEATHER CONDITIONS AS QUOTED FROM THE 1996 STAFF MEMO?

A. Yes. The Staff's discussion, as quoted, is consistent with my perspective regarding design day HDD level. The individual LDC will likely have a unique philosophy regarding HDD level utilized for extreme weather conditions planning. In other words, there is no specific HDD level that has been mandated as the most appropriate HDD level for design day planning; rather, Staff, in the 1996 Staff Memo, outlined a range of outcomes, i.e., "quite lean" to "quite conservative". Finally, I would like to highlight my

[26] Direct testimony of David N. Kirkland, Schedule DNK-2, p. 000137-000141.

agreement with Staff's perspective that weather extremes beyond the most conservative planning standard could occur and no LDC can guarantee supply reliability.[27]

Q. PLEASE BRIEFLY REVIEW THE GENERAL APPROACHES UTILIZED BY LDCS TO DETERMINE THE DESIGN DAY HDD LEVEL.

A. As discussed in my direct testimony, there are two general ways utilized by LDCs to determine a design day HDD level: (i) the coldest observed; or (ii) a probabilistic approach. The coldest observed is simply the coldest weather experienced over a specified period. The probabilistic approach, which relies on probability theory, is the approach I utilized for my independent analysis regarding the MGE design day HDD level.

Q. PLEASE BRIEFLY DESCRIBE THE PROBABILISTIC APPROACH.

A. The first step in the probabilistic approach is to inspect the data to determine if a normal distribution is representative of the underlying data. If the underlying data is normally distributed, then the average and standard deviation of the data series will be utilized to specify the normal probability density curve[28] and calculate the probability associated with various levels of HDDs. Specifically, the coldest day for each year over the 1971 to 2001 period was identified and that entire data set was reviewed for normality and we have demonstrated that the data is normally distributed.

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[27] Ms. Jenkins also agrees that the planned design day HDD level could be exceeded. – Staff's response to MGE's Data Request No. 171 in Case Nos. GR-2003-0330 and GR-2002-348 (Consolidated).

[28] Donald L Hornett, and Ashok K. Soni, Statistical Methods for Business and Economics, 4th Ed (Addison-Wesley Publishing Company, Inc., 1991) p. 164-176.

Q. PLEASE RETURN NOW TO YOUR PREVIOUS DISCUSSION OF THE CRITICISM LODGED BY MS. JENKINS.

A. As discussed above, there is little difference between Staff and my independent analysis regarding the design day HDD level utilized for the Kansas City and St. Joseph regions, so I will focus on the HDD level for the Joplin region. As shown in Schedule JJR-13 to my surrebuttal testimony, in the Joplin region, the coldest day per year over the thirty-year period from 1971/1972 to 2000/2001 is normally distributed, i.e., the data points follow a normal or bell curve distribution with a skewness statistic of -0.227, which is well below the skewness statistic standard error of +/- 0.427.[29] Therefore, the normal probability distribution curve specified by the mean and standard deviation of the coldest days per year data series is utilized to determine the HDD level associated with a 1-in-100 year probability, i.e., 76.3 HDD in Joplin. Please note that, as discussed in my rebuttal testimony, a 1-in-100 year probability is consistent with the Kansas City region probability level, i.e., 1-in-100 year, which I utilized.

Q. PLEASE SUMMARIZE MS. JENKINS' CRITICISM OF YOUR ANALYSIS.

A. Ms. Jenkins has asserted that my analysis is based on an improper data set. Specifically, regarding the Joplin region:

> Mr. Reed is unreasonably limiting the data that he reviews. Staff finds a different peak cold day by examining the coldest days in these years...Staff's analysis of the coldest 50 days for Joplin for 1961/1962 through 2000/2001 results in a peak

[29] The skewness statistic is a measure of symmetry of a distribution about the mean and a value of zero means that the distribution is symmetrical. The skewness statistic for a normal distribution is zero. Given that data sets rarely have skewness statistics equal to zero, a data set with a skewness statistic that is within +/- two standard errors is typically assumed to be close enough to zero to be considered symmetric and normally distributed. Conversely, a data set with a skewness statistic +/- two standard errors is considered to be skewed to a significant degree and not normally distributed. – James Dean Brown, "Questions and Answers about Language Testing Statistics: Skewness and Kurtosis", Shiken: JALT Testing & Evaluation SIG Newsletter, Vol. 1, No. 1, April 1997, p. 16-18 (http://www.jalt.org/test/bro_1.htm)

day of ** ** HDD using a 99% confidence interval. A review of the top 40 HDD results in a peak day of ** ** HDD using a 99% confidence interval.[30]

Q. DO YOU AGREE WITH MS. JENKINS' ANALYSIS AND THE ASSOCIATED RESULTS?

A. No, I do not. Ms. Jenkins wrongly assumed that the distribution of the various coldest days data sets was a normal distribution.[31] However, as shown by Schedule JJR-14, the coldest days data sets utilized by Ms. Jenkins are not representative of a normal distribution. In addition to the visual inspection of the coldest days data set, I also reviewed the skewness statistic for each of the data sets proposed by Ms. Jenkins (i.e., the coldest 40 and 50 days).[32] As a result of the visual inspection of the data and the review of the skewness statistic, I have concluded that Ms. Jenkins' observation that, "[a] normal distribution reasonably represents the [coldest days] HDD data"[33] is incorrect. (Clarification added)

Q. WHAT IS THE SIGNIFICANCE OF MS. JENKINS INCORRECT ASSUMPTION?

A. Given that Ms. Jenkins' assumption that the coldest days data set are normally distributed is incorrect, the associated conclusions regarding the design day HDDs for the Joplin region are also incorrect. Specifically, Staff's peak day estimate of 70.2 HDD for the Joplin region is not representative of the 99% confidence interval as the 70.2 HDD has

30 Rebuttal testimony of Lesa A. Jenkins, p. 10.

31 Staff's response to MGE's Data Request No. 0189 in Case No. GR-2003-0330.

32 In addition, I have reviewed a data set that includes the coldest 30 days.

33 Staff's response to MGE's Data Request No. 0189 in Case No. GR-2003-0330.

been exceeded twice in the forty-year period utilized by Staff (i.e., 1961/1962 to 2000/2001). In other words, the Staff 70.2 HDD level is closer to a 1-in-20 probability rather than the 1-in-100 probability as opined by Ms. Jenkins.

B. APPROPRIATE DATA FOR THE DEMAND FORECAST

Q. PLEASE SUMMARIZE MS. JENKINS' ASSERTION REGARDING THE DATA YOU UTILIZED FOR YOUR DEMAND FORECAST.

A. Staff has asserted that my independent analysis is flawed, as the data set utilized for that independent analysis is limited. Ms. Jenkins has two main issues regarding the limited examination of data: (i) baseload; and (ii) the number of data points utilized in the design day demand forecast.

Q. PLEASE DISCUSS MS. JENKINS' POSITION REGARDING THE FIRST ISSUE, I.E., BASELOAD.

A. Ms. Jenkins has asserted, "[a]n LDC's definition of baseload does not explain how it evaluates peak day requirements."[34]

Q. IS MS. JENKINS' ASSERTION REGARDING THE ROLE OF BASELOAD IN CALCULATING DESIGN DAY DEMAND CONSISTENT WITH PREVIOUS STAFF POSITIONS?

A. No. To provide context, I will need to review the genesis of the reliability reports that have been filed by MGE. As summarized in the 1996 Staff Memo, various parties

[34] Rebuttal testimony of Lesa A. Jenkins, p. 16.

including Staff and MGE participated in a technical conference regarding the outline for the first MGE reliability report that had been ordered by the Commission. In fact, Staff stated in that 1996 Staff Memo, "[a]s 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."[35]

Q. PLEASE DISCUSS THE APPROACH UTILIZED BY MGE TO CALCULATE BASELOAD.

A. Similar to my independent analysis, MGE, in the 1996 Reliability Report, utilized summer load as being representative of baseload. Specifically,

> 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.[36]

Q. IS THE MGE APPROACH TO CALCULATING BASELOAD DEMAND CONSISTENT WITH INDUSTRY PRACTICES?

A. Yes. As discussed in my rebuttal testimony[37], the American Gas Association and the New York Public Service Commission, Laclede Gas Company, among others, define baseload in a manner similar to MGE and my independent analysis.

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35 Direct testimony of David N. Kirkland, Schedule DNK-2, p. 000139.

36 Direct testimony of David N. Kirkland, Schedule DNK-2, p. 000004.

37 Rebuttal testimony of John J. Reed, p. 18.

Q. DOES MS. JENKINS AGREE WITH YOUR BASELOAD DEFINITION?

A. Yes, apparently she now does. In her rebuttal testimony supplement, she offers the following:

> Staff does not disagree with Mr. Reed that natural gas demand can be thought of as having a weather sensitive component and a more constant baseload component. However, daily demand may be influenced by other factors as well, such as whether an LDC has customers such as office buildings or retail businesses that are closed on weekends.[38]

Q. HAS MS. JENKINS PROVIDED OTHER FEEDBACK TO MGE REGARDING THE PROCESS FOR CALCULATING BASELOAD?

A. Yes. In a May 28, 2002 e-mail, Ms. Jenkins stated the following regarding the calculation of baseload:

> The Company is now proposing to calculate a new baseload factor by averaging summer months usage with zero heating degree days for June 1996 through current available data. The Company states that the past two years of data show a lower baseload trend, but the Company is concerned about lowering this factor too soon. Staff is concerned that the Company is including data from too far back and that customer usage patterns could have changed or customer mix could have changed. **Staff would accept a 2-year average, but not a 6-year average.** Additionally, if the Company expects growth/decline in a particular customer class, then the Company should submit the explanation for this growth/decline and adjust the baseload accordingly – providing copies of the calculations to Staff.[39] (Emphasis added)

Q. WHAT ARE YOUR OBSERVATIONS REGARDING THE MAY 28, 2002 E-MAIL FROM MS. JENKINS?

A. I have two primary observations from Ms. Jenkins' e-mail dated May 28, 2002. The first is Ms. Jenkins' validation that an acceptable approach for calculating baseload is

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[38] Supplemental filing to the rebuttal testimony of Lesa A. Jenkins, p. 2.

[39] Direct testimony of David N. Kirkland, Schedule DNK-10, p. 000048.

averaging summer months usage with zero heating degree days. Ms. Jenkins does state that a two-year average would be acceptable but not a six-year average. However, irrespective of the number of years in the calculation, Ms. Jenkins also stated in May of 2002 that summer months with zero HDDs is an acceptable approach for calculating baseload demand. Even though MGE has utilized the same process (i.e., summer month load) to calculate baseload and Staff, in several memorandums, found that approach to be adequate and Ms. Jenkins has, in 2002, accepted the same approach, Ms. Jenkins has now asserted that a new after-the-fact approach should be utilized to calculate baseload.

Q. HAVE YOU COMPARED THE BASELOAD CALCULATION THAT WOULD HAVE RESULTED FROM MS. JENKINS' SUGGESTED APPROACH OF TWO YEARS OF DATA AS WELL AS THE NEW BASELOAD CALCULATION EMBODIED IN MS. JENKINS' DIRECT TESTIMONY DEMAND EQUATION TO THE BASELOAD CALCULATION UTILIZED BY MGE IN THE RELIABILITY REPORT AND IN YOUR INDEPENDENT ANALYSIS?

A. Yes. Schedule JJR-15 is a comparison of the various baseload calculations. Specifically, Schedule JJR-15 summarizes the baseload utilized by MGE in the Reliability Reports that were submitted on July 1, 2001 and July 1, 2002, the baseload utilized in my independent analysis and the baseload utilized in Ms. Jenkins' analysis. Finally, for comparison purposes, I have also included the baseload value that results from Ms. Jenkins' two-year average approach as outlined in the May 28, 2002 e-mail. As shown by Schedule JJR-15, the baseload utilized in Ms. Jenkins' direct testimony in this case is approximately one-half of the baseload calculated by all of the other methodologies. In other words, the Staff approach as outlined in the May 28, 2002 e-mail from Ms. Jenkins produced results

consistent with the MGE approach utilized in the Reliability Report and the approach utilized in my independent assessment. In sharp contrast to that, Ms. Jenkins' current approach utilized in this case produces a result that is vastly different from the rest. Specifically, in her direct and rebuttal testimony, Ms. Jenkins has asserted that an appropriate baseload value for MGE is ** ** MMBtu. However, in my independent analysis, I utilized a MGE baseload of ** ** MMBtu for 2001 and ** ** MMBtu for 2002.[40] If the two-year average approach, as outlined by Ms. Jenkins in the May 28, 2002 e-mail, is utilized, then the MGE baseload for 2001 and 2002 would be ** ** MMBtu and ** ** MMBtu, respectively. In other words, the approach outlined by Ms. Jenkins in the May 28, 2002 e-mail and the approach utilized in my independent analysis and by MGE produce similar baseload results.

Q. PLEASE DISCUSS YOUR SECOND PRIMARY OBSERVATION WITH RESPECT TO THE MAY 28, 2002 E-MAIL FROM MS. JENKINS.

A. My second observation regarding the May 28, 2002 e-mail is the date of that e-mail. Specifically, MGE submitted a Reliability Report on July 1, 2001,[41] which is part of Case No. GR-2002-348, and submitted another Reliability Report on July 1, 2002,[42] which is part of Case No. GR-2003-0330. In other words, Ms. Jenkins' e-mail dated May 28, 2002, which accepted a baseload calculation using two years of summer month data, was after the submission of the July 1, 2001 Reliability Report and a month before the

[40] Please note that the slight difference is the result of three years of summer load data being available for the 2001 analysis and the four years of data available for the 2002 analysis.

[41] Rebuttal testimony of David N. Kirkland, p. 11.

[42] Ibid, p. 11.

submission of the July 1, 2002 Reliability Report. Therefore, in addition to the various Staff memorandums[43] accepting MGE's Reliability Reports and therefore, the peak day demand forecast therein, Ms. Jenkins provided feedback regarding the baseload calculation which affirmed and validated the MGE approach but for an adjustment with respect to number of years to include in the calculation.

Q. PLEASE DISCUSS MS. JENKINS' POSITION REGARDING THE SECOND ISSUE RELATED TO THE LIMITED EXAMINATION OF DATA ISSUE, I.E., LIMITED NUMBER OF DATA POINTS FOR THE REGRESSION ANALYSIS.

A. Ms. Jenkins has asserted the following: "...CEA disregards usage on many high usage days...Mr. Reed provides no rationale for excluding the other data points, other than asserting that these 12 data points are representative of usage on a very cold day."[44]

Q. PLEASE SUMMARIZE YOUR RATIONALE FOR THE USE OF TWELVE DATA POINTS TO DEVELOP THE HEAT LOAD COMPONENT OF YOUR DESIGN DAY DEMAND FORECAST.

A. First, it is important to remember that actual data for design day demand is not available for evaluation in this particular instance. Therefore, the most important assumption in the design day demand analysis is to identify the appropriate data to be utilized in the design day demand analysis (i.e., data points that "are representative of usage on a very cold day."[45]). Given that there was four years of data available, I concluded that every year

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43 Ibid, p. 18, 21, 23, 25.

44 Rebuttal testimony of Lesa A. Jenkins, p. 18.

45 Ibid, p. 18.

should be represented in the analysis. Second, I identified days that would be most representative of design day demand, that is, the days need to have high usage and have cold temperatures; specifically, I utilized the three highest demand days that were also in the top ten coldest days for that year. Based on these guidelines, I then developed a data set of twelve points and fifteen points for the design day demand forecast depending on years of data available. This data set was then utilized to develop the heat load component of the design day demand forecast.

Q. PLEASE DISCUSS WHY MS. JENKINS' POSITION RESULTS IN A VALUE THAT IS SO MUCH LOWER THAN THE MGE FORECAST AND YOUR INDEPENDENT ANALYSIS.

A. Ms. Jenkins' fundamental misconception, as I see it, is her confusion of available data with appropriate data. The flaw in Ms. Jenkins' logic regarding design day demand is the assumption that usage per HDD is the same regardless of whether the HDD is observed on a warm day in November, March or design day. Ms. Jenkins has assumed that the development of a usage factor over all winter days is representative of usage per HDD on the design day. Ms. Jenkins reaches this conclusion despite the fact that in her rebuttal testimony, there is an acknowledgement that "some LDCs have concluded that usage on moderate days in any winter month, not just shoulder months, is not directly related to HDD."[46] Yet, despite this observation and the fact that HDDs are the only variable utilized in her design day demand forecast, Ms. Jenkins utilizes winter days that have very low HDD values. In fact, approximately 69% of the data utilized by Ms. Jenkins are

[46] Rebuttal testimony of Lesa A. Jenkins, p. 14.

on days where the average temperature was not even below freezing (i.e., 32°F or 33 HDD).

Q. DO OTHER MISSOURI LDCS APPARENTLY SHARE YOUR CONCERN REGARDING THE LIMITED DATA SET THAT IS AVAILABLE FOR DESIGN OR PEAK DAY DEMAND ANALYSIS?

A. At least one does. Certain information provided by Staff supports the utilization of a subset of the available data. Specifically,

** ** [47]

Q. DID THAT MISSOURI LDC OFFER ADDITIONAL SUPPORT FOR NARROWING THE DATA SET?

A. Yes. In response to MGE's Data Request No. 190(b) in Case No. GR-2003-0330, Ms. Jenkins provided as an attachment certain excerpts from **

** [48,49]

[47] Attachment DR190(b) to Staff's response to MGE's Data Request No. 190 in Case No. GR-2003-0330, p. 15.

[48] Attachment DR190(b) to Staff's response to MGE's Data Request No. 190 in Case No. GR-2003-0330, p. 13.

[49] In addition, in Case No. GR-2003-0224, Laclede Gas Company utilized data from one month (i.e., December 2000) to develop peak cold day requirements, specifically: "...Staff states that in using data from the winter of 2000-2001 to develop an estimate of peak cold day requirements, the Company used only the daily data for the month of December 2000, and did not evaluate data from other months during that winter. Staff recommends that Laclede 'at least consider January and February actual distribution data in its review of peak day estimate'." – Response of Laclede Gas Company to Staff Recommendation, Case No. GR-2003-0224, p. 2.

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Q. DO LDCS IN OTHER STATES ALSO HAVE CONCERN REGARDING DESIGN DAY DEMAND DATA?

A. Yes. SEMCO Energy Gas Company recently submitted the following:

> Peak Day / Design Day
>
> ...
>
> A. The peak, or design day, is the attempt to define the highest expected daily demand on the Company's transmission and distribution system, under the most severe weather conditions anticipated, in order to appropriately plan for the reservation of peak day capacity and supply. On capacity-constrained pipelines such as Northern Natural, where little, if any, additional firm capacity is available when needed, it is prudent to hold capacity in excess of current design day demand to allow for meeting growth over the next several years.
>
> ...
>
> A. In SEMCO Gas's GCR plan case, Case No. U-13960, I developed a numerically derived methodology which, in part, (1) recognizes the non-linear use of gas as temperatures vary, (2) attempts to overcome the lack of actual data at or near the designated peak day temperatures, (3) acknowledges forecasted customer growth and (4) encompasses three standard deviations above the mean customer use at a given temperature as a level of safety.
>
> ...
>
> In this method I used approximately the 30-40 coldest temperature data points in each area to calculate a linear regression slope, to which I added and subtracted three standard deviations of the population of data.[50]

As illustrated by the above quote, SEMCO defines the objective of the demand forecast (i.e., highest expected daily demand...under the most severe weather conditions) similar to my definition and the 1996 Staff Memo; but SEMCO also recognizes the lack of representative data. To address this data issue, SEMCO utilizes 30 to 40 data observations and a Tail + 3 approach, which is the inclusion of three standard deviations

[50] Direct testimony of John R. Alger, SEMCO Energy Gas Company 2005-06 GCR Application, PSC Case No. U-14402, p. 11-14.

as opposed to the one standard deviation used by Ms. Jenkins and in my independent analysis.

Q. PLEASE DISCUSS WHY LDCS WOULD UTILIZE VARIOUS DATA SUBSETS.

A. Similar to an LDC's choice of design day HDD, the LDC, when developing the appropriate data set and planning process, will utilize the information that the LDC believes best represents design day demand. The data set may be one point as used by Cascade Natural Gas,[51] or 30 points as used by Laclede Gas Company, or 12 points as I utilized. Irrespective of the number of points, the relevant observation is the LDC's application of its knowledge and experience to identify a reasonable data set for the analysis.

Q. DOES MS. JENKINS EVER ADDRESS THE USE OF LESSER AMOUNTS OF DATA?

A. Yes. Ms. Jenkins has recognized that determining the size of the data set is part of the estimation process, specifically: "...regarding data considerations, there is no set amount of data that must be reviewed...Determining a reasonable sample size is part of the estimating process. You must gain an understanding of the data that you are reviewing to make decisions about the number of variables to include and **the amount of data to include**."[52] (Emphasis added) In addition, Ms. Jenkins has also stated, "[h]owever, as noted in most statistical texts, if the data cannot be reasonably acquired, a decision may

[51] Please see the Attachment to MGE's Response to Staff Data Request No. 0238 in Case No. GR-2003-0330.

[52] Staff's response to MGE's Data Request No. 40 in Case No. GR-2002-348.

be made to use the factors that reasonably estimate the outcome with a lesser amount of data."[53]

Q. DOES MS. JENKINS' ANALYSIS COMPLY WITH THE DIRECTION PROVIDED, I.E., GAINING AN UNDERSTANDING OF THE DATA?

A. No. Since the objective is to develop demand under extreme conditions, Ms. Jenkins should recognize that demand on days with minimum HDDs are less likely to provide an understanding of demand on design day than days that are cold and have high demand, i.e., the data set I utilized for my independent analysis.

Q. IS MS. JENKINS' LOGIC REGARDING THE LIMITED DATA CONSISTENT WITH HER POSITION REGARDING DESIGN CONDITIONS?

A. No. Ms. Jenkins has stated the following:

> It is my experience that an LDC will define its requirements based on the "design conditions" being considered. For example, if an LDC is designing a plan for normal weather, it will consider normal weather. Likewise, if an LDC is designing a plan for historic peak cold day, its plan will be different than that for a {sic} normal weather. If an LDC is designing a plan for weather that is 10% colder than normal weather, it will consider weather data that is 10% colder than normal.[54]

Ms. Jenkins has suggested that the planning objective (i.e., design conditions) will guide the appropriate data selection. Specifically, Ms. Jenkins stated that if the LDC is planning or designing for 10% colder than normal weather, it will consider 10% colder than normal weather. Yet for the demand analysis in this case, Ms. Jenkins does not

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[53] Staff's response to MGE's Data Request No. 185(c) in Case Nos. GR-2003-0330 and GR-2002-348 (Consolidated).

[54] Supplemental filing to the rebuttal testimony of Lesa A. Jenkins, p. 2.

follow the same guidance. She utilizes all the winter demand data over the four years, thus assuming the heat load associated with a 20 HDD in one month is the same as the heat load associated with a 20 HDD in another month. More importantly, Ms. Jenkins is also assuming that heat load associated with an average winter day is reflective of the heat load on a peak or design HDD. In other words, she has concluded that the use per HDD is the same regardless of whether the day is a 20 HDD in November or a 80 HDD in January. That is in direct contradiction of her prior statement.

Q. PLEASE DISCUSS THE DATA SET UTILIZED BY MS. JENKINS TO DEVELOP HER DESIGN DAY DEMAND ESTIMATE.

A. As discussed in my rebuttal testimony, data for design day demand are not available thus MGE, Ms. Jenkins and I all had to evaluate the data that was available and utilize data that would reasonably represent demand on a design day. As shown in Schedule JJR-16 to my surrebuttal testimony, the Kansas City region data utilized by Staff not only includes the data that I utilized but also a significant amount of data at very low HDD levels, i.e., warmer temperatures. As a result, the Staff data set has a mean HDD of 27.9 HDD (i.e., 37° Fahrenheit or 5° above freezing) and almost 70% of the data set utilized by Ms. Jenkins are days when the temperature is not even below freezing. As a result of the significant amount of data utilized by Ms. Jenkins that is between 15 and 40 HDDs, her model will perform poorly at the extremes of the data set, as shown in Schedule JJR-16.

Q. PLEASE EXPLAIN WHY STAFF'S REGRESSION ANALYSIS WILL UNDER-PREDICT THE EXTREMES.

A. First, I will focus on the days that have little, if any, heating load. The Staff model predicts approximately ** ** MMBtus of baseload for the Kansas City region on days with little or no heating load, i.e., HDDs at or near 0. I will utilize the information from two of my schedules to discuss the Staff under-prediction at very low HDDs. First, as summarized in Schedule JJR-15, the MGE approach, the approach used in my independent analysis and Ms. Jenkins' 2002 approach all produce baseload values for the Kansas City region that are twice the baseload produced by Ms. Jenkins' current approach. Second, using Schedule JJR-16, Ms. Jenkins' predictions, as illustrated by the solid gray line, are below the actual daily loads for most of the days that are warm, i.e., 5 HDDs or less.

More importantly, the Staff model is under-predicting the other extreme (i.e., cold temperature/high use days) as shown by the data identified in Schedule JJR-16; and therefore, will likely underestimate design day demand. Specifically, as shown by the demand data associated with cold days (i.e., 60 HDDs or greater) in Schedule JJR-16, the Staff model under-predicted demand on the cold days. In fact, the Staff model under-predicted each observation of the high use/cold days data set that I utilized. Given that there are no data to use for actual design day demand, and Staff utilization of so many warm days in its data set, the design day demand under-prediction by Staff could be significant. This problem could in turn be magnified since the risk of not having sufficient capacity is asymmetric as compared to the cost of a reserve margin.

Q. HAVE YOU DETERMINED THE UNDERLYING CAUSE OF STAFF'S UNDER-PREDICTION?

A. As I also discussed in my rebuttal testimony, Staff has utilized data that is not representative of design day demand. As another illustration of its downward bias, if the Staff methodology is applied to data that is 35 HDD or greater (i.e., 30° Fahrenheit or colder), the result for the Kansas City region is a design day demand estimate of ** ** MMBtus for the 2001/2002 winter period as compared to the current Staff estimate of ** ** MMBtus for the same period.[55] In other words, if the Staff data series is truncated such that only days with HDD equal to or greater than 35 HDDs are included in the analysis, the Staff estimate for the Kansas City region increases by ** ** MMBtus and is now only approximately ** ** MMBtus below my estimate.

Q. WHY DOES YOUR EQUATION NOT RESULT IN A SYSTEMATIC UNDER-PREDICTION?

A. First of all, similar to MGE, I utilized the summer months as the non-temperature component for my model. Second, I utilized data that is more representative of design day conditions. As shown in Schedule JJR-16, the data set I utilized has a mean HDD of 53.4 (i.e., temperature of 11.6° Fahrenheit) which is almost double the Staff mean HDD of 27.9. As noted on page 26 of my rebuttal testimony, authorities on statistics warn of the inherent prediction problems in using a data set with a mean so far from the x-value (the value sought to be predicted). Therefore, the data set I utilized is less likely to

[55] CEA utilized the Staff data but only included data that was 35 HDDs or colder and the resultant model (y-intercept; HLF and standard error) produced ** ** MMBtus.

under-predict on cold/high use days and is, therefore, more representative of design day demand.

Q. FOR THE KANSAS CITY REGION, PLEASE SUMMARIZE THE RESULTS OF THE STAFF REGRESSION EQUATION TO YOUR INDEPENDENT ANALYSIS.

A. The regression methodologies utilized by Staff and in my independent analysis produce design day demands for the Kansas City region that differ by ** ** MMBtus as shown in Schedule JJR-16, of which ** ** MMBtus or 62% is associated with Staff's inclusion of warm days equal to or greater than 35 HDDs. A difference of ** ** MMBtus is less than two standard errors[56] and a difference ** ** MMBtus is well under one standard error. As mentioned earlier, SEMCO Energy Gas Company's design day forecast includes a reserve margin equivalent to three standard errors, while both Staff and I include only one standard error. A disagreement over ** ** MMBtus in design day demand for the Kansas City region seems trivial, considering the difficulties and imprecision associated with forecasting an extreme event for which there is little historic data and the asymmetric higher cost of under-predicting and failing to deliver to firm customers versus over-predicting.

Q. COULD YOU SUMMARIZE THE PRIMARY FINDINGS OF YOUR TESTIMONY?

A. The primary findings of my testimony are as follows:

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[56] Staff's proposed regression model has a standard error of ** ** MMBtus, while CEA's regression model has a standard error of ** ** MMBtus.

- The capacity planning process is, as acknowledged by Staff, a multi-faceted process that incorporates various market and LDC specific issues;
- There are no specific standards in Missouri applicable to the elements of capacity planning in general or design day demand forecasting specifically;
- MGE, in conjunction with various parties, developed a process for submitting certain information (i.e., reliability reports). MGE submitted several such reports which covered all the agreed upon elements and Staff determined that MGE's actions as reported were adequate;
- The MGE design day demand forecast element of capacity planning has been criticized by Staff and as a result, I conducted an independent analysis which produced design day demand estimates similar to the MGE design day demand estimates;
- The importance of the design day demand estimates is critical as Staff utilized its design day demand estimates to propose a capacity disallowance which is not appropriate since: (i) Staff proposed an approach to baseload that is, not only counter to the MGE approach and past Staff practices, but is also nonsensical as it produces results that are one-half the actually-observed summer load; (ii) the heat load component of the Staff estimate is based on a data set in which 70% of the observations are not even coldest days (i.e., below freezing); and (iii) the Staff analysis assumes that MGE should have utilized the Staff specific approach when the capacity decisions were made even though Staff's approach was not communicated to MGE until well after the capacity acquisition decisions had been made; and
- Setting aside all the concerns that I have with the statistical approach utilized by Ms. Jenkins, the most troubling aspect of her position in this case is that she attempts to

use statistical analysis to draw a very specific, yet very arbitrary, "bright line" which she would use to disallow or allow costs on the grounds of prudence. As I have discussed in my prior rounds of testimony in this case, the prudence standard inherently involves establishing a *range* of reasonable behavior, and questioning acts or decisions that are outside of that range. Similarly, regression analysis and LDC resource planning incorporate ranges of uncertainty, and recognize that point estimates are inappropriate to use as a standard for decision making. However, Ms. Jenkins apparently believes that her statistical analysis somehow yields the one and only correct answer, and that all who differ with her should be punished with a cost disallowance. In reality, these types of decisions consider the consequences of under-prediction and over-prediction, the forward-looking benefits of holding capacity, and the inherent unpredictability of extreme circumstances (such as design day demand), don't fit within Ms. Jenkins' black-and-white world. When all of the relevant information is considered, there is no way that MGE's capacity planning decisions that are at issue in this case can fairly be labeled as being outside of a range of reasonable behavior.

Q. DOES THIS CONCLUDE YOUR SURREBUTTAL TESTIMONY?

A. Yes.