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Kansas Corporation Commission
/S/ Susan K. Duffy

In the Matter of the Application of Kansas Gas Service, A Division of ONEOK, Inc. for Adjustment of its Natural Gas Rates in the State of Kansas	)))))	DOCKET NO. 06-KGSG-___-RTS

STATE CORPORATION COMMISSION

MAY 1 5 2006

Susan Talbuffy Docket Room

DIRECT TESTIMONY

OF

PAUL H. RAAB

ON BEHALF OF

KANSAS GAS SERVICE

A DIVISION OF ONEOK, INC

DIRECT TESTIMONY

OF

PAUL H. RAAB

KANSAS GAS SERVICE

DOCKET NO. 06-KGSG-___-RTS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Paul H. Raab and my business address is 4866 Cordell Avenue, Suite 300, Bethesda, MD 20814.

Q. BY WHOM AND IN WHAT CAPACITY ARE YOU EMPLOYED?

A. I am a self-employed, independent economic consultant.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND.

A. I have a B.A. in Economics from Rutgers University and an M.A. from the State University of New York at Binghamton with a concentration in econometrics. While attending Rutgers, I studied as a Henry Rutgers Scholar.

Q. PLEASE DESCRIBE YOUR BUSINESS EXPERIENCE.

A. I have been providing consulting services to the utility industry for thirty years, having assisted electric, natural gas, telephone, and water utilities; Commissions; and intervenor clients in a variety of areas. I am trained as a quantitative economist so that most of this assistance has been in the form of mathematical and economic analysis and information systems development. My particular areas of focus are planning issues, marginal cost and rate design analysis, and depreciation and life analysis. I began my career with the professional services firm that is now known as Ernst & Young, where I was employed for ten years.

Q. Have you ever testified before any regulatory commission?

A. Yes. I have provided expert testimony before this Commission in Docket Nos. 174,155-U; 176,716-U; 98-KGSG-822-TAR; 99-KGSG-705-GIG; 01-KGSG-229-TAR; 02-KGSG-018-TAR; 02-WSRE-301-RTS; 03-KGSG-602-RTS; 03-AQLG-1076-TAR; and 05-AQLG-367-RTS. In addition, I have provided expert testimony before the state regulatory authorities of the District of Columbia, Georgia, Indiana, Iowa, Kentucky, Louisiana, Maryland, Michigan, Montana, Missouri, Nebraska, Nevada, New Jersey, New Mexico, New York, Ohio, Oklahoma, Tennessee, Virginia, West Virginia and Wisconsin, as well as the Michigan House Economic Development and Energy Committee, the Province of Saskatchewan, and the United States Tax Court. Details on the subject matter of the testimony presented are provided in Exhibit_____(PHR-1).

Q. ON WHOSE BEHALF ARE YOU TESTIFYING TODAY?

A. Kansas Gas Service, a division of ONEOK, Inc. ("Kansas Gas Service" or "Company").

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. I have prepared and will sponsor Adjustment Nos. IS 9 and IS 10 from Section 9, Schedule 9-B of the Company's Application. Adjustment No. IS 9 represents the amount by which revenues would have increased had weather been normal during the test year. Adjustment No. IS 10 is the "Customer Annualization" adjustment, which is necessary to synchronize revenues and expenses related to the test year-end number of customers with the test year-end rate base. I also provide the new Heat Sensitive Factors (HSFs) and normal weather to be used in the (Weather Normalization Adjustment (WNA) tariff on a going-forward basis.

In addition, I sponsor the class cost of service study that is used to allocate the Company's requested revenue increase to customer classes. Finally, I sponsor the Company's rate design proposals. The proposed rate designs include usage level rate options for RS and GS customers that will allow higher usage customers to mitigate their respective bills during higher usage months and on an annual basis. A customer billed under one of these options will face higher service charges and lower delivery (volumetric) charges (Option B) than if that customer had chosen to remain on the alternative rate option (Option A), developed to benefit lower use customers within each of these customer classes.

Q. HOW IS YOUR TESTIMONY ORGANIZED?

A. My testimony is organized into six additional sections. Section I describes the weather normalization adjustment and Section II describes the customer annualization adjustment. The coefficients and normal weather that are needed to make the Company's WNA clause consistent with the level of normal weather volumes and revenues from the current case are described in Section III. Section IV describes the class cost of service studies. Section V presents the Company's proposed rate designs. Finally, this testimony concludes with Section VI, which presents an evaluation of the Company's usage level rate options, using the rate design criteria established by Professor James Bonbright.

I. WEATHER NORMALIZATION ADJUSTMENT

Q. WHY IS IT NECESSARY TO ADJUST TEST YEAR SALES LEVELS FOR THE EFFECTS OF WEATHER?

A. Temperature greatly impacts the amount of natural gas used. Because of this, the Company's earned return in any year can vary significantly, solely as a function of the weather, and test year revenues based on a period of abnormal weather require a weather adjustment for ratemaking purposes. It is unlikely that such abnormalities repeat themselves regularly during the period that the new rates are expected to be in effect. As a result, rates established on such abnormalities would not be likely to produce the revenue levels for which they were designed. It is necessary, therefore, to adjust test year revenues from the sale of gas expenses to reflect normal weather.

Q. HOW DID THE WEATHER ACTUALLY EXPERIENCED DURING THE TEST PERIOD COMPARE TO NORMAL WEATHER?

A. The test period was warmer than normal; consequently, it was necessary to add a total of 2,976,028 Mcf to sales and revenues of $4,876,048 to reflect the effects of normal weather.

Q. WOULD YOUR PLEASE EXPLAIN THE PROCEDURE USED TO MAKE THE WEATHER ADJUSTMENT?

A. There are a variety of methods that can be used to make this adjustment. However, having performed similar calculations for Kansas Gas Service in past cases, having worked with the Commission Staff on this issue a number of times and based on a review of prior Commission decisions, I believe that I have applied a method that has broad support in the state of Kansas. This method adheres to the following five guidelines:

1. The method employs a level of rate class disaggregation that is as fine as can be reasonably supported by the data.
2. The method employs as many weather recording stations as can be reasonably supported by the data.
3. "Normal" weather is defined to be the normal weather established by the National Oceanic and Atmospheric Administration.
4. Regression techniques are used to relate usage to an appropriate weather variable. These regression equations should be as free as possible from any identifiable statistical impairment.
5. The weather variable employed in the regression specifications should be reasonably anticipated to influence usage. In other words, Heating Degree

Days (HDDs) should be used to normalize those classes that use natural gas for space heating purposes and rainfall should be used to normalize those classes whose usage of natural gas is driven by irrigation needs.

Q. HOW DID YOU IMPLEMENT THESE GUIDELINES?

A. First, the average use per customer was established for each of Kansas Gas Service's rate classes for January 2002 through December 2005. Next, actual and normal weather data (defined as either monthly heating degree days or monthly rainfall) were compiled for thirteen weather stations in Kansas Gas Service's service territory. This disaggregation results in 183 rate class/weather station combinations. Usage per customer for these 183 groups was then related to the appropriate weather variable using an ARMA-type model structure that Staff has advocated in past proceedings.

To calculate the weather adjustment from these equations, the NOAA-normal number of HDDs and amount of rainfall were then applied to the regression equation to obtain the amount of sales that would have occurred had customers experienced normal weather. These volumes are priced at existing rates and the resulting adjustment represents the difference between the weather normalized revenues and the actual test year revenues.

Q. WHAT IS THE SOURCE OF YOUR USAGE DATA?

A. The source of the usage and customer data is the Company. They have provided me with disaggregated usage data that are consistent with that level of usage recorded on the Company's books for the test year. Test year volumes as adjusted are 144,681,114 Mcf.

Q. DO THESE DATA ADHERE TO THE COMMISSION'S PRIOR DISAGGREGATION GUIDELINES?

A. Yes, these data are compiled at the rate class level, which is the finest reasonable level of disaggregation that is possible.

Q. FROM WHICH STATIONS DID YOU COMPILE THE WEATHER DATA?

A. I compiled weather data from the following thirteen weather stations in Kansas Gas Service's service territory:

1. Concordia – National Climatic Data Center (NCDC) Weather Bureau Army Navy (WBAN) No. 13984
2. Emporia – NCDC WBAN No. 13989
3. Great Bend – NCDC WBAN No. 13940
4. Hutchinson – NCDC WBAN No. 13986
5. Kansas City International Airport – NCDC WBAN No. 03947
6. Manhattan – NCDC WBAN No. 03936
7. Newton – NCDC WBAN No. 53939
8. Olathe – NCDC WBAN No. 03967
9. Parsons – NCDC WBAN No. 03998
10. Russell – NCDC WBAN No. 93997
11. Salina – NCDC WBAN No. 03919
12. Topeka – NCDC WBAN No. 13996
13. Wichita – NCDC WBAN No. 03928.

Q. WHY DID YOU USE THESE STATIONS?

A. I used these stations because I believe that they represent the finest level of disaggregation supported by the data.

Q. ARE THESE THE SAME WEATHER STATIONS THAT HAVE BEEN PREVIOUSLY REVIEWED BY STAFF AND APPROVED BY THE COMMISSION FOR THE PURPOSE OF WEATHER NORMALIZING SALES IN THE COMPANY'S WEATHER NORMALIZATION ADJUSTMENT (WNA) CLAUSE?

A. Not entirely. The stations for Concordia, Kansas City, Russell, Salina, Topeka and Wichita are the same. The stations from which the data are compiled for the other towns are different from those stations that have been used in the past.

Q. WHY DID YOU CHOOSE TO CHANGE THE STATIONS IN THIS CASE?

A. The new stations listed above are Automated Surface Observation System (ASOS) stations that allow for the collection of weather data on an electronic basis. Thus, one would expect the resulting data to be more accurate and timely than data collected at a manual recording station. However, the primary reason for the change is that the Company's customer information system accumulates weather data from these stations on a real time basis. Using consistent weather data between the customer information system and the weather normalization calculation will allow for consistent calculations between these two processes and will not have any material impact on the results.

Q. PLEASE DESCRIBE THE REGRESSION EQUATIONS THAT YOU USED TO DEVELOP THE RELATIONSHIP BETWEEN USAGE AND THE APPROPRIATE WEATHER MEASURE.

A. Regression analysis develops the relationship between a (dependent) variable and one or more independent variables. In this case, the dependent variable is the monthly gas usage of Kansas Gas Service's customers. The independent variables are the weather effects (HDDs and Precipitation). Thus, the regression equations estimated for this purpose quantify the sensitivity of gas usage to changes in the weather.

The regression equation for the heat-sensitive classes is specified as:

$$Usage_{i,j,t} = \alpha_{i,j} + \beta_{i,j}(HDD_{j,t}) + \varepsilon_{i,j,t}$$

where:

$Usage_{i,j,t}$ = Mcf gas usage per customer per month for rate class i and weather station j;

$HDD_{j,t}$ = the actual monthly HDDs at weather station j;

$\varepsilon_{i,j,t}$ = an error term; and

$\alpha_{i,j}, \beta_{i,j}$ = estimated coefficients for rate class i and weather station j.

In this case, the coefficient β (sometimes referred to as the heat sensitive factor, or HSF) is of greatest interest since it measures the way that natural gas usage can be expected to change as temperature changes. By extension, β can be used to estimate what consumption would have been had weather been "normal."

For those classes whose usage is assumed to be driven by rainfall, the equation is:

$$Usage_{i,j,t} = \alpha_{i,j} + \beta_{1,i,j}(Precip_{j,t}) + \varepsilon_{i,j,t}$$

where:

$Precip_{j,t}$ = the actual monthly rainfall at weather station j;

and all other variables are defined as before.

Q. CAN YOU USE THE WEATHER VARIABLES EXACTLY AS PROVIDED BY THE NCDC IN THESE REGRESSION EQUATIONS?

A. No, these data must first be adjusted before they are related to usage.

Q. WHY?

A. Because, due to different meter read cycles, the time period over which monthly usage data is aggregated is not the same time period as the one over which monthly weather data are aggregated. Usage recorded in any month has actually occurred in both that month and the preceding month while weather data for any month actually do represent observations of weather in that month. In order to match the period in which the usage occurs with the period in which the weather that influenced that usage occurs, I include weather from the current month and weather from the preceding month in the regression equations. Thus, the exact functional specifications employed in my analysis are:

$$Usage_{i,j,t} = \alpha_{i,j} + \beta_{1,i,j}(HDD_{j,t}) + \beta_{2,i,j}(HDD_{j,t-1}) + \varepsilon_{i,j,t}$$

$$Usage_{i,j,t} = \alpha_{i,j} + \beta_{1,i,j}(Precip_{j,t}) + \beta_{2,i,j}(Precip_{j,t-1}) + \varepsilon_{i,j,t}$$

Q. HOW DID YOU DETERMINE WHICH OF THESE EQUATIONS TO APPLY TO ANY PARTICULAR RATE CLASS?

A. As expected, the first equation that uses HDDs as the independent variables applies to the majority of the rate classes. Accordingly, that specification was applied except for the following irrigation rate classes in which usage is defined to be a function of rainfall. The irrigation rate classes are GIS (associated with 7 weather stations) and GITt (associated with 6 weather stations).

Q. WAS THERE A CORRESPONDING WEATHER ADJUSTMENT TO THE CONSUMPTION IN EACH OF THESE WEATHER STATION/RATE CLASS GROUPINGS?

A. No. It was not always possible to develop a statistically valid relationship between consumption and the weather variable for two reasons. First, in some cases there simply were not enough observations to develop a meaningful statistical relationship between usage and the appropriate weather variable for that weather station/rate class combination. This filter resulted in the elimination of 10 weather station/rate class groups from consideration for weather normalization. Second, in some cases, it was not possible to develop a statistically valid relationship between usage and the appropriate weather variable.

Q. WHAT WERE YOUR CRITERIA FOR DETERMINING THE VALIDITY OF THE ESTIMATED RELATIONSHIP?

A. I relied on a battery of commonly applied statistical tests. These tests are:

1. t-test. The t-test is used to determine whether a particular independent variable (in this case, weather) has an influence on the dependent variable (in this case, usage per customer). In other words, it determines whether the selected variable belongs in the regression.

2. R-squared. This is a measure of the success of the regression in predicting the values of the dependent variable within the sample.

3. log likelihood test. This is the value of the log likelihood function (assuming normally distributed errors) evaluated at the values of the coefficients. It is often used to select between alternative regression specifications.

4. Durbin-Watson statistic. The Durbin-Watson statistic tests for first-order autocorrelation in the errors, which is the situation where the regression error in one period moves together with the regression error of another. When errors exhibit autocorrelation, the estimated coefficients are biased.

5. F-statistic. This statistic tests whether all of the coefficients in a regression are zero. In other words, it tests for the statistical significance of the regression itself.

6. Q-statistics. Q-statistics provide a measure of the autocorrelations and partial autocorrelations of the regression residuals. These statistics provide evidence of autocorrelated disturbance terms and also provide guidance for correcting the autocorrelation.

7. Breusch-Godfrey Serial Correlation Lagrangian Multiplier (LM) Test. This test is a test for general (higher order) serial correlation that uses the Breusch-Godfrey large sample test for autocorrelated disturbances.

8. AutoRegressive Conditional Heteroskedasticity (ARCH) Lagrangian Multiplier (LM) Test. The ARCH LM procedure tests for autoregressive conditional heteroskedasticity, or the tendency for regression errors to move together through time, and be related to the size of the residuals.

Q. HOW DID YOU APPLY THESE TESTS TO YOUR REGRESSION EQUATIONS?

A. I initially used a basic statistical technique called the Ordinary Least Squares (OLS) method to estimate the coefficients of the specified regressions in those cases where sufficient data exist to derive meaningful statistics. I then examined the Q-statistics to determine whether a correction for autocorrelation was needed. If the need for a correction was indicated, I applied an AutoRegressive Moving Average (ARMA) estimation technique to estimate the coefficients. After introduction of the ARMA terms, I tested the models using the Durbin-Watson statistic, the Breusch-Godfrey serial correlation LM test, and the ARCH LM test. After successfully passing these tests, I knew that the weather coefficients that I had estimated were unbiased and of minimum variance, and I proceeded to test whether a valid statistical relationship exists between the dependent and independent variables. For this purpose, I relied primarily on the t-test, the R-squared, the log likelihood test, and the F-test.

Q. UNDER WHAT CIRCUMSTANCES WAS A REGRESSION EQUATION REJECTED USING YOUR TESTING CRITERIA?

A. As an overview, I performed all statistical tests at the commonly applied 95% level of confidence. I did not reject any regression equation if it did not pass the initial tests for serial correlation, but rather used the information from those tests to reduce the serial correlation as much as possible before moving on to tests of the coefficients themselves. With regard to testing the coefficients, I rejected a regression equation if either the t-statistic on the estimated weather coefficient or the F-statistic for the entire regression were not significant at the 95% level of confidence. This results in the rejection of an additional 62 regression specifications. Thus, I was able to derive a weather normalization adjustment for (183 – 10 – 62 =) 111 of the weather station/rate class groupings that had been established.

Q. WHAT RESULTS WERE OBTAINED FROM THE REGRESSION ANALYSIS?

A. Estimated values for the HDD and Precipitation coefficients obtained from the regression analysis for each rate class are listed in Exhibit_____(PHR-2). This exhibit also contains the results of the statistical tests to which I subjected my specifications. All reported coefficients are significant at the 95% level of confidence.

Q. HOW ARE THESE NUMBERS INTERPRETED?

A. As an example, consider the results obtained for Residential RSk customers in Concordia (Town Code 3). Exhibit_____(PHR-2) shows that the estimate for the HDD coefficient is .00697797 and for the lagged HDD coefficient is .00624121. This means that if the average daily temperature were lower by one degree in the current and preceding month, we would expect consumers in this group to respond to that lower temperature by using .013 more Mcfs of natural gas per customer. Conversely, if the average temperature were one degree higher, then consumers would use .013 less Mcfs of natural gas per customer.

Q. YOU STATED EARLIER THAT THE ESTIMATED COEFFICIENTS β_1 AND β_2 CAN BE USED TO ESTIMATE WHAT CONSUMPTION WOULD HAVE BEEN HAD WEATHER BEEN NORMAL. EXACTLY HOW IS THIS DONE?

A. This is done by using the monthly departure from normal and the regression coefficients. The adjustment formulas for the two general regressions are:

$$WNA = [(HDD_t \text{ departure})*(HDD_t \text{ Coeff}) + (HDD_{t-1} \text{ departure})*(HDD_{t-1} \text{ Coeff})] * \text{Customers}$$

$$WNA = [(Precip_t \text{ departure})*(Precip_t \text{ Coeff}) + (Precip_{t-1} \text{ departure})*(Precip_{t-1} \text{ Coeff})] * \text{Customers}$$

Q. HOW ARE THE DEPARTURES CALCULATED?

A. Departures, which measure how the test year weather differs from "normal" weather, are calculated by subtracting the actual monthly weather variables for the test year from the normal monthly weather variables for those months. The normal monthly HDDs and CDDs are obtained from the NCDC for the 1971 to 2000 time period.

Q. HOW DID YOU COMPUTE THE LEVEL OF REVENUES ASSOCIATED WITH THESE VOLUMETRIC ADJUSTMENTS?

A. For all classes except Small Generator Service (SGS), the Company bills for consumption under a flat rate. Thus, for all classes except SGS, it is a simple matter to calculate the revenue adjustment as the product of the volumetric adjustment and the Company's existing rates.

For customers billed under the Company's SGS tariffs, I did not need to apply bill frequency data to consumption since these customers do not exhibit any weather sensitivity.

Q. HAS THIS ADJUSTMENT MECHANISM BEEN USED IN PAST RATE CASES?

A. Yes. This general formula has been used in all of the prior cases in which I have participated plus other cases that I have reviewed, including Docket Nos. 193,305-U, 00-UTCG-336-RTS, 01-KGSG-229-TAR, 01-WSRE-436-RTS, and 02-MDWG-922-RTS.

Q. AFTER APPLYING THE ABOVE FORMULAS, WHAT ARE THE FINAL RECOMMENDED WEATHER NORMALIZATION ADJUSTMENTS TO THE COMPANY'S TEST YEAR NATURAL GAS SALES?

A. The final adjustment to the Company's actual test year natural gas volumes is 2,976,028 Mcfs. This corresponds to an adjustment to the Company's actual test year revenues of $4,876,048 as shown on Schedule 9-B, Adjustment No. IS 9.

II. <u>CUSTOMER ANNUALIZATION ADJUSTMENT</u>

Q. WHY IS IT NECESSARY TO ADJUST TEST YEAR SALES LEVELS FOR THE NUMBER OF CUSTOMERS THAT KANSAS GAS SERVICE SERVED AT THE END OF THE TEST YEAR?

A. Customer annualization is necessary to synchronize the number of customers existing at the end of the test year with the test year-end level of rate base. The adjustment is made to properly recognize the level of operating income that would have been received from those customers receiving service at the end of the test year as if they had been on the system for the entire period. During the test year, Kansas Gas Service experienced modest customer growth. The annualization of the Mcf sales associated with the increase in customers during the test year raised gas sales by 294,328 Mcf. The revenues associated with these volumes were calculated at the test year-end rate levels and, including the service charges, results in an increase in operating income of $81,892 as shown on Schedule 9-B, Adjustment No. IS 10.

Q. PLEASE EXPLAIN HOW YOU CALCULATED THE CHANGE IN THE NUMBER OF CUSTOMERS.

A. During the test year, Kansas Gas Service experienced changes in the number of customers in its various rate classes. For many of these rates, the changes are seasonal and the monthly seasonal variations are often greater than the real growth in customers. To obtain the real customer growth, a linear regression analysis was utilized to calculate the long-term growth of customers by the same weather station and rate class breakdown as employed above. The results of the regressions gave the average monthly increase or decrease in customers. Then, starting at the end of the test year and working backward, customers were added or removed each month levelizing the number of customers for the tariff. The change in the number of customers each month was the same as the monthly growth rate. This method assumes a constant rate of customer growth throughout the test year. For example, if a customer class was growing at an average rate of 10 customers per month, 10 customers were added to November, 20 customers to October, 30 customers to September and so on until January 2005 when a total of 110 customers were added. No additional customers were added to December 2005 since the test year-end customers are already included in that month's totals.

Q. HOW DID YOU DEVELOP THE CUSTOMER REGRESSIONS?

A. I utilized the same methodology to develop these regressions as I used to develop the usage regressions described above. Specifically, I relied on the following steps:

1. Obtain weather station/rate class customer count breakdowns from the Company for the period January 2002 to December 2005 for the 183 different groupings referred to above.
2. Regress these customer counts on a monthly trend variable using OLS techniques.
3. Using the same serial correlation tests referenced above, develop ARMA regression specifications as necessary for the customer regressions.
4. Test for significance of customer growth or decline using the tests referred to above.
5. Finalize regression equations for those classes that pass the battery of statistical tests to which they had been subjected.

The results of this analysis are provided as Exhibit_____(PHR-3).

Q. PLEASE EXPLAIN HOW YOU CALCULATED THE SALES VOLUMES ASSOCIATED WITH THE CUSTOMER ADJUSTMENT.

A. To calculate the sales impact, the monthly change in customers was multiplied by the weather normalized monthly energy sales for the rate class under study plus the full weather normalized monthly energy times the number of customers added in earlier months. This method was used since those customers that were added for the first time in a month already had some energy booked in that month. It was assumed that on average this would follow the historical pattern. The final adjustment was the summation of all the resultant increases and decreases to obtain the total gas sales associated with the new customers.

Q. HOW DID YOU CALCULATE THE IMPACT ON OPERATING INCOME?

A. The appropriate tariff rate was multiplied times the amount of change in sales to determine the volume revenue. In the case of SGS customers, all delivery changes were assigned to the first rate block since average consumption for these customers is less than 1 Mcf and the initial block rate applies to the first 40 Mcfs of consumption. Service charge revenues were determined by taking the service charge times the number of customers added each month by tariff. The sum of the delivery and service charge revenues equals the amount of the customer annualization adjustment. I have applied this adjustment to all weather station/rate class groups for which a statistically significant change in growth was derived, as determined through the regression analysis.

Q. HAVE YOU DEVELOPED A SUMMARY OF THE WEATHER NORMALIZATION AND CUSTOMER ANNUALIZATION ADJUSTMENTS THAT YOU HAVE DEVELOPED?

A. Yes. A summary of these adjustments appears as Exhibit_____(PHR-4).

III. <u>THE WNA</u>

Q. WHAT CHANGES ARE YOU RECOMMENDING TO THE WEATHER NORMALIZATION ADJUSTMENT CLAUSE?

A. The new weather stations, their corresponding normal values, and the HSFs from my normal weather study need to be substituted for these elements of the WNA that were approved by the Commission in Docket No. 03-KGSG-602-RTS in order to ensure that the weather normalization adjustments on a going-forward basis are consistent with the Commission's determination in this case.

Q. DO YOU PROPOSE ANY OTHER CHANGES TO THE WNA?

A. No, and the tariff reflecting only these changes is sponsored by Company witness Frank P. Garver.

IV. <u>CLASS COST OF SERVICE</u>

a. <u>Background</u>

Q. WHAT IS A CLASS COST OF SERVICE ANALYSIS?

A. A class cost of service analysis is the process by which the costs that a utility incurs to serve particular classes of customers are linked to the classes of customers that caused those costs to be incurred.

Q. WHY IS IT NECESSARY TO ALLOCATE COSTS TO THE DIFFERENT CUSTOMER CLASSES?

A. It is a generally accepted utility ratemaking principle that rates should be based on costs. This statement applies not only to the overall level of costs incurred by the utility, but also to the costs that the utility incurs to serve individual services, classes of customers, and segments of the utility's business. Adherence to this principle is complicated by the fact that many of the costs incurred to provide different types of service are "joint" costs and many are "common" costs, neither of which have a theoretically precise method by which they can be assigned to the different products produced as a result of the incurrence of these costs.

Joint costs occur when the provision of one service is an automatic by-product of another (e.g., the delivery of natural gas at different times of the year). Common costs are incurred when several outputs are produced using the same facilities or inputs (e.g., administrative and general expenses).

Thus, cost of service studies are the primary method used to allocate the common and joint costs incurred by the utility in serving different customer classes. They are used for five purposes:

1. To attribute costs to different categories of customers based on how those customers cause costs to be incurred;
2. To determine how costs will be recovered from customers within each customer class;
3. To calculate the costs of individual types of service based on the costs each service requires the utility to expend;
4. To determine the revenue requirement for the monopoly services offered by a utility operating in both monopoly and competitive markets; and
5. To separate costs between different regulatory jurisdictions.

Q. HOW ARE THE COSTS INCURRED BY THE UTILITIES ALLOCATED TO THE DIFFERENT CUSTOMER CLASSES?

A. These costs are allocated to the different customer classes in three steps: functionalization, classification, and allocation.

Q. PLEASE DESCRIBE THE FUNCTIONALIZATION PROCESS.

A. Functionalization is the process whereby the capital and operating costs incurred by the utility to provide service are categorized by function. The typical functions of a natural gas utility are transmission, distribution, customer service and facilities, and administrative and general. The transmission function includes those assets and expenses associated with the delivery of natural gas from the field to the distribution system. The assets and expenses involved in the delivery of natural gas to ultimate customers, except those that can be directly assigned to a particular customer, are included in the distribution function. Those distribution costs that can be directly assigned to a particular customer (e.g., service drops and meters) plus the meter reading and other customer service functions such as billing and collections are included in the customer service and facilities function. The administrative and general function includes management costs that cannot be directly assigned to the other major cost functions.

Q. WHY DOES ONE FUNCTIONALIZE COSTS?

A. Costs are functionalized so that they can be more easily classified, which is the next step in the cost of service analysis.

Q. HOW WAS THE FUNCTIONALIZATION PROCESS PERFORMED FOR KANSAS GAS SERVICE?

A. The Company' accounting processes follow the FERC Uniform System of Accounts. In large measure, this system of accounts records costs by the function for which they were incurred. Thus, the costs that I work with in the cost of service analysis are already grouped by function.

Q. PLEASE DESCRIBE THE CLASSIFICATION PROCESS.

A. The classification process recognizes that the utility's costs are incurred for a number of purposes: to meet customers' peak demands (demand-related costs), to provide energy (energy- or commodity-related costs), and because there are customers on the system (customer-related costs). The classification process groups the utility's costs by the purpose for which they were incurred. The cost of odorant is the best example of a cost that is incurred in direct proportion to the amount of natural gas that flows through the system and is therefore classified as an energy-related cost. On the other hand, metering costs are primarily driven by the number of customers on the system and would be classified as customer-related costs.

Q. HOW WERE THE COMPANY'S COSTS CLASSIFIED IN THIS STUDY?

A. In general, I followed the classifications that are generally accepted by utilities and state commissions, and relied upon the suggested classification of the National Association of Regulatory Utility Commissioners (NARUC). Moreover, the classifications used in the class cost of service study are virtually identical to those utilized by the Staff in the classification and allocation of costs in Docket No. 03-KGSG-602-RTS, the Company's last base rate proceeding.

Q. PLEASE DESCRIBE THE ALLOCATION PROCESS.

A. The allocation process is one in which the functionalized and classified costs from above are assigned to specific customer classes. It is assumed that the load characteristics of the customers within each of the major customer classes are relatively homogeneous with respect to their usage characteristics. Thus, costs can be allocated to these customer classes based on these characteristics. Those costs that have been classified as demand-related costs in the classification process above are allocated among the customer classes on the basis of demands imposed on the system during the peak day. Energy-related costs are allocated on the basis of the energy that the system must supply to meet the needs of these customers. Customer-related costs are allocated to the different customer classes based on the number of customers.

Q. HOW ARE THESE COSTS ALLOCATED TO THE COMPANY'S DIFFERENT CUSTOMER CLASSES?

A. First, customers are divided into groups or classes. These classes are populated with customers having similar natural gas demand characteristics. The customers within each class can therefore be billed pursuant to a single rate schedule containing a service charge and a delivery charge since their load profiles are sufficiently similar. Next, costs are examined to determine why the utility incurred them and how customers' natural gas demand characteristics impact the utility's cost incurrence decisions. Finally, a demand characteristic is associated with each cost incurred; each customer class' contribution to that cost provides the basis for the allocation of the associated cost.

Q. WHAT ARE THESE "NATURAL GAS DEMAND CHARACTERISTICS" THAT CUSTOMERS PLACE ON THE SYSTEM?

A. The customer's request for service is a cost causative demand characteristic that necessarily results in an immediate investment in a regulator, a service line and metering facilities and establishes a commitment on the part of the company to provide, among other things, answers to questions and a monthly billing. Hence, the very existence of this customer-utility relationship causes the incurrence of cost. The amount of natural gas taken from the utility system, usually expressed volumetrically (Mcf) or in terms of the energy content of the natural gas itself (therms) and referred to as the customer's energy use or usage, is a cost causative characteristic as well. Additionally, as my testimony will describe in more detail, the magnitude of costs incurred to serve a customer is also driven by the customer's potential rate of energy use, usually expressed in design day usage and referred to as the customer's demand.

Q. HOW DO SUCH DEMANDS AFFECT COST INCURRENCE?

A. Cost incurrence is strongly driven by two primary factors, energy use and the rate at which energy is used. Odorant expense incurrence for each customer or customer class and total energy use during the year are obviously strongly correlated. Likewise, the rate at which energy is used is measured by the class contribution to total energy usage during the year and serves as the link to the incurrence and magnitude of demand-related utility costs.

Q. WHY HAVE YOU EMPHASIZED THE RATE AT WHICH ENERGY IS USED WHEN DESCRIBING COST CAUSATIVE CUSTOMER UTILIZATION FACTORS?

A. There are two very important factors that drive a natural gas utility's cost incurrence. First, it is a capital-intensive enterprise. Second, the system must be sized so that it has the capability to deliver natural gas to customers during extremely cold conditions (the "design day"), even though this intensity of usage only occurs a few days out of the year, if at all. This combination of capital intensity and sizing to meet peak day demands dictates the prominence of the "rate of use" customer demand characteristic when discussing the cause of cost incurrence.

Q. WHAT IS THE SIGNIFICANCE OF THE DESIGN DAY DEMAND?

A. It is necessary first and foremost to meet the simultaneous load of all customers. Furthermore, transmission plant is built to meet the highest simultaneous peak established by customers. Therefore, the class contribution to the coincident design day demand is the appropriate cost causative factor to be used in the allocation to customer classes of capital cost carrying charges of facilities.

Q. WHAT ARE THE GENERAL PRINCIPLES THAT SHOULD GUIDE AN ANALYST IN PREPARING A CLASS COST OF SERVICE STUDY?

A. Allocations of costs among customer classes establish the basis to measure existing revenue levels from such classes against the costs incurred by the Company to serve them. It also provides a basis for establishing actual tariff prices that will equitably recover the costs associated with providing service while minimizing inter-class subsidies that may otherwise occur. In brief, using the class cost of service analysis, the analyst allocates costs to cost causers. The costs that a utility incurs to serve customers are the transmission facilities to transmit the natural gas to town border stations, distribution facilities to distribute the natural gas to homes and businesses, general facilities that provide support to the first two functional groups and the related costs of operation.

Some analysts utilize energy use in a class cost of service to distribute capital costs to classes. These analysts rationalize this allocation methodology by pointing out that these facilities serve year-round load. This methodology gives no weight to the critical point that these facilities were sized and built to meet the highest demand that occurs during the winter period for Kansas Gas Service.

During the five winter months of November through March (the winter heating season), Kansas Gas Service can be expected to distribute more than half of its total annual throughout. This vividly illustrates that the use of a design day allocation methodology links cost incurrence and the cost causer for demand-related fixed costs.

Energy-related costs such as odorant vary with the actual throughput and should be spread to the various classes based on test year throughput. Costs such as services, regulators, meters, operation and maintenance of these facilities, customer accounting and other similar costs can be directly linked to given customer classes and should be allocated to and collected from those classes.

b. Results

Q. PLEASE DESCRIBE THE RESULTS OF THE CLASS COST OF SERVICE STUDY THAT YOU HAVE CONDUCTED.

A. Exhibit_____(PHR-5) contains a summary of the study for Kansas Gas Service. The first page of this exhibit contains a summary of the cost of service at existing rate levels, at proposed rate levels with equalized class rates of return and at proposed rate levels with the proposed class increases. Pages 2 through 4, respectively, of the exhibit provide all of the customer-, demand-, and commodity-related costs developed within the study at existing, proposed equalized and proposed rate levels.

Finally, page 5 summarizes the costs of service at existing, proposed equalized and proposed rate levels.

Q. WHAT ARE THE RESULTS OF YOUR CLASSIFICATION STUDY?

A. The total test-year revenues at existing rates for Kansas Gas Service are $209,396,105. Customer-related costs are $107,856,808 (52% of the total), demand-related costs are $53,251,620 (25%), and commodity-related costs are $48,287,676 (23%), as can be seen on Exhibit_____(PHR-5).

Q. WHAT ARE THE RESULTS OF YOUR ALLOCATION STUDY?

A. The results are summarized on the first page of Exhibit_____(PHR-5). Line 32 of the exhibit shows the returns by class. These returns show that SGS customers and KGSSD customers are contributing substantially more than the system average rate of return. The exhibit also shows on line 36 the amount by which each class' revenues must increase (or decrease) in order to achieve rate of return parity at the new rate levels.

Q. WHY ARE THESE AMOUNTS OF INTEREST TO THE COMMISSION?

A. One of the primary purposes of a class cost of service analysis is to identify interclass subsidies that may exist between the different classes of a natural gas distribution system so that steps can be made to eliminate them. The equal class rates of return increase identifies for the Commission the extent to which rates need to be adjusted so that <u>all</u> identified subsidies can be eliminated.

Q. WOULD YOU RECOMMEND THAT THE COMMISSION ADOPT A CLASS REVENUE DISTRIBUTION THAT RESULTS IN EQUAL CLASS RATES OF RETURN?

A. While I do believe that equal class rates of return should be an objective of any rate design study, there are other considerations (predominately "rate shock") that limit the overall level of increase that can be assigned to any class of customers at one time.

Q. WHAT DO YOU RECOMMEND?

A. I would propose a revenue distribution that generally moves the classes closer to rate of return parity, but provides no customer class with a rate decrease in the face of an overall Company increase. To that end, my proposed revenue distribution leaves the rate levels for SGS and KGSSD customers unchanged and assigns to all other customer classes approximately the same percentage increase in revenues. The results of this process are provided on line 44 of page 1 of Exhibit_____(PHR-5). The resulting class rates of return are shown on line 48 and the relative returns by class are provided on line 49. These can be compared to the existing class rates of return (on lines 32 and 33). Such a comparison confirms that this proposed revenue increase distribution would result in a movement toward class rate of return parity.

V. RATE DESIGN

Q. PLEASE DESCRIBE THE COMPANY'S RATE DESIGN PROPOSALS IN THIS CASE.

A. For most of its customer classes, the Company is proposing to continue with its traditional, two-part rate designs. This is the case for irrigation sales customers, small generator service customers, transportation customers and resale customers. In the case of RS and GS customers, however, the Company is proposing changes to its existing rate designs to provide customers with additional choices. I will discuss these two types of rate designs in turn.

a. Traditional Rate Designs

Q. WHAT ARE THE TRADITIONAL RATE DESIGNS YOU ARE PROPOSING TO RECOVER YOUR SUGGESTED REVENUE INCREASE DISTRIBUTION?

A. The traditional rate designs are summarized in Exhibit_____(PHR-6). This exhibit develops proofs of existing and proposed revenues and shows the rate components for the traditional rate designs that the Company is proposing in this case. These rate designs were developed using assumptions consistent with those used to allocate the revenue increase by class. Specifically, each class that is assigned an increase will see the same percentage increase to both the service charge component and the delivery charge component of the rate.

Q. YOU STATED ABOVE THAT THE COMPANY IS PROPOSING CUSTOMER CHOICE RATE DESIGNS FOR RS AND GS CUSTOMERS. WHY THEN DOES EXHIBIT_____(PHR-6) INCLUDE TRADITIONAL RATE DESIGNS FOR THESE CLASSES?

A. They are included because the traditional rate design provides an important starting point for the design of the customer choice rate designs. In the event the Commission does not accept the customer choice options for RS and GS customers, the rates shown on Exhibit___(PHR-6) represent the applicable rates to reflect the Company's increased cost of service.

b. Customer Choice Rate Designs

Q. HOW DO THE CUSTOMER CHOICE RATE DESIGNS COMPARE TO TRADITIONAL RATE DESIGNS?

A. The customer choice rate designs are a departure from existing rate designs in the sense that they attempt to collect more of the fixed costs of providing natural gas distribution service in fixed monthly charges to customers.

Q. Why is the company making such a proposal?

A. For two reasons. First, in focus groups conducted by the Company, customers have indicated a preference for choices in how they pay for natural gas delivery service. Second, economic considerations virtually dictate that Kansas Gas Service move to more rational rate designs.

Q. ARE TRADITIONAL RATE DESIGNS "IRRATIONAL?"

A. From an economics standpoint, yes. Kansas Gas Service, like every natural gas distribution utility, has three types of costs:

1. Customer-related costs – the costs that can be directly assigned to an individual customer (e.g., meters, services, and regulators)
2. Demand-related costs – the costs that vary according to the customer's peak demand (e.g., a portion of mains costs)
3. Commodity-related costs – the costs that vary with usage (e.g., gas costs and the cost of odorant).

When customer-related and demand-related costs are accorded rate treatment, they are fixed for 20-30 years or more. The only commodity-related costs that are billed as base rates are *de minimus.* Despite the high level of fixed *costs*, gas utility rate structures collect most of the resulting revenues through variable (volumetric) *charges.* As a result, there is a mismatch between cost-incurrence and cost recovery.

Q. BUT DOESN'T THE WEATHER NORMALIZATION ADJUSTMENT CLAUSE YOU DESCRIBE ABOVE, RECONCILE THE MISMATCH?

A. No. There has been a documented and long-term decline in usage per customer in the United States and on the Kansas Gas Service system in Kansas specifically that has placed additional pressure on Company earnings. This trend is not mitigated by the Company's WNA and the resulting pressure on earnings can lead to greater frequency of rate cases than would otherwise be the case.

Q. IN GENERAL, WHAT HAS BEEN THE TREND IN NATURAL GAS USAGE PER RESIDENTIAL CUSTOMER?

A. On February 11, 2000, the American Gas Association (AGA) published Patterns in Residential Natural Gas Consumption Since 1980. That report indicates that nationally, natural gas use per residential customer dropped 16 percent from 1980 to 1997 from 106 thousand cubic feet (Mcf)/year to 89 Mcf/year. The Midwest saw even more dramatic declines over this period of almost 18%, from 142 Mcf/year to 116 Mcf/year.

When the AGA updated its analysis and published the results in Patterns in Residential Natural Gas Consumption, 1997-2001, a similar pattern emerged: national consumption down an additional 6.4% to 83.5 Mcf per residential customer per year and Midwestern consumption down an additional 8.1% to 107 Mcf per residential customer per year.

Q. WHAT ARE THE CAUSES OF THIS DECLINE?

A. In order of importance, the AGA reports cite the following factors:

1. Space heating efficiency gains. Federal efficiency guidelines set the minimum efficiency of new natural gas furnaces at 78 percent, up from an average efficiency of 65 percent in 1980.
2. Water heating efficiency gains. Similarly, Federal water heater standards, which took effect in 1990, set the minimum efficiency factor of water heaters at .54, up from .50 during the 1980s.
3. Space heating market share loss. This was primarily a factor in warmer climates where heat pumps captured a significant share of the market.

4. Baseload appliance market share loss. The market shares of water heaters, cooking appliances and gaslights all declined, and were not off set by increased market shares of clothes dryers and gas logs.

5. Improved home energy efficiency. Not only were more energy efficient homes built, but older homes were retrofitted with insulation and storm doors and windows so that the thermal integrity of heated building shells was improved. In addition, the amount of heated floor space per residence declined.

6. Demographic changes. Population shifted to warmer climates and the number of people per household fell. While not specifically cited in the AGA reports, the number of people working outside of the home could also have contributed to these declines.

Q. ARE THESE SAME FACTORS AT WORK IN KANSAS?

A. They clearly are, and have manifested themselves in Kansas Gas Service's usage per residential customer figures. Since the last rate case in 2002, residential usage has dropped from 83.2 Mcf/year to 80.6 Mcf/year, a reduction of about 1% per year.

Q. HAVE THESE FACTORS "PLAYED THEMSELVES OUT" OR ARE THEY LIKELY TO CONTINUE TO AFFECT NATURAL GAS USAGE IN THE FUTURE?

A. While the impact of these factors will tend to lessen through time, it is clear that they will still influence natural gas consumption in the future. AGA estimates that an additional 10% reduction in residential usage per customer will occur between 2001 and 2020. (Forecasted Patterns in Residential Natural Gas Consumption, 2001-2020, September 21, 2004) The same factors will affect usage, but the reductions will occur "at a slower pace than experienced in the past two decades."

Q. ARE THE SAME TRENDS APPARENT AND SAME FACTORS AT WORK IN THE NON-RESIDENTIAL SECTORS?

A. Yes. As the AGA documented in Trends in the Commercial Natural Gas Market, October 23, 2002, use per commercial customer declined 18 percent nationally from 1979 to 1999. In the Midwest these declines were even more pronounced, reflecting reductions in commercial usage per customer of almost 27%.

Q. AREN'T THE IMPROVEMENTS IN ENERGY EFFICIENCY AND THE RESULTING REDUCTIONS IN USAGE PER CUSTOMER UNQUALIFIED GOOD NEWS?

A. There are certainly many positive aspects to this phenomenon. Natural gas consumption at the end-use level has become much more efficient and natural gas bills to consumers are lower than they otherwise would be. Furthermore, the reduction in usage has caused natural gas LDCs to reduce operations and maintenance expenses in order to maintain a level of earnings that will support their financial health. However, there are two not so obvious negatives associated with these rosy reports:

1. Because there is a mismatch between the "high fixed cost" cost structure faced by an LDC and the significant amount of revenues that is currently collected through volumetric charges, reductions in volumes do not necessarily translate into reductions in costs. Therefore, LDC finances have been unnecessarily stressed and pressure for rate relief has been greater than it would have been had rate structures been more closely aligned with cost structures.

2. It is not clear that all of the reductions in gas volumes that have occurred are in the best economic interests of society. To the extent that inefficient pricing has caused fuel switching that would not occur for underlying economic

reasons, what appears to be conservation is not, in the broader context of overall energy consumption.

Q. Has Kansas Gas Service suffered from these negatives in Kansas?

A. Certainly from the first one. As can be seen from the embedded cost of service study, approximately 75% of the Company's costs to serve its customers can be characterized as "fixed" in the short run, i.e., they are either customer-related or demand-related costs. By contrast, under current rates, about 60% of the Company's revenues are obtained through volumetric charges. Solely as a result of this mismatch between prices and cost incurrence, the Company has suffered financially.

It is because of this mismatch and its attendant consequences that the Company has proposed a bold solution: to collect the bulk of its fixed costs through fixed charges to customers. The purpose of this section of my testimony is to present and support that initiative.

Q. HOW WILL YOU DO THIS?

A. I will do this by first compiling the fixed costs by customer class from the class cost of service study. This provides an indication of the level of fixed costs that are inherent in the Company's cost structure. Next, I develop more cost-based rates using the cost of service study as a guide. Finally, I evaluate the resulting rates against ten attributes of a sound rate structure espoused by Professor James C. Bonbright in his seminal work, Principles of Public Utility Rates, and generally accepted as appropriate criteria by state regulatory authorities around the country.

i. Fixed Costs

Q. HOW DO YOU USE THE CLASS COST OF SERVICE STUDY IN THE DEVELOPMENT OF THE PROPOSED RATE DESIGNS?

A. The class cost of service study provides two insights that I use in the development of rates. First, the class rates of return can be compared to the overall return to determine those classes that are providing a higher or lower return than the system average. Those classes that are providing higher than system average rates of return are subsidizing those classes that are providing less than system average rates of return. This information provides guidance on how the requested rate increase should be allocated and was used in the recommended class revenue increase allocations described above.

Second, the fixed charges (customer- and demand-related costs) can be isolated from the class costs. This analysis can then be used to develop more cost-based rates than the Company currently offers.

Q. PLEASE DESCRIBE THE FIXED COSTS THAT YOU HAVE IDENTIFIED FROM THE CLASS COST OF SERVICE STUDY.

A. At the requested return of 8.8669%, the embedded class cost of service study develops an overall cost of service (excluding gas costs) of $282,696,893 (see page 5, line 22 of Exhibit_____(PHR-5)). Of this total, $123,283,121 or 44% of the total cost of service is classified as customer-related, or is incurred simply to serve customers (see page 2, line 24 of Exhibit_____(PHR-5)). The demand-related portion, or the amount that is classified according to the volumes of natural gas that customers require on the peak day is $80,429,753 (28% of the total, shown on page 3, line 22 of Exhibit_____(PHR-5)). Finally, the commodity-related portion, or those costs classified according to the amount of natural gas that customers consume annually is $78,984,019 (28% of the total, shown on page 4, line 24 of Exhibit_____(PHR-5)).

Q. IS THIS AN UNUSUAL RESULT?

A. No. Based on my experience, the finding that the bulk of the Company's non-gas costs are fixed is typical. Furthermore, support for this general conclusion can be found in publications of the National Association of Regulatory Utility Commissioners (NARUC). For example, the NARUC Manual on Gas Rate Design, August 6, 1981, shows the following functional breakdowns of a natural gas LDC's major expenses:

TABLE III

TYPICAL FUNCTIONAL BREAKDOWN – GAS SYSTEM

Production plant & purchased gas cost	D,E
Storage plant	D
Transmission plant	
Mains	D
Compressor stations	D
Distribution Plant	
Mains	D,C
Measuring & Regulating Stations	D,C
Services	C
Meters & Regulators	C
General plant	D,C
Customers' accounting & collecting expenses	C
Sales promotion expenses	D,C
Administrative & general expenses	D,C

(C = Customer Costs)
(D = Demand Costs)
(E = Energy Costs)

Source: NARUC Manual on Gas Rate Design, August 6, 1981, page 28.

As can be seen from this exhibit, the only commodity-related costs that are identified in the NARUC Manual are those related to the acquisition of natural gas. Thus, the only surprise from the Company's results is that any commodity-related costs have been identified at all, since the Company figures cited above specifically exclude natural gas costs.

Q. HOW WILL THESE RESULTS BE USED TO DEVELOP NEW RATE DESIGNS?

A. The development any rate design is more art than science and involves the balancing of competing objectives. For purposes of this rate design, I have attempted to balance three competing objectives:

1. Cost Basis – The key to this rate design proposal is a desire to more accurately match the Company's rate designs with the underlying cost basis for those rate designs. Thus, I pay particular attention to the cost of service components and attempt to match them to the proposed rate design as closely as possible.

2. Practical Considerations – The proposed rate designs must be capable of being implemented. This means that even though the Company's cost of service study has identified demand-related costs, it is not practical to implement a three-part rate design for the RS and GS customers with meters currently in the field.

3. Rate Impacts – Because the Company is attempting to move from a rate structure in which the components are not strictly based on the costs of service, there will be changes in the overall rate levels of customers who consume different amounts of natural gas. In general, as one moves toward rates that are more heavily weighted toward fixed charges, consumers who use lower amounts of natural gas will see bill increases relative to existing rate designs and consumers who use higher amounts of natural gas will see bill decreases relative to existing rate designs. Thus, it is important that the movement to more cost-based rate designs be done gradually so that significant rate shocks are avoided.

ii. The Proposed Rate Designs

Q. PLEASE DESCRIBE YOUR PROPOSED RATE DESIGN THAT BALANCES THESE COMPETING OBJECTIVES.

A. My proposed rate design can be summarized as follows:

RS Customers (Normalized Consumption)

Less than or equal to 80 Mcf per year:		
Service Charge:	$12.25	/customer /month
Delivery Charge:	$ 2.6631	/Mcf, plus cost of gas plus applicable charges
More than 80 Mcf per year:		
Service Charge:	$23.20	/customer /month
Delivery Charge:	$ 1.0205	/Mcf, plus cost of gas plus applicable charges

GS Customers (Normalized Consumption)

Less than or equal to 265 Mcf per year:		
Service Charge:	$23.35	/customer /month
Delivery Charge:	$ 2.8885	/Mcf, plus cost of gas plus applicable charges
More than 265 Mcf per year:		
Service Charge:	$56.05	/customer /month
Delivery Charge:	$ 1.4078	/Mcf, plus cost of gas plus applicable charges

Thus, this rate design has the effect of introducing a high usage level option (Option B) for the Residential class and the General Service class. It is initially proposed that customers whose weather normalized annual consumption is greater than 80 and 265 Mcfs per year, respectively, will be billed under the Option B rate which reflects prices whose service charges are significantly more (and whose commodity charges are significantly less) than the corresponding option of the smaller customers in these respective classes (Option A). Other than changes in the levels of the charges, the Option A rates for the smaller customers in each class will remain largely the same as the Company's traditional rates, relying on the same lower service charge, higher delivery charge structure as the existing rates.

Q. PLEASE DESCRIBE THE DEVELOPMENT OF THESE OPTIONS.

A. I began with the Company's class cost of service study and developed a single, two-part (a service charge and a delivery charge) rate for all residential customers and a single, two-part (a service charge and a delivery charge) rate for all general service customers. In both of the resulting residential and general service rates, service charges were comprised of the customer-related and demand-related costs by class identified in the Company's class cost of service study.

Q. WHY ARE YOU NOT SIMPLY PROPOSING THE RATE DESIGN YOU JUST DESCRIBED?

A. Because that rate structure, when applied to typical bills experienced in these classes, resulted in significant bill increases relative to the Company's traditional rate structure, particularly for smaller customers. Thus, while the rate structure just described would best match the costs of service identified by the Company and would clearly satisfy my practicality objective, it would not avoid significant rate shocks and would therefore violate my third objective. Because of this, I had to adopt a different approach to developing the proposed rate.

Q. AND HOW DID YOU DO THIS?

A. Recognizing that smaller users would receive the biggest increase from a rate design that more closely reflected cost of service, I decided to leave the smaller users alone to the extent possible. I also decided that, since larger customers will not face significant rate increase issues as a result of implementation of more cost-based rates, they would be billed at the full cost of service rates to the extent possible. The only question then left to answer was how would I distinguish between a smaller user (who would stay on the existing rate) and a larger user (who would be billed under the new, cost-of service based rate design).

Q. HOW DID YOU MAKE THAT DETERMINATION?

A. In effect, I let the competing rate designs make that decision for me. I did this by determining that level of annual consumption at which a consumer's bill would be equal under either tariff. For residential customers, I calculated this level to be approximately 80 Mcfs per year. For small commercial customers, this level is 265 Mcfs per year. Since consumption below these annual consumption levels results in lower bills under the Company's traditional tariff, this became my tariff proposal for the smaller customers. Conversely, since consumption above these annual consumption levels results in lower bills under my cost-based tariff, this became my tariff proposal for the larger customers.

Q. WERE YOU THEN DONE?

A. No. Because the rates applied to the volumes of the smaller customers do not fully collect the cost of service, the more customers that are billed on the traditional rate design, the more revenues need to be made up by other customers on the system. In other words, even under my proposed rate designs, the smaller customers are being subsidized. Thus, I had to determine the shortfall from these customers and which customers were going to pay for that subsidy.

Q. HOW DID YOU MAKE THAT DETERMINATION?

A. I decided to recover the shortfall through an equal, additional charge applied to all Mcfs. This appears to be the most equitable solution to this revenue shortfall problem.

Exhibit_____(PHR-7) summarizes the proposed rate designs and demonstrates how they more closely match the Company's underlying cost to serve these two classes.

Q. PLEASE DESCRIBE HOW THESE RATE DESIGNS MORE ACCURATELY MATCH THE COMPANY'S UNDERLYING COST OF SERVICE.

A. This can be seen on Exhibit_____(PHR-7). There are three basic sections to that exhibit. The first section is provided on lines 1 through 7 and shows the degree of correspondence between the Company's traditional proposed rate designs in this case and cost of service. Columns (A) and (B) list the components of the rates for residential and GS customers respectively. The remaining columns show revenues (columns (C) and (D)), cost of service (columns (E) and (F)), the difference between the revenues collected under the rate and the cost of service (columns (G) and (H)) and the percentage difference between the revenues collected under the rate and the cost of service (columns (I) and (J)).

Looking first at the performance of the traditional proposed rate design, it can be seen that there is a large divergence between the revenues it collects and the underlying cost of service by component part. Specifically, this rate design under-collects the residential fixed costs by approximately 90 percent and under-collects the GS fixed costs by approximately 140%. This under-collection is made up by significantly over-collecting volumetric costs by almost 70% for both classes.

This can be compared to the performance of the Full Cost of Service based rate on lines 10 through 14 of the exhibit. The agreement of this rate with the underlying cost of service is apparent from the absolute (columns (G) and (H)) and percentage (columns (I) and (J)) differences between revenues and costs for both classes.

As I discussed above, while the Full Cost of Service based rate matches costs very well and would therefore be the ideal if one were trying to send the best price signal to consumers, its implementation would result in a significant degree of rate shock. Therefore, I recommend that this rate be phased in, beginning with the rates provided in lines 20 through 26 of the exhibit. Lines 30 through 32 compare this phase-in rate with the underlying cost of service. From columns (G) through (J), it is apparent that this phase-in rate tracks costs much more closely that the traditional rate proposal. The difference between all of the rate components and the corresponding costs has been significantly reduced. Thus, it is clear that this rate proposal will do a significantly better job of providing consumers with the true cost consequences of their consumption decisions than will the Company's traditional rate design.

Q. CAN THESE RATES BE EASILY IMPLEMENTED?

A. Yes. Since the rate designs maintain the existing two-part structure (service charges and delivery charges), it is obvious that the rate designs can be implemented very simply. In addition, a significant advantage of these rate structures is that if a customer finds himself on a disadvantageous rate structure (the traditional one versus the cost of service based one or vice-versa), he can change without causing significant revenue erosion to the Company. The only restriction needs to be that, having chosen, customers must remain on one rate structure or the other for a full year. Otherwise, customers will choose the traditional rate designs in the summer and the cost-based rate designs in the winter.

Q. PLEASE DESCRIBE HOW THESE RATE DESIGNS AVOID SIGNIFICANT RATE SHOCK.

A. This is demonstrated in Exhibit_____(PHR-8). Lines 1 through 31 of the exhibit show the rate impacts of the Option A rates to the Company's traditional proposal for the range of weather-normalized consumption observed in the residential rate class. These ranges are provided in columns (A) and (B) of the exhibit. The number of customers whose consumption falls within these ranges is provided in column (C). Columns (D) through (H) of the exhibit calculate a typical bill for the extremes of each of the consumption ranges evaluated under the Company's traditional rate design. Thus, line 6 of the exhibit shows that, under the traditional rates, a residential customer who consumes 51 Mcfs per year (column (A)) will have an annual bill, excluding gas cost, of $269.05 (column (G)). Similarly, a residential customer who consumes 60 Mcfs per year (column (B)) will have an annual bill of $290.59 (column (H)). Obviously, all of the 79,970 customers (column (C)) whose annual consumption falls within this volume range will also see bills within this dollar range.

Columns (I) through (M) provide the same information for the Company's Option A rate proposal. The absolute monthly bill impacts are shown by range in columns (N) and (O) and the percentage bill impacts are shown in columns (P) and (Q).

Q. WHAT ARE THOSE BILL IMPACTS?

A. The bill impacts are shown to be modest (less than $2 per month) for all customers evaluated. The increase is spread relatively evenly across the residential class. Larger customers receive a slightly larger increase than smaller customers.

Q. WHAT ARE THE BILL IMPACTS FROM YOUR OPTION B COST-BASED RATE DESIGN PROPOSAL?

A. On an annual basis, these impacts are shown for the residential class on lines 37 to 71 of Exhibit_____(PHR-8). Because higher usage customers provide a subsidy to small customers relative to cost of service under the Company's traditional rate design, moving them closer to the cost of service, as my proposal does, actually reduces their bills, thereby obviating any concern about rate shock for these customers. For example, over 10% (33,984+23,923) of the Company's residential customers consume between 101 and 120 Mcfs per year of normalized annual consumption as shown on lines 51 and 52 of the exhibit. Customers in this group will receive rate reductions relative to the Company's traditional rate design of between

$0.60 and $2.78 per month. This can be found on lines 51 and 52, columns (N) and (O) of the exhibit.

Q. ARE THERE ANY OTHER FEATURES OF THESE RATES THAT MAKE THEM PARTICULARLY DESIRABLE?

A. Yes. Because of the way these two rates are designed to work together, massive migration of customers from one rate to the other is not likely. This can be seen by comparing the annual bills for two customers near the breakpoint between the rates. This is shown on lines 77 to 111. Consider a residential customer who uses exactly 80 Mcfs per year. Under the Option A rate, his annual bill is $360.05 (line 88, column (H) of Page 1 of 4 of Exhibit_____(PHR-8)). This is slightly more than the customer's bill under the cost-based rate design of $360.04 (line 88, column (M)). If the customer's usage changes by 10 Mcfs per year, there is only about a $1 difference in his monthly bill between the customer's most economical rate schedule and the alternative ($350.86 versus $336.08 and $386.68 versus $370.25). Thus, at the margin, it makes little difference in his annual bill what rate schedule he is on. As a result, bills won't change dramatically and the Company's revenues will not change radically as a result of rate shifts.

Because of this feature of the rate design, as long as a customer is willing to agree to stay on one rate or the other for one year, the choice of which rate to be billed under can be the customer's.

Q. WOULD YOU THEN MAKE THE CHOICE VOLUNTARY?

A. Not initially. I believe that customers will be understandably nervous about trying a new rate design, even one that is likely to save them money. Thus, I would recommend that the Company make the initial selection for the customer based on the rate that appears to be the most economical and then allow customers to switch if they believe the other rate will be better, due to changed circumstances or personal preferences.

Q. PLEASE DESCRIBE THE REMAINING PAGES OF EXHIBIT_____(PHR-8).

A. Page 2 duplicates these calculations for typical winter bills for the residential class, while pages 3 and 4 contain a summary of the calculations for the general service class. The information contained therein tells a similar story, i.e., modest rate impacts.

Q. PLEASE DESCRIBE HOW THESE RATE DESIGNS LESSEN THE COMPANY'S RISK OF COLLECTING THE LEVEL OF REVENUES NEEDED TO EARN ITS AUTHORIZED RETURN.

A. Under the Company's traditional rate design proposal, the Company will collect only 41% of the cost of service for residential and small commercial customer classes through fixed charges. Under this proposal, that percentage increases to 56%. Since customer-related revenues are less subject to the vagaries of usage declines and weather than commodity-related revenues, this rate design more closely aligns the Company's rate structure with its cost structure.

Q. HAVE YOU PREVIOUSLY PROPOSED THIS RATE DESIGN?

A. Yes. I proposed this rate design to the KCC in Docket No. 05-AQLG-367-RTS. I also proposed this rate design to the Oklahoma Corporation Commission in Cause No. PUD 200400610.

Q. DID THE KCC APPROVE THE RATE DESIGN PROPOSAL IN THAT CASE?

A. The case was settled prior to hearing with an alternative rate design so the Commission never ruled on the merits of the proposal. Although Staff witness Myrick filed testimony in opposition to the rate, she acknowledged the merit in some of the arguments I raised in support of the rate design and stated:

"A major change in rate structure such as the one proposed should be based on a single CCOS that indicates the cost of serving each subgroup of customers and the resulting rate of return for existing and proposed rates. It is imperative that, if the Company considers the classification of expenses and the allocation of demand-related expenses to be significant, it provides qualitative information on system load factor as well as class monthly coincident and non-coincident peaks." Myrick Direct Testimony, Case No. 05-AQLG-367-RTS, Page 14, Lines 11-16.

I have corrected this deficiency in this filing. Exhibit_____(PHR-9) shows the Company's class cost of service with Residential and General Service Option A and Option B customers separately identified. Exhibit_____(PHR-10) provides the proof of revenue for these new rate designs.

Q. DID THE OKLAHOMA CORPORATION COMMISSION APPROVE THE RATE DESIGN?

A. Yes, and the rate design has been operating since August 2005 in the Oklahoma Natural Gas service territory in Oklahoma.

VI. EVALUATION OF THE PROPOSED RATE DESIGNS

Q. HOW WILL YOU EVALUATE THE RATE DESIGNS INTRODUCED IN THE PREVIOUS SECTION?

A. I will evaluate the rate design proposals by applying a set of objective rate design criteria to the current, volumetric-based tariffs and the new, fixed cost-based rate designs in turn. The rate design criteria I use for this purpose are those developed by Bonbright.

Q. WHAT ARE BONBRIGHT'S ATTRIBUTES OF A SOUND RATE STRUCTURE?

A. In his seminal work, Principles of Public Utility Rates, Professor Bonbright introduces ten attributes of a sound rate structure. Bonbright characterizes these attributes as "desireable characteristics of utility performance that regulators should seek to compel through edict," and groups the attributes into those related to revenues, those related to cost, and those related to practicality.

The three revenue-related attributes are:

1. Effectiveness in yielding total revenue requirements under the fair-return standard without any socially undesireable expansion of the rate base or socially undesireable level of product quality and safety.

2. Revenue stability and predictability, with a minimum of unexpected changes seriously adverse to utility companies.

3. Stability and predictability of the rates themselves, with a minimum of unexpected changes seriously adverse to the ratepayers and with a sense of historical continuity. Bonbright at 383.

The five cost-related attributes are:

4. Static efficiency of the rate classes and rate blocks in discouraging wasteful use of service while promoting all justified types and amounts of use:
   (a) in the control of the total amounts of service supplied by the company;
   (b) in the control of the relative uses of alternative types of service by ratepayers (on-peak versus off-peak service or higher quality versus lower quality service).

5. Reflection of all of the present and future private and social costs and benefits occasioned by a service's provision (i.e., all internalities and externalities).

6. Fairness of the specific rates in the apportionment of total costs of service among the different ratepayers so as to avoid arbitrariness and capriciousness and to attain equity in three dimensions: (1) *horizontal* (i.e., equals treated equally); (2) *vertical* (i.e., unequals treated unequally); and (3)

anonymous (i.e., no ratepayer's demands can be diverted away uneconomically from an incumbent by a potential entrant).

7. Avoidance of undue discrimination in rate relationships so as to be, if possible, compensatory (i.e., subsidy free with no intercustomer burdens).

8. Dynamic efficiency in promoting innovation and responding economically to changing demand and supply patterns. Bonbright at 383, 384.

The final two attributes are related to practicality:

9. The related, practical attributes of simplicity, certainty, convenience of payment, economy in collection, understandability, public acceptability, and feasibility of application.

10. Freedom from controversies as to proper interpretation. Bonbright at 384.

Q. HOW WILL YOU USE THESE ATTRIBUTES IN YOUR REVIEW?

A. I apply these attributes to the proposed rate design changes to show that the proposed changes better reflect a sound rate structure than existing rate designs.

<u>**a. Effectiveness In Yielding Total Revenue Requirements**</u>

Q. TURNING FIRST TO THE REVENUE-RELATED ATTRIBUTES OF DESIRABLE RATE STRUCTURES, HOW DO THE COMPANY'S PROPOSED RATE DESIGNS COMPARE TO THE COMPANY'S EXISTING RATE DESIGNS?

A. The Company's proposed rate designs are superior to its existing rate designs when measured against each of the three revenue-related criteria established by Bonbright.

Q. PLEASE EXPLAIN.

A. The first evaluation I have performed measures the effectiveness of the rate structure in yielding total revenue requirements under the fair-return standard without any socially undesirable expansion of the rate base or socially undesirable level of product quality and safety. Consider first the rate structure's ability to yield total revenue requirements under the fair-return standard. The Company's proposed rate designs will clearly better satisfy this objective than the Company's current rate designs for three reasons. First, as I discussed earlier, the Company's class cost of service study demonstrates that 80% of the costs of serving customers are fixed, while 40% of those costs are collected through delivery charges. Since natural gas usage has historically declined and is forecasted to continue to decline, existing volumetric-based rate designs will increasingly under-collect Commission-authorized levels of revenues and put financial pressure on the Company.

The fact that volumes and revenues are weather-sensitive also argues in favor of the Company's proposal. This is true even though the current designs incorporate a Weather WNA clause because, under the WNA, the incurrence of cost (or the lack of it) and the collection of revenue to compensate the utility for that cost (or its return) are separated by time.

Q. ISN'T THERE MORE TO THE FIRST ATTRIBUTE THAN THE SIMPLE ABILITY TO RECOVER COST?

A. Yes. The two additional features of this attribute are: an ability of the rate to collect the desired level of revenues without any socially undesirable expansion of the rate base and an ability of the rate to collect the desired level of revenues without providing a socially undesirable level of product quality and safety. In either case, one is concerned with sending a price signal that is too low so that either wasteful consumption occurs or insufficient revenues are generated to allow the Company to maintain appropriate quality of service levels.

Q. HOW CAN YOU DETERMINE WHETHER A PARTICULAR RATE DESIGN WILL LEAD TO SOCIALLY UNDESIRABLE LEVELS OF CONSUMPTION?

A. There are two factors that one can consider when making such a determination: the Company's cost of providing service and the incentives that are provided to the Company to promote consumption or conservation.

Q. WHAT DOES THE COMPANY'S COST OF SERVICE TELL US ABOUT WHETHER THE NEW RATE DESIGNS WILL PROMOTE SOCIALLY UNDESIRABLE LEVELS OF CONSUMPTION?

A. To answer this question, there are two interrelated factors to consider: the degree to which the components of the rate structure reflect the components of the Company's costs and the level of intra- and inter-class subsidization inherent in that rate structure.

As discussed above, Exhibit_____(PHR-7) compares the level of revenues collected from fixed and variable components of each rate with the corresponding fixed and variable costs as identified by the Company's class cost of service study filed in this case. As can be seen, even the Company's proposed rate design, which moves to correct some of this deficiency, over-collects the variable costs in the residential and small commercial classes. There is a corresponding under-collection of fixed costs in both of these classes to compensate.

These differences become important when we consider the level of intra-class subsidization inherent in the current rate designs. To determine the level of subsidization, I have calculated the average consumption associated with each rate class as shown on Exhibit_____(PHR-11). With existing rate designs, any customer in that class who consumes greater than the average amount is subsidizing those consumers who consume less than the average amount. I have calculated this level of subsidization for the consumption ranges experienced in the class and I also provide this information on Exhibit_____(PHR-11). Thus, for example, residential average use per customer is approximately 80 Mcfs per year. The average consumption of residential customers who consume less than this amount (low use residential customers) is about 59 Mcfs per year. Based on the Company's proposed rate designs and its estimated cost of service, the average low use residential customer receives a subsidy of $34.75 per year. This subsidy is provided by the other customers on the system who consume, on average, 114 Mcfs per year and pay a subsidy, on average, of $54.63 per year. Except for those rare few customers who consume the class average amount of natural gas, each and every residential consumer is either receiving or providing a subsidy.

Because of the diversity in the class, the subsidies observed in the small commercial class are even more pronounced. There, low use customers receive an annual subsidy of $250.68. However, the larger users provide an extremely large subsidy of $626.07 per customer per year to the other users in the class.

Q. HOW CAN YOU DETERMINE WHETHER A PARTICULAR RATE DESIGN WILL LEAD TO SOCIALLY UNDESIRABLE LEVELS OF PRODUCT QUALITY AND SAFETY?

A. For purposes of responding to this question, I assume that the level of revenues associated with the Company's authorized return is the level of revenues that corresponds to a socially desirable level of product quality and safety. In other words, when the Company earns its authorized return, it is earning revenues that enable it to maintain a socially desirable level of product quality and safety.

Q. WHAT THEN DOES AN ANALYSIS OF THE COMPANY'S COSTS TELL US ABOUT THE COMPANY'S CURRENT RATE DESIGNS?

A. This analysis demonstrates that there are subsidies in the Company's current rate designs such that low users are encouraged to consume more than economically efficient levels and large users are encouraged to consume less than the economically efficient level.

Q. BUT ISN'T THIS A GOOD THING? SHOULDN'T THE COMPANY'S RATE STRUCTURES ENCOURAGE LOW USERS TO USE MORE AND HIGHER USERS TO USE LESS?

A. In theory, yes. However, from a practical standpoint, this is not necessarily the case. Consider, for example, a low use customer who uses natural gas solely for cooking. The Company maintains the same infrastructure for that customer as it does for the space heating and water heating customer, but the cooking customer pays for only a fraction of that infrastructure. Thus, the cooking-only customer receives a significant subsidy from all other customers on the system.

Under current rate structures, the only way for the low use customer to compensate the Company for the infrastructure it has installed to serve the low use customer is to use more natural gas. This can be accomplished in two ways. First, the customer can use existing appliances more intensively, but it is unlikely that the customer will cook more meals or dry more clothes simply because the price is low. Thus, the only realistic action that a low use customer can take is to install more natural gas using appliances.

But now consider what happens under the Company's existing rate structures after this change: the one-time low usage customer, who would now, in all likelihood, be a space-heating customer, now provides the subsidy. Thus, the impact of the Company's current rate structures is to (uneconomically) encourage low-use customers to come on and stay on the system and to discourage high usage/space heating customers from coming on the system, forcing them instead to choose alternative, and potentially less economically efficient, energy sources.

Q. SINCE YOUR PROPOSED RATE DESIGN IS SO HEAVILY DOMINATED BY SERVICE-RELATED CHARGES, WILL IT DISCOURAGE THE COMPANY FROM PROMOTING ECONOMICALLY EFFICIENT CONSERVATION?

A. No. A rate structure that is dominated by customer-related charges will actually provide stronger incentives for the utility to promote conservation than will a rate structure that relies heavily on volumetric charges. Furthermore, because the charges better match the costs of providing service, consumers receive a more accurate price signal of the consequences of their consumption decisions to use more or to use less.

Q. WHY WILL A RATE STRUCTURE THAT IS DOMINATED BY CUSTOMER-RELATED CHARGES PROVIDE STRONGER INCENTIVES FOR THE UTILITY TO PROMOTE CONSERVATION THAN A RATE STRUCTURE THAT RELIES HEAVILY ON VOLUMETRIC CHARGES?

A. Under a traditional, volumetric-based rate, utilities must increase consumption to maintain their financial health. This is particularly true given the persistent declines in usage per customer that I discussed previously. Rate structures such as the one that I propose here provide a stronger incentive for utilities to promote conservation because they "decouple" the utility's volumetric sales from its profitability. Thus, the utility is not penalized in the form of decreased earnings for encouraging the efficient use of natural gas.

Q. HAVE OTHER REGULATORY AUTHORITIES RECOGNIZED THIS DISINCENTIVE?

A. I believe that regulators have long recognized this inherent defect in traditional rate designs and have recently begun to adopt regulatory policies to overcome this disincentive. For example, in 2003 the Oregon Public Utility Commission approved a "conservation tariff" for Northwest Natural Gas Company "to break the link between an energy utility's sales and its profitability, so that the utility can assist its customers with energy efficiency without conflict." The conservation tariff seeks to do that by using modest periodic rate adjustments to "decouple" recovery of the utility's authorized fixed costs from unexpected fluctuations in retail sales. (See Oregon PUC Order No. 02-634, Stipulation Adopting Northwest Natural Gas Company Application for Public Purpose Funding and Distribution Margin Normalization (September 12, 2003).

In California, natural gas distribution utilities have a long tradition of investment in energy efficiency services, including those targeting low income households, and the Commission is now considering further expansion of these investments along with the creation of performance-based incentives tied to verified net savings. California also pioneered the use of modest periodic true-ups in rates to break the linkage between utilities' financial health and their retail gas sales, and has now restored this policy in the aftermath of their industry restructuring experiment.

Also consistent with the notion that traditional ratemaking discourages natural gas utilities from promoting conservation, Southwest Gas Company received an order from the California PUC in March 2004 that authorizes it to establish a margin tracker that will balance actual margin revenues to authorized levels. In Maryland, Washington Gas and Baltimore Gas and Electric are now both operating under Revenue Normalization Adjustment Clauses, which collect "lost margins" from their customers as a result of declining usage, regardless of the cause. These types of mechanisms are becoming increasingly common.

Q. DO OTHER INDUSTRY GROUPS RECOGNIZE THIS DISINCENTIVE?

A. Yes. In July 2004, the American Gas Association and the Natural Resources Defense Counsel issued a joint statement to the National Association of Regulatory Commissioners that was intended to identify "ways to promote both economic and environmental progress by removing barriers to natural gas distribution companies' investments in urgently needed and cost-effective resources and infrastructure," and encourage regulators to consider "innovative programs that encourage increased total energy efficiency and conservation in ways that will align the interests of state regulators, natural gas utility company customers, utility shareholders, and other stakeholders." The primary problem that the Joint Statement identifies is what it refers to as the "Energy Efficiency Problem," under which utilities are "penalized" for aggressively promoting energy efficiency. According to the Statement, the penalty results from the same mismatch of (fixed) costs and (volumetric) rates that I have identified earlier for Kansas Gas Service:

> The vast majority of the non-commodity costs of running a gas distribution utility are fixed and do not vary significantly from month to month. However, traditional utility rates do not reflect this reality. Traditional utility rates are designed to capture most of approved revenue requirements for fixed costs through volumetric retail sales of natural gas, so that a utility can recover these costs fully only if its customers consume a minimum amount of natural gas (these amounts are normally calculated in rate cases and generally are based on what consumers consumed in the past). Thus, many states' rate structures offer – quite unintentionally – a significant financial disincentive for natural gas utilities to aggressively encourage their customers to use less natural gas, such as by providing financial incentives and education to promote energy-efficiency and conservation techniques.
>
> When customers use less natural gas, utility profitability almost always suffers, because recovery of fixed costs is reduced in proportion to the reduction in sales. Thus, conservation may prevent the utility from recovering its authorized fixed costs and earning its state-allowed rate of return.

This statement enjoyed broad support and was also endorsed by the Alliance to Save Energy and the American Council for an Energy Efficient Economy. In addition, NARUC endorsed this rate design at its 2005 Fall Meeting in Palm Springs, CA:

> **RESOLVED**, That the Board of Directors of NARUC encourages state commissions and other policy makers to consider in their review

innovative rate designs including "energy efficient tariffs" and "decoupling tariffs" (such as those employed by Northwest Natural Gas in Oregon, Baltimore Gas & Electric in Maryland, Washington Gas in Maryland, Southwest Gas in California, and Piedmont Natural Gas in North Carolina), "fixed-variable" rates (such as that employed by Northern States Power in North Dakota, and Atlanta Gas Light in Georgia), **"customer choice options" (such as that approved in Oklahoma for Oklahoma Natural Gas),** and other innovative proposals and programs that may assist, especially in the short term, in promoting energy efficiency and energy conservation and slowing the rate of growth of natural gas; *and be it further resolved* (emphasis added)

Q. ARE YOU SAYING THAT THE COMPANY WILL ACTIVELY PROMOTE CONSERVATION IF THIS RATE STRUCTURE IS IMPLEMENTED AS PROPOSED?

A. It is clear that the Company has no incentive to do so, and is therefore highly unlikely to do so, under its traditional rate designs. With my proposed rate design, the Company should be less reluctant to actively promote conservation.

Q. YOU MENTIONED IN AN EARLIER ANSWER THAT YOUR PROPOSED RATE DESIGN WILL ALSO PROVIDE CONSUMERS WITH A MORE ACCURATE PRICE SIGNAL OF THE CONSEQUENCES OF THEIR CONSUMPTION DECISIONS TO USE MORE OR TO USE LESS. WHY IS THIS IMPORTANT?

A. There are those who believe that less use of natural gas is an unqualified good thing. However, as an economist, I am trained to believe that conservation for conservation's sake is not the answer. It is the job of a rate structure to provide the correct price signal. Consumers can then use the cost information contained in the rate and make consumption tradeoffs between the cost of energy and the costs of durable goods to make economically efficient consumption decisions, which may even result in more consumption of natural gas. In my opinion, signaling consumers that the consumption of more distribution service has significant cost consequences is misleading and unwise when all cost bases for all economic time horizons indicate this not to be the case.

Q. HOW WILL YOUR PROPOSED RATE DESIGN PROMOTE CONSERVATION BY OPTION B CUSTOMERS?

A. The Company's proposed rate designs still bill gas costs through the COGR so that over 75% of charges to residential and general service customers are billed on a volumetric basis. Thus, Option B customers who engage in successful conservation activities still receive a substantial benefit in the form of reduced gas costs.

Q. HOW WILL YOUR PROPOSED RATE DESIGN PROMOTE CONSERVATION BY OPTION A CUSTOMERS?

A. Not only do they receive a substantial reward for conserved volumes in the form of reduced gas costs, but they also receive a non cost-based premium for all natural gas saved as a result of successful conservation activities.

b. Revenue Stability And Predictability

Q. WHICH OF THE RATE STRUCTURES PROVIDES MORE STABLE AND PREDICTABLE REVENUES FOR KANSAS GAS SERVICE?

A. The customer choice rate designs. As discussed above, revenue stability and predictability will be enhanced under my proposed rate design for two reasons. First, it better reflects cost causation so that as volumes change as a result of conservation, efficiency gains or warm weather, the revenues and costs will be more synchronized. Second, seasonal revenues will better match the seasonal costs. This is a decided advantage over the Company's WNA since, under the WNA, there is at least a one-season time lag between cost incurrence and revenue collection.

Q. DO YOU BELIEVE THAT THIS INCREASE IN REVENUE STABILITY SHOULD BE REFLECTED IN AN ROE ADJUSTMENT FOR THE COMPANY?

A. No. There are at least six reasons why it is not appropriate to impose such a penalty on the Company:

1. Comparable companies used to determine ROE already incorporate measures to mitigate risk. Therefore, to not allow some sort of risk mitigation will penalize Kansas Gas Service by not affording it risk protection, but awarding it an ROE that assumes Kansas Gas Service already has it.

2. ROE cannot be measured precisely enough to reflect the impact of ROE reduction from these measures (i.e., the ROE band is generally wider, +/-50 basis points, than any reduction to ROE ever suggested by any party). Therefore, any ROE impact may already be reflected in the allowed ROE.

3. No one has been able to develop a defensible measure of the impact that revenue decoupling has on ROE. And, it could be positive (less revenue risk) or negative (the uncertainty associated with a new rate design). Therefore, any adjustment that the Commission makes is arbitrary and could in fact be exactly the opposite of what should be done.

4. Any impact from the new rate design will not be immediately felt and is therefore too removed from the test year to be reflected in current rates. The Commission would be violating its own practices by going well beyond the test year for a speculative adjustment if it makes an adjustment for the rate design. When the impacts are known, they will be reflected in an upcoming test year's data and can be incorporated at that time. (This was FERC's rationale when it approved SFV rate designs in Order No. 636.)

5. Customers will see benefits from the rate design (more stable bills, less risk and bills for the delivery of natural gas that do not vary by weather and other factors) unless there is a cost associated with those factors.

6. Even if this rate design were to lead to reduced risk for Kansas Gas Service, there is broad support by many disparate groups for the notion that to reflect an adjustment for that is bad public policy. As indicated in the Joint Statement:

> "Proposals by utilities to decouple revenues from both conservation-induced usage changes and variations in weather from normal have sometimes been characterized by utilities as attempts to reduce utilities' risk of earning their authorized return. The result of these rate reforms, in this regulatory view, should be a lower authorized return. *But reducing authorized returns would penalize utilities for socially beneficial advocacy and action, including mechanisms that minimize the volatility of customer bills.*" Joint Statement at 3, emphasis added.

<u>c. Rate Stability And Predictability</u>

Q. WHICH OF THE RATE STRUCTURES PROVIDES MORE STABLE AND PREDICTABLE RATES FOR KANSAS GAS SERVICE'S CUSTOMERS?

A. Rate stability and predictability are often referred to as rate continuity. In the context of this rate proposal, there are two dimensions to rate continuity. The first is the degree to which rates remain stable and predictable as they are being implemented. Clearly, because the introduction of any new rate design leads to different rates, there is an element of rate discontinuity, simply by virtue of the fact that rates themselves have changed. However, as described in the previous section of my testimony, the new rate designs have been developed so as to produce the least amount of negative customer impact in the form of significant bill increases.

The second dimension to rate continuity is the degree to which rates remain stable and predictable after they are implemented. In this case, the new rate designs are vastly superior to the existing rate designs. In addition, under the traditional rate design, bills for natural gas delivery service are the highest in the coldest winters, when natural gas prices are also likely to be higher. Thus, after implementation, not only will my proposed rate designs be more stable and more predictable for customers, but they could also produce additional benefits in the form of lower arrearages and less disconnects.

d. Static Efficiency

Q. TURNING NOW TO THE COST-BASED ATTRIBUTES, WHAT DOES THE STATIC EFFICIENCY ATTRIBUTE REQUIRE?

A. The static efficiency attribute requires that customers receive a cost-based price signal. This in turn requires that the price includes all costs, but no "extra" costs such as are imposed when a subsidy is extracted, and no "discounts" such as are provided when a subsidy is received. In order to satisfy this rate design attribute, it is necessary to eliminate three kinds of subsidies: interclass, intra-class and seasonal.

Q. WHY IS IT IMPORTANT THAT CUSTOMERS RECEIVE A PRICE SIGNAL FREE FROM SUBSIDIES?

A. Those groups that are receiving subsidies are receiving service at less than cost and will therefore engage in wasteful consumption. Conversely, those groups that are providing the subsidies (i.e., paying rates that result in a return to the Company greater than the system average return) will consume less than their economically efficient level of consumption. This has efficiency consequences for all related economic sectors such as electricity and durable goods. In this context, the "groups" we are concerned with are customer classes (to measure interclass subsidies), customers who consume different amounts of energy within the same class (to measure intra-class subsidies) and customers who have different seasonal load patterns within the same class (to measure seasonal subsidies).

Q. WHICH OF THE RATE DESIGNS BETTER REDUCES INTERCLASS SUBSIDIES?

A. Neither. The Company has done a good job at keeping such subsidies at a minimum as demonstrated by the class returns calculated from the cost of service study. Since my proposed rate designs continue this practice, both of the rate designs at issue here will satisfy this attribute of a sound rate structure.

Q. WHICH OF THE RATE DESIGNS IS BETTER AT ELIMINATING INTRA-CLASS SUBSIDIES?

A. Referring back to Exhibit_____(PHR-11), it is clear that my rate proposal in this case will better eliminate the intra-class subsidies inherent in the traditional, volume-based rate structure that the Company currently has in place.

Q. WHICH OF THE RATE DESIGNS FARES BETTER FROM THE STANDPOINT OF ELIMINATING SEASONAL SUBSIDIES?

A. Exhibit_____(PHR-12) calculates the degree of seasonal subsidy in the competing rate structures in this case. The average winter consumption of residential customers is about 58 Mcfs per year. Based on the Company's proposed rate designs and its estimated cost of service, the average residential customer provides a subsidy in the winter of $39.71 per year. In other words, residential consumers are paying more for the delivery of natural gas in the winter than their cost of service. The opposite situation prevails in the summer when customers receive a subsidy, on average, of about the same amount. This analysis demonstrates another flaw in the current rate designs that is corrected by my proposal: consumers are paying unnecessarily high winter bills for the distribution of natural gas at just the time when they need the most relief from higher bills.

Again because of the diversity in the class, the subsidies observed in the general service class are even more pronounced. These customers pay a non-cost-based premium of about $150 in the winter. My proposed rate structures reduce these subsidies for both classes.

Q. BESIDES ELIMINATING SUBSIDIES, ARE THERE OTHER RATE DESIGN FEATURES THAT ARE REQUIRED BY THE STATIC EFFICIENCY ATTRIBUTE?

A. Yes. The rate design must discourage wasteful use and encourage all justified types and amounts of use. This attribute requires first that the rate design provide an economically efficient price signal. As demonstrated above, my proposed rate designs better match the costs of providing service than the Company's traditional rate designs and are therefore better able to provide such a price signal. This attribute also requires that the Company be provided with the proper financial incentives to the extent market interventions are desired to promote conservation of natural gas. Again, the discussion above indicates that, to the extent such interventions are desired, my proposed rate designs will provide the Company with better incentives to make those interventions without financial penalty.

Q. YOU INDICATE ABOVE THAT THE STATIC EFFICIENCY ATTRIBUTE ALSO REQUIRES THAT THE RATE PROVIDE THE PROPER PRICE SIGNAL FOR CONSUMERS TO CHOOSE BETWEEN HIGHER QUALITY AND LOWER QUALITY SERVICE. WHICH OF THE COMPETING RATE DESIGNS BETTER SATISFIES THIS FEATURE OF THE ATTRIBUTE?

A. Since the classes for which I have proposed the alternative rate designs do not have lower quality services available to them, neither of the competing rate designs will influence the economic decision to transport or to take interruptible service.

e. Incorporation of Internalities and Externalities

Q. WHAT ARE INTERNALITIES AND EXTERNALITIES?

A. They are effects on one party that emanate from the action of another party. When the effect is positive, an internality has been said to have been created; when negative, an externality. In the context of energy usage, externalities associated with pollution are often cited as being particularly important.

Q. WHY ARE THEY IMPORTANT IN THE RATE SETTING PROCESS?

A. Externalities are important in the rate-setting process because they have a cost and they impose that cost on the non cost-causer. Thus, the cost of the consumption decision to the consumer is understated by the value of the externality. When costs are understated (or over-stated) economically efficient decision making is thwarted and too much (or too little) consumption occurs.

Q. WHICH OF THE COMPETING RATE DESIGNS BETTER CAPTURES INTERNALITIES AND EXTERNALITIES?

A. Because both rate designs are designed to recover the same level of revenues, both reflect an equal amount of internalities and externalities. However, the ability of my proposed rate design to provide better incentives to the utility to encourage energy efficient investments (thereby implicitly recognizing whatever pollution externalities might exist) makes it a better rate design.

<u>f. Fairness</u>

Q. WHAT DOES THE FAIRNESS ATTRIBUTE REQUIRE?

A. The fairness attribute requires that rates be equitable. Bonbright addresses three dimensions of equity: horizontal, vertical, and anonymous.

Q. WHAT DOES HORIZONTAL EQUITY REQUIRE?

A. Horizontal equity requires that equals be treated equally. Specifically, it requires that if there are two consumers who take the same quality of service at the same level, they pay the same.

Q. WHAT IS VERTICAL EQUITY?

A. Vertical equity is a measure of fairness that requires that unequals be treated differently. Consistent with the discussion from above, it requires that if two consumers take service that costs the utility different amounts to provide, then they should pay something different for that service.

Q. WHAT IS ANONYMOUS EQUITY?

A. Anonymous equity is another concept of fairness that requires that no ratepayer's demands be diverted away uneconomically from the incumbent supplier. This is particularly relevant for natural gas companies such as Kansas Gas Service, since natural gas has readily available substitutes for each of its end-uses.

Q. HOW DO THE CANDIDATE RATE DESIGNS PERFORM AGAINST THESE EQUITY CRITERIA?

A. To the extent that my proposed rate design is better at eliminating subsidies of all types and to the extent that my rate design more accurately reflects the costs of service, it is clear that my proposed rate design will be fairer than Kansas Gas Service's traditional rate design.

g. Avoidance of Undue Discrimination

Q. WHAT IS REQUIRED BY THE AVOIDANCE OF UNDUE DISCRIMINATION ATTRIBUTE?

A. The avoidance of undue discrimination attribute requires that each customer class pay its fair share of costs and no more. Specifically, it requires that there be no interclass, intra-class and seasonal subsidies. As I have shown above, each of these is significantly reduced under the Company's proposals.

Q. IS THERE SOME DEGREE OF DISCRIMINATION THAT MAY BE APPROPRIATE IN THE RATE SETTING PROCESS?

A. Some argue that price discrimination to benefit low-income consumers is appropriate. For example, Bonbright, in his discussion of the desirable rate design criteria and how they relate to the basic objectives of ratemaking policy, notes that, "Some writers, especially the older ones...would add a fifth objective: that of benefiting specific classes of ratepayers, such as customers of substandard income..." Bonbright at 386.

Q. HOW DOES YOUR RATE DESIGN PROPOSAL FARE WHEN IT IS EVALUATED BASED ON ITS IMPACT ON LOW-INCOME CONSUMERS?

A. Since my proposals increase monthly fixed charges and decrease volumetric charges relative to the Company's traditional rate design, they will definitely increase bills for smaller users relative to traditional rate designs and decrease bills for larger users relative to traditional rate designs. Thus, to answer the incidence question, one needs to know the relationship between income level and consumption level, i.e., are low-income consumers also low volume consumers, or are they high volume consumers. If low-income consumers are also high volume consumers, then they will benefit (in the form of reduced bills) from the Company's proposal. On the other hand, if they are low volume consumers, then they will pay higher bills under the Company's proposal.

The available evidence regarding the relationship between income and natural gas usage is contradictory. However, one thing is unequivocal: low income consumers have a higher energy *burden* than non low income consumers. Thus, if the Commission believes that it is appropriate for the Company to address this burden, the Company's rate design, which lowers costs to low-income heating customers, is also appropriate.

Q. REGARDLESS OF THE LEVEL OF CONSUMPTION OF LOW-INCOME CUSTOMERS, WILL THEY STILL BENEFIT FROM YOUR PROPOSED RATE DESIGN?

A. Yes. I believe that my proposed rate designs will still provide significant benefits to low-income consumers, regardless of their level of consumption. These are:

1. By reducing seasonal subsidies, space-heating customers receive an immediate reduction in their winter natural gas bill relative to traditional rate designs.

2. The fact that the distribution price is effectively "capped" in the winter months will make it easier for all customers, regardless of income level, to pay their bills. This should reduce arrearages and eventually lead to lower rates for all customers on the system.

3. My rate design proposal provides for more stable bills, at least for the distribution-related portion of the bill. This will provide a benefit to all of the customers on the system who are on fixed incomes, generally the elderly and low-income consumers.

Q. WHY WILL "CAPPED" DISTRIBUTION RATES IN THE WINTER MONTHS MAKE IT EASIER FOR ALL CUSTOMERS TO PAY THEIR BILLS?

A. Because the customers' bills for distribution service will not be influenced by weather.

Q. AND WHY IS THIS A GOOD THING?

A. As Roger D. Colton states in Payment-Problems, Income Status, Weather and Prices: Costs and Savings of a Capped Bill Program:

> Irrespective of the unaffordability of home energy during "normal" times, one additional question is whether low income customers, and the companies that serve them, can beneficially insulate these customers from the vagaries of weather and price-induced spikes in annual and seasonal home energy bills. After the confluence of cold weather and a fly-up in natural gas prices during the 2000/2001 winter heating season in much of the nation, an increasing number of industry observers recognize the harms that arise from extraordinary changes in bills accompanying spikes in price and/or temperature.

While gas costs will still vary according to the weather, these costs are determined by the market and not by the Commission. Therefore, if the Commission approves my proposed rate design, it will have done what it can to stabilize the prices under its control.

Q. WHY WILL "CAPPED" DISTRIBUTION RATES IN THE WINTER MONTHS REDUCE ARREARAGES AND EVENTUALLY LEAD TO LOWER RATES FOR ALL CUSTOMERS ON THE SYSTEM?

A. The previously cited study by Colton also provides the answer to this question. While Colton discusses a lack of empirical data to assess the exact degree to which influence the level of arrears, his evaluation of Iowa utility data shows that:

1. There is a strong association between the dollars of arrears for energy assistance accounts at the end of the heating season and the temperatures experienced during the heating season.
2. There is a strong association between the dollars of arrears for energy assistance accounts at the end of the heating season and the bills experienced during the heating season.

This means that if the strong association between winter temperatures and bills can be weakened, the dollars of arrears for energy assistance accounts will be lower at the end of any given heating season.

Q. HOW WILL YOUR RATE DESIGN PROPOSAL PROVIDE FOR MORE STABLE BILLS?

A. As above, the level of the customer's bill will be less influenced by weather variations from year to year.

Q. HOW WILL THIS PROVIDE A BENEFIT TO ALL OF THE CUSTOMERS ON THE SYSTEM WHO ARE ON FIXED INCOMES?

A. It will help them to budget their energy expenditures more effectively. This could also help the Company to manage its arrearages and provide benefits to all customers on the system.

h. Dynamic Efficiency

Q. WHAT IS DYNAMIC EFFICIENCY?

A. In the context of Bonbright's criteria, dynamic efficiency refers to the rate structure's ability to provide the correct long run price signal to foster the economically correct consumption decisions and then to continue to provide the correct long run price signal after those consumption decisions have manifested themselves in the form of new loads.

Q. WHAT ARE THE CONSEQUENCES OF A RATE STRUCTURE THAT DOES NOT PROMOTE DYNAMIC EFFICIENCY?

A. It is easiest to explain this concept by example. Consider making energy efficiency investments based on the Company's traditional rate design. This rate design signals consumers that each Mcf they conserve is worth $2.3932, even though the cost of service study indicates that these conserved Mcfs are worth about one-third of this amount. Assume now that a consumer makes an energy efficiency investment based on these numbers. Between rate cases, the consumer's investment pays off at this rate. However, when rates are reset at the next rate case, the Company has not saved the equivalent of $2.3932/Mcf, but something closer to $1.0205/Mcf. Thus, rates are set to collect these lost revenues, the per-Mcf rate increases, and the return on the efficiency investment declines. Setting rates closer to cost of service, as my rate designs do, will ensure that this does not happen.

Q. DOES THIS MEAN THAT YOUR PROPOSED RATE DESIGNS WILL BETTER SATISFY THIS CRITERIA THAN THE COMPANY'S CURRENT, TRADITIONAL RATE DESIGNS?

A. Absolutely.

i. Practicality

Q. PLEASE DISCUSS THE PRACTICALITY ATTRIBUTES THAT CAN BE USED TO EVALUATE A PROPOSED RATE DESIGN.

A. The practicality attributes are simplicity, certainty, convenience of payment, economy in collection, understandability, public acceptability, and feasibility of application.

Q. HOW DO THE COMPETING RATE DESIGNS COMPARE FROM THE STANDPOINT OF THESE PRACTICALITY ATTRIBUTES?

A. For the most part, these criteria favor neither rate design. For example, I would consider the attributes of convenience of payment, economy in collection, understandability, public acceptability and feasibility of application to be equally satisfied by both rate designs.

With respect to the simplicity criterion, one could argue that a rate design that is more heavily weighted toward fixed charges is simpler than the Company's traditional rate design. However, gradualism considerations dictate that the final rate design incorporate both fixed and variable cost components. As a result, it is a toss-up between my proposed rate design and the Company's traditional rate designs as to which better satisfies the simplicity criterion.

Finally, I would argue that my proposed rate design incorporates far more certainty than the Company's traditional rate design. This is due to the declining usage documented earlier and the volatility of usage with respect to weather. Because of this, I believe that these practicality attributes favor my proposed rate design over the Company's traditional rate designs. However, neither dominates and these are secondary criteria in any case.

j. Freedom From Controversies As To Proper Interpretation

Q. ARE EITHER OF THE COMPETING RATE DESIGNS MORE FREE FROM CONTROVERSIES AS TO PROPER INTERPRETATION?

A. Probably not. Both of the proposals are straightforward two-part rate designs that customers are well accustomed to seeing and responding to. Therefore, the selection of the best rate design for Kansas Gas Service's customers in Kansas can not be decided on the basis of how well each one satisfies this criteria. However, in all fairness, this criterion is, at best, of secondary importance and should not be used to select between competing rate designs unless one of the alternatives is simply not understandable.

Q. PLEASE SUMMARIZE YOUR EVALUATION OF THE COMPANY'S TRADITIONAL RATE DESIGNS AND YOUR PROPOSED RATE DESIGNS IN THIS CASE BY USING BONBRIGHT'S SOUND RATE DESIGN CRITERIA.

A. Based on the above discussion, it is clear that my rate design proposals are superior to more traditional rate design proposals. The following attributes unequivocally favor my rate designs:

1. Effectiveness in yielding total revenue requirements. My proposed rate designs will better satisfy this objective because they will better match fixed costs with fixed charges, they will reduce intra-class subsidies relative to traditional rate designs, they better match the marginal costs of providing service, and they provide the Company with better incentives to pursue conservation.

2. Revenue stability and predictability. My rate designs better reflect cost causation and better match seasonal costs to seasonal revenues.

3. Rate stability and predictability. My rate designs incorporate more fixed charges and therefore result in more stable and more predictable bills to customers.

4. Static efficiency. My rate designs promote static efficiency by better reducing intra-class and seasonal subsidies than traditional rate designs.

5. Incorporation of internalities and externalities. My rate design better meets this standard than a traditional rate design because of its ability to provide better incentives to the utility to encourage energy efficient investments (thereby implicitly recognizing whatever pollution externalities might exist).

6. Fairness. Because it eliminates subsidies of all types and because it more accurately reflects the costs of providing service, my rate design better satisfies this standard than the Company's traditional rate design.

7. Avoidance of undue discrimination. Undue discrimination is avoided under my rate design. However, to the extent that the Commission believes that it is appropriate to provide subsidies to low-income consumers, my rate design is superior to traditional rate design because it reduces winter bills, provides more stable bills in the winter and could lead to reduced arrearages for low-income customers.

8. Dynamic efficiency. Dynamic efficiency is enhanced under my proposal because my proposed rates more closely track the costs of service over time.

9. Practicality. The practicality attributes favor my proposed rate design over traditional rate design because my proposed rate design incorporates far more certainty than traditional rate design.

In only one case does an evaluation of the two competing rate designs lead to no clear-cut winner:

10. Freedom from controversies as to proper interpretation. Both of the proposals are straightforward two-part rate designs that customers are well accustomed to seeing and responding to.

Q. DOES THIS COMPLETE YOUR DIRECT TESTIMONY?

A. Yes.

VERIFICATION

STATE OF KANSAS)
) ss.
COUNTY OF JOHNSON)

Paul H. Raab, being duly sworn upon his oath, deposes and states that he has read and is familiar with the foregoing Direct Testimony filed herewith; and that the statements made therein are true to the best of his knowledge, information, and belief.

PAUL H. RAAB

Subscribed and sworn to before me this 5th day of May 2006.

NOTARY PUBLIC

My appointment Expires:

11/02/09

NOTARY PUBLIC - State of Kansas
CATHY KUNCE
My Appt. Exp. 11/02/09

PAUL H. RAAB

Mr. Raab's consulting focus is on the regulated public utility industry. His experience includes mathematical and economic analyses and system development and his areas of expertise include regulatory change management, load forecasting, supply-side and demand-side planning, management audits, mergers and acquisitions, costing and rate design, and depreciation and life analysis.

PROFESSIONAL EXPERIENCE

Mr. Raab has directed or has had a key role in numerous engagements in the areas listed above. Representative clients are provided for each of these areas in the subsections below.

Regulatory Change Management. Mr. Raab has recently been assisting both electric and natural gas utilities as they prepare to operate in an environment that is significantly different from the one they operate in today. This work has involved the development of unbundled cost of service studies; the development of strategies that will allow companies to prosper in a restructured industry; retail access program development, implementation, and evaluation; and the development of innovative ratemaking approaches to accompany changes in the regulatory structure. Representative clients for whom he has performed such work include:

- Aquila
- Kansas Corporation Commission
- Atmos Energy Corporation
- Electric Cooperatives' Association
- Central Louisiana Electric Company
- Washington Gas
- Western Resources
- Kansas Gas Service
- Mid Continent Market Center.

Load Forecasting. Mr. Raab has broad experience in the review and development of forecasts of sales forecasts for electric and natural gas utilities. This work has also included the development of elasticity of demand measures that have been used for attrition adjustments and revenue requirement reconciliations. Representative clients for whom he has performed such work include:

- Washington Gas Energy Services
- Central Louisiana Electric Company
- Washington Gas
- Saskatchewan Public Utilities Review Commission
- Union Gas Limited
- Nova Scotia Power Corporation

- Cajun Electric Power Cooperative
- Cincinnati Gas & Electric
- Commonwealth Edison Company
- Cleveland Electric Illuminating
- Public Service of Indiana
- Atlantic City Electric Company
- Detroit Edison Company
- Sierra Pacific Power
- Connecticut Natural Gas Corporation
- Appalachian Power Company
- Missouri Public Service Company
- Empire District Electric Company
- Public Service Company of Oklahoma
- Wisconsin Electric Power Company
- Northern States Power Company
- Iowa State Commerce Commission
- Missouri Public Service Commission.

Supply Side Planning. Mr. Raab has assisted clients to determine the most appropriate supply-side resources to meet future demands. This assistance has included the determination of optimal sizes and types of capacity to install, determination of production costs including and excluding the resource, and an assessment of system reliability changes as a result of different resource additions. Much of this work for the following clients has been done in conjunction with litigation:

- Washington Gas
- Soyland Electric Cooperative
- Houston Lighting and Power
- City of Farmington, New Mexico
- Big Rivers Electric Cooperative
- City of Redding, California
- Brown & Root
- Kentucky Joint Committee on Electric Power Planning Coordination
- Sierra Pacific Power.

Demand Side Planning. Demand Side Planning involves the forecasting of future demands; the design, development, implementation, and evaluation of demand side management programs; the determination of future supply side costs; and the integration of cost effective demand side management programs into an Integrated Least Cost Resource Plan. Mr. Raab has performed such work for the following clients:

- Washington Gas Light Company
- Piedmont Natural Gas Company
- Chesapeake Utilities
- Pennsylvania & Southern Gas
- Montana-Dakota Utilities.

Management Audits. Mr. Raab has been involved in a number of management audits. Consistent with his other experience, the focus of his efforts has been in the areas of load forecasting, demand- and supply-side planning, integrated resource planning, sales and marketing, and rates. Representative commission/utility clients are as follows:

- Public Utilities Commission of Ohio/East Ohio Gas
- Kentucky Public Service Commission/Louisville Gas & Electric
- New Hampshire Public Service Commission/Public Service Company of New Hampshire
- New Mexico Public Service Commission/Public Service of New Mexico
- New York Public Service Commission/New York State Electric & Gas
- Missouri Public Service Commission/Laclede Gas Company
- New Jersey Board of Public Utilities/Jersey Central Power & Light
- New Jersey Board of Public Utilities/New Jersey Natural Gas
- Pennsylvania Public Utilities Commission/ Pennsylvania Power & Light
- California Public Utilities Commission/San Diego Gas & Electric Company.

Mergers and Acquisitions. Mr. Raab has been involved in a number of merger and acquisition studies throughout his career. Many of these were conducted as confidential studies and cannot be listed. Those in which his involvement was publicly known are:

- ONEOK, Inc./Southwest Gas Corporation
- Western Resources
- Constellation.

Costing and Rate Design Analysis. Mr. Raab has prepared generic rate design studies for the National Governor's Conference, the Electricity Consumer's Resource Council, the Tennessee Valley Industrial Committee, the State Electricity Commission of Western Australia, and the State Electricity Commission of Victoria. These generic studies addressed advantages and disadvantages of alternative costing approaches in the electric utility industry; the strengths and weaknesses of commonly encountered costing methodologies; future tariff policies to promote equity, efficiency, and fairness criteria; and the advisability of changing tariff policies. Mr. Raab has performed specific costing and rate design studies for the following companies:

- Cable Television Association of Georgia
- Devon Energy
- Aquila
- Oklahoma Natural Gas
- Semco Energy Gas Company
- Laclede Gas
- Western Resources
- Kansas Gas Service Company
- Central Louisiana Electric Company

- Washington Gas Light Company
- Piedmont Natural Gas Company
- Chesapeake Utilities
- Pennsylvania & Southern Gas
- KPL Gas Service Company
- Allegheny Power Systems
- Northern States Power
- Interstate Power Company
- Iowa-Illinois Gas & Electric Company
- Arkansas Power and Light
- Iowa Power & Light
- Iowa Public Service Company
- Southern California Edison
- Pacific Gas & Electric
- New York State Electric & Gas
- Middle South Utilities
- Missouri Public Service Company
- Empire District Electric Company
- Sierra Pacific Power
- Commonwealth Edison Company
- South Carolina Electric & Gas
- State Electricity Commission of Western Australia
- State Electricity Commission of Victoria, Australia
- Public Service Company of New Mexico
- Tennessee Valley Authority.

Depreciation and Life Analysis. Mr. Raab has extensive experience in depreciation and life analysis studies for the electric, gas, rail, and telephone industries and has taught a course on depreciation at George Washington University, Washington, DC. Representative clients in this area include:

- Champaign Telephone Company
- Plains Generation & Transmission Cooperative
- CSX Corporation (Includes work for Seaboard Coast Line, Louisville & Nashville, Baltimore & Ohio, Chesapeake & Ohio, and Western Maryland Railroads)
- Lea County Electric Cooperative, Inc.
- North Carolina Electric Membership Cooperative
- Alberta Gas Trunk Lines (NOVA)
- Federal Communications Commission.

TESTIMONY

The following table summarizes Mr. Raab's testimony experience.

Jurisdiction	Docket Number	Subject
District of Columbia	834	Demand Side Planning
	905	Costing/Rate Design
	917	Costing/Rate Design
	921	Demand Side Planning
	922	Rate Design
	934	Rate Design
	989	Rate Design
	1016	Rate Design
Georgia	18300-U	Costing/Rate Design
Indiana	36818	Capacity Planning
Iowa	RPU-05-2	Costing/Rate Design
Kansas	174,155-U	Retail Competition
	176,716-U	Costing/Rate Design
	98-KGSG-822-TAR	Rate Design
	99-KGSG-705-GIG	Restructuring
	01-KGSG-229-TAR	Rate Design
	02-KGSG-018-TAR	Rate Design
	02-WSRE-301-RTS	Cost of Service
	03-KGSG-602-RTS	Cost of Service/Rate Design
	03-AQLG-1076-TAR	Rate Design
	05-AQLG-367-RTS	Cost of Service/Rate Design
Kentucky	9613	Capacity Planning
	97-083	Management Audit
Louisiana	U-21453	Restructuring/Market Power
Maryland	8251	Costing/Rate Design
	8259	Demand Side Planning
	8315	Costing/Rate Design
	8720	Demand Side Planning
	8791	Costing/Rate Design
	8920	Costing/Rate Design
	8959	Costing/Rate Design

Jurisdiction	Docket Number	Subject
Michigan	U-6949 U-13575	Load Forecasting Costing/Rate Design
Montana	D2005.4.48	Costing/Rate Design
Missouri	GR-2002-356	Rate Design
Nebraska	NG-0001, NG-0002, NG-0003	Rate Design
Nevada	81-660	Load Forecasting
New Jersey	OAL# PUC 1876-82 BPU# 822-0116	Load Forecasting
New Mexico	2087	Capacity Planning
New York	27546	Costing/Rate Design
Ohio	81-1378-EL-AIR	Load Forecasting
Oklahoma	27068 PUD 200400610	Load Forecasting Costing/Rate Design
Tennessee	PURPA Hearings	Costing/Rate Design
US Tax Court	4870 4875	Life Analysis Life Analysis
Virginia	PUE900013 PUE920041 PUE940030 PUE940031 PUE950131 PUE-2002-00364 PUE-2003-00603	Demand Side Planning Costing/Rate Design Costing/Rate Design Costing/Rate Design Capacity Planning Costing/Rate Design Costing/Rate Design
West Virginia	79-140-E-42T 90-046-E-PC	Capacity Planning Demand Side Planning
Wisconsin	05-EP-2	Capacity Planning

In addition, Mr. Raab has presented expert testimony before the Michigan House Economic Development and Energy Committee and the Province of Saskatchewan. He is a member of the Advisory Board of the Expert Evidence Report, published by The

Bureau of National Affairs, Inc.

EDUCATION

Mr. Raab holds a B.A. (with high distinction) in Economics from Rutgers University and an M.A. from SUNY at Binghamton with a concentration in Econometrics. While attending Rutgers, he studied as a Henry Rutgers Scholar.

PUBLICATIONS AND PRESENTATIONS

Mr. Raab has published in a number of professional journals and spoken at a number of industry conferences. His publications/ presentations include:

- "Responses to Arrearage Problems From High Natural Gas Bills," American Gas Association Rate and Regulatory Issues Seminar, Phoenix, AZ, April 8, 2004.

- "Factors Influencing Cooperative Power Supply," National Rural Utilities Cooperative Finance Corporation Independent Borrower's Conference, Boston, MA, July 3, 1997.

- "Current Status of LDC Unbundling," American Gas Association Unbundling Conference: Regulatory and Competitive Issues, Arlington, VA, June 19, 1997.

- "Balancing, Capacity Assignment, and Stranded Costs," American Gas Association Rate and Strategic Planning Committee Spring Meeting, Phoenix, AZ, March 26, 1997.

- "Gas Industry Restructuring and Changes: The Relationship of Economics and Marketing" (with Jed Smith), National Association of Business Economists, 38th Annual Meeting, Boston, MA September 10, 1996.

- "Improving Corporate Performance By Better Forecasting," 1996 Peak Day Demand and Supply Planning Seminar, San Francisco, CA, April 11, 1996.

- "Natural Gas Price Elasticity Estimation," AGA Forecasting Review, Vol. 6, No. 1, November 1995.

- "Assessing Price Competitiveness," Competitive Analysis & Benchmarking for Power Companies, Washington, DC, November 13, 1995.

- "Avoided Cost Concepts and Management Considerations," Workshop on Avoided Costs in a Post 636 Gas Industry: Is It Time to Unbundle Avoided Cost? Sponsored by the Gas Research Institute and Wisconsin Center for Demand-Side Research, Milwaukee, WI, June 29, 1994.

- "Estimating Implied Long- and Short-Run Price Elasticities of Natural Gas Consumption," Atlantic Economic Conference, Philadelphia, PA, October 10, 1993.

- "Program Evaluation and Marginal Cost," The Natural Gas Least Cost Planning Conference, Washington, DC, April 7, 1992.

- "The New Environmentalism & Least Cost Planning," Institute for Environmental Negotiation, University of Virginia, May 15, 1991.

- "Development of Conditional Demand Estimates of Gas Appliances," AGA Forecasting Review, Vol. 1, No. 1, October 1988.

- "The Feasibility Study: Forecasting and Sensitivities," Municipal Wastewater Treatment Facilities, The Energy Bureau, Inc., November 18, 1985.

- "The Development of a Gas Sales End-Use Forecasting Model," Third International Forecasting Symposium, The International Institute of Forecasting, July 1984.

- "New Forecasting Guidelines for REC's - A Seminar," (Chairman), Kansas City, Missouri, June 1984.

- "A Method and Application of Estimating Long Run Marginal Cost for an Electric Utility," Advances in Microeconomics, Volume II, 1983.

- "Forecasting Under Public Scrutiny," Forecasting Energy and Demand Requirements, University of Wisconsin - Extension, October 25, 1982.

- "Forecasting Public Utilities," The Journal of Business Forecasting, Vol. 1, No. 4, Summer, 1982.

- "Are Utilities Underforecasting," Electric Ratemaking, Vol. 1. No. 1, February, 1982.

- "A Polynomial Spline Function Technique for Defining and Forecasting Electric Utility Load Duration Curves," First International Forecasting Symposium, Montreal, Canada, May, 1981.

- "Time-of-Use Rates and Marginal Costs," ELCON Legal Seminar, March 20, I980.

- "The Ernst & Whinney Forecasting Model," Forecasting Energy & Demand Requirements, University of Wisconsin - Extension, October 8, I979.

- "Marginal Cost in Electric Utilities--A Multi-Technology Multi-Period Analysis" (with Frederick McCoy), ORSA/Tims Joint National Meeting, Los Angeles, California, November 13-15, 1978.

Weather Coefficients

Rate Class	Weather Station	HDD Coefficient	HDD(t-1) Coefficient	Precipitation Coefficient	Precipitation(t-1) Coefficient	R-squared	Log likelihood	Durbin-Watson statistic	F-statistic
RESk	Concordia - 03	0.00697797	0.00624121	-	-	0.97697338	-42.75180038	1.62136925	700.06187141
RESk	Emporia - 04	0.00714891	0.00708002	-	-	0.97095043	-47.39942215	1.62119641	551.49456798
RESk	Great Bend - 05	0.00183481	0.01205179	-	-	0.97554743	-38.98060910	1.76300447	385.65640024
RESk	Hutchinson - 07	0.00748199	0.00658415	-	-	0.96987663	-47.99879569	1.58663793	531.24748027
RESk	KCI - 09	0.00747461	0.00851460	-	-	0.97148669	-52.63359542	1.80628074	562.17718800
RESk	Newton - 12	0.00466868	0.00863279	-	-	0.97211385	-43.77442790	1.67713178	575.19164292
RESk	Olathe - 13	0.00945328	0.00794415	-	-	0.97804364	-44.01300977	2.15816986	430.60056691
RESk	Parsons - 15	0.00744695	0.00886375	-	-	0.98207151	-34.18435892	2.29936200	529.51232102
RESk	Russell - 17	0.00409759	0.00811021	-	-	0.97338574	-38.76894724	2.10632075	265.16033772
RESk	Salina - 18	0.00674032	0.00745473	-	-	0.97052512	-47.36341478	1.73532531	543.29868119
RESk	Topeka - 19	0.00596363	0.00738562	-	-	0.97332915	-44.43637196	1.57337099	602.15296019
RESk	Wichita - 20	0.00598136	0.00697617	-	-	0.97862841	-32.01848779	2.09348435	320.53764255
RESt	Concordia - 03	0.00563938	0.00856407	-	-	0.97458353	-47.12141872	1.46704659	632.68528650
RESt	Great Bend - 05	0.00652542	0.00767616	-	-	0.96642221	-50.37451781	1.50171729	474.89623796
RESt	Hutchinson - 07	0.00630795	0.00675741	-	-	0.96657298	-47.23478923	1.45225299	477.11271380
RESt	KCI - 09	0.01095674	0.00468582	-	-	0.97575107	-49.32291362	2.10828365	663.94236724
RESt	Manhattan - 10	0.00499469	0.00626301	-	-	0.97346995	-35.10400913	1.90482491	354.70001167
RESt	Russell - 17	0.00457932	0.00847915	-	-	0.97114144	-41.93928640	2.08673297	243.97525997
RESt	Salina - 18	0.00647134	0.00666478	-	-	0.97229078	-43.43890106	1.50675513	578.96961087
RESt	Topeka - 19	0.00398543	0.00941212	-	-	0.96698620	-48.67296410	1.68261457	483.29104994
RESt	Wichita - 20	0.00793424	0.00713083	-	-	0.97298726	-46.41743030	1.76865220	594.32285300
COMk	Concordia - 03	0.02232065	0.01028304	-	-	0.97209408	-73.82603257	2.39148571	252.55153132
COMk	Emporia - 04	0.01980831	0.01946799	-	-	0.95606214	-91.67952610	1.58099406	359.03037339
COMk	Great Bend - 05	0.00512236	0.01183459	-	-	0.32521771	-129.85757711	1.90681198	4.98024789
COMk	Hutchinson - 07	0.01964254	0.01464031	-	-	0.96129824	-84.80201517	1.68949263	409.83714696
COMk	KCI - 09	0.02339785	0.02864099	-	-	0.97062377	-86.96094494	2.18308556	231.28785648
COMk	Newton - 12	0.01542069	0.03052337	-	-	0.97437889	-78.67164950	2.10175742	266.21217354
COMk	Olathe - 13	0.02690324	0.02214998	-	-	0.95960104	-88.83283275	2.12422561	229.61342847
COMk	Parsons - 15	0.02117414	0.02524987	-	-	0.96303282	-81.54983815	2.25529015	182.35716196
COMk	Russell - 17	0.00888738	0.01283880	-	-	0.95118911	-69.45009885	2.19651831	141.28241700
COMk	Salina - 18	0.01828202	0.01940561	-	-	0.95085744	-86.08547941	1.78023531	193.48961641
COMk	Topeka - 19	0.02699021	0.02902899	-	-	0.94890761	-108.24008393	1.81110106	306.44439820
COMk	Wichita - 20	0.02032059	0.02361299	-	-	0.97075738	-78.22963088	2.17400287	232.37665006
COMt	Concordia - 03	0.01468769	0.01983209	-	-	0.92434095	-90.63642679	2.47901984	118.09949601
COMt	Great Bend - 05	0.01493059	0.02585367	-	-	0.83047399	-120.27357098	2.52498888	80.83019999
COMt	Hutchinson - 07	0.01875327	0.02511919	-	-	0.96384100	-83.50786924	1.91171153	257.67109281
COMt	KCI - 09	0.01665361	0.01216807	-	-	0.38640872	-145.80643251	2.07950192	10.39086440
COMt	Manhattan - 10	0.01426841	0.02186038	-	-	0.97170073	-75.23772923	2.15172222	240.35616918
COMt	Russell - 17	0.01334626	0.02240723	-	-	0.96277623	-81.03112222	2.18376064	187.51800547
COMt	Salina - 18	0.01908456	0.02693404	-	-	0.96224441	-88.06465783	1.64685712	254.86147308
COMt	Topeka - 19	0.00828592	0.02224745	-	-	0.96271308	-75.07293870	2.19135915	187.18815836
COMt	Wichita - 20	0.01835953	0.01960790	-	-	0.96313419	-77.04138762	2.02936990	252.54554791
GIS	Concordia - 03	-	-	-	-	-	-	-	-
GIS	Great Bend - 05	-	-	-	-	-	-	-	-
GIS	Hutchinson - 07	-	-	-	-	-	-	-	-
GIS	Manhattan - 10	-	-	-	-	-	-	-	-
GIS	Salina - 18	-	-	-	-	-	-	-	-
GIS	Topeka - 19	-	-	-	-	-	-	-	-
GIS	Wichita - 20	-	-	-	-	-	-	-	-
KGSSD (Sales)	Wichita - 20	-	-	-	-	-	-	-	-
SGS	Emporia - 04	-	-	-	-	-	-	-	-
SGS	KCI - 09	-	-	-	-	-	-	-	-
SGS	Newton - 12	-	-	-	-	-	-	-	-
SGS	Olathe - 13	-	-	-	-	-	-	-	-
SGS	Parsons - 15	-	-	-	-	-	-	-	-
SGS	Topeka - 19	-	-	-	-	-	-	-	-
SGS	Wichita - 20	-	-	-	-	-	-	-	-
INDk	Concordia - 03	-	-	-	-	-	-	-	-
INDk	Emporia - 04	0.09492223	0.11213953	-	-	0.93908944	-146.95516953	1.81288313	111.77698044
INDk	KCI - 09	0.04065782	0.05253879	-	-	0.94453722	-119.97230846	1.93291919	123.46828877
INDk	Newton - 12	-	0.04257424	-	-	0.82459519	-30.28356582	2.18643790	37.60878284
INDk	Olathe - 13	0.04697796	-	-	-	0.91164361	-108.80468947	1.93591554	165.08481494
INDk	Parsons - 15	0.00579707	0.00503653	-	-	0.83980312	-67.50172913	1.73393482	86.49826240
INDk	Salina - 18	-	-	-	-	-	-	-	-
INDk	Topeka - 19	-	-	-	-	-	-	-	-
INDk	Wichita - 20	-	-	-	-	-	-	-	-
INDt	Concordia - 03	-	-	-	-	-	-	-	-
INDt	Great Bend - 05	-	-	-	-	-	-	-	-
INDt	Hutchinson - 07	0.04865334	-	-	-	0.18545786	-183.82891103	2.28652157	7.74124107
INDt	Manhattan - 10	-	-	-	-	-	-	-	-
INDt	Salina - 18	0.12993442	0.12463200	-	-	0.88452545	-177.55995044	1.65629986	126.38862826
INDt	Topeka - 19	-	-	-	-	-	-	-	-
INDt	Wichita - 20	-	0.20536372	-	-	0.73155943	-180.27812465	1.86382145	19.07653543
SSRk	Wichita - 20	-	-	-	-	-	-	-	-
KGSSD (Resale)	Wichita - 20	8.10301594	-	-	-	0.86764399	-294.63546777	2.05748896	104.88608189
AAGS	Topeka - 19	-	-	-	-	-	-	-	-
STSk	Concordia - 03	-	-	-	-	-	-	-	-
STSk	Emporia - 04	-	-	-	-	-	-	-	-
STSk	KCI - 09	-	-	-	-	-	-	-	-
STSk	Newton - 12	-	-	-	-	-	-	-	-
STSk	Olathe - 13	-	-	-	-	-	-	-	-
STSk	Parsons - 15	-	-	-	-	-	-	-	-
STSk	Topeka - 19	-	-	-	-	-	-	-	-
STSk	Wichita - 20	-	-	-	-	-	-	-	-
STSt	Concordia - 03	-	-	-	-	-	-	-	-
STSt	Great Bend - 05	-	-	-	-	-	-	-	-
STSt	Hutchinson - 07	-	-	-	-	-	-	-	-
STSt	Manhattan - 10	-	-	-	-	-	-	-	-
STSt	Salina - 18	-	-	-	-	-	-	-	-
STSt	Wichita - 20	-	-	-	-	-	-	-	-
GTk	Concordia - 03	0.34460248	-	-	-	0.97522604	-154.43922353	1.90699852	393.64958323

GTk	Emporia - 04	0.30324761	0.03906822	-	-	0.98535717	-145.59606180	1.91571359	695.35879293
GTk	Great Bend - 05	0.34939250	-	-	-	0.96021540	-165.01202281	1.87356344	386.16564504
GTk	Hutchinson - 07	0.43376064	-	-	-	0.96396040	-169.31360402	2.10670743	427.95608914
GTk	KCI - 09	0.29189302	-	-	-	0.93308524	-175.43385865	2.15630298	474.10911083
GTk	Newton - 12	0.19889984	0.04304869	-	-	0.97834516	-142.28412729	1.84916822	466.85021200
GTk	Olathe - 13	0.20532479	-	-	-	0.99088972	-124.64220406	1.56872907	3,698.04888060
GTk	Parsons - 15	0.48719067	-	-	-	0.95391258	-181.74801474	1.90661992	703.72844588
GTk	Russell - 17	0.76238822	0.23270919	-	-	0.90314986	-225.35264730	1.32109981	153.86629241
GTk	Salina - 18	0.26681350	-	-	-	0.89092788	-180.29730981	1.76318919	277.72034432
GTk	Topeka - 19	0.25120851	-	-	-	0.97744808	-144.04846090	1.96785790	693.47401689
GTk	Wichita - 20	0.32468508	-	-	-	0.99036194	-130.47841663	1.92327158	1027.55341875
GTt	Concordia - 03	0.22732346	0.04066463	-	-	0.97148080	-150.70603908	1.79678422	351.99564857
GTt	Great Bend - 05	-	-	-	-	-	-	-	-
GTt	Hutchinson - 07	0.33842485	-	-	-	0.53869926	-224.22554137	2.00595330	39.70462876
GTt	Manhattan - 10	0.39849048	-	-	-	0.92722418	-189.22284256	2.44352667	433.18815166
GTt	Russell - 17	0.46394547	-	-	-	0.93757976	-190.66126835	2.04629781	510.69510137
GTt	Salina - 18	0.28041421	-	-	-	0.97715731	-147.90299665	2.33818736	684.44278081
GTt	Topeka - 19	0.33258577	-	-	-	0.95458227	-166.55074971	1.95297045	336.28536029
GTt	Wichita - 20	0.25113142	-	-	-	0.94076811	-157.38636935	1.50746116	254.12477737
GITt	Concordia - 03	-	-	-	-	-	-	-	-
GITt	Great Bend - 05	-	-	-26.17274704	-	0.57311726	-201.88325044	1.92659996	13.42563651
GITt	Hutchinson - 07	-	-	-	-	-	-	-	-
GITt	Manhattan - 10	-	-	-	-	-	-	-	-
GITt	Salina - 18	-	-	-	-	-	-	-	-
GITt	Wichita - 20	-	-	-	-	-	-	-	-
SCHk	Concordia - 03	0.20926724	-	-	-	0.97537203	-140.98650120	1.89709288	633.66788842
SCHk	Emporia - 04	0.14826507	-	-	-	0.98281825	-116.80195417	2.40153330	572.01274822
SCHk	Great Bend - 05	0.33927495	-	-	-	0.96249645	-168.75363533	2.06575747	872.58080462
SCHk	Hutchinson - 07	0.30856074	-	-	-	0.98264962	-151.03218344	2.37239337	1925.61134434
SCHk	KCI - 09	0.17449113	-	-	-	0.98030017	-134.01228208	1.43703676	1691.90299363
SCHk	Newton - 12	0.16276500	0.02341400	-	-	0.96566300	-143.74900000	1.71811800	464.02636028
SCHk	Olathe - 13	0.25140475	-	-	-	0.98193990	-135.03520267	2.15254091	543.70683351
SCHk	Parsons - 15	0.21118123	-	-	-	0.98036161	-126.82899544	2.09779521	499.20664426
SCHk	Russell - 17	0.26476958	-	-	-	0.91973158	-175.34133108	1.81137274	389.57880949
SCHk	Salina - 18	0.29169553	-	-	-	0.96819091	-155.30439893	2.17788346	487.00093409
SCHk	Topeka - 19	-	0.19263906	-	-	0.98955210	-116.70311828	1.48735634	915.55941997
SCHk	Wichita - 20	0.22406289	-	-	-	0.96622298	-140.12554841	2.17276313	286.05927739
SCHt	Concordia - 03	0.18851015	-	-	-	0.98010342	-129.55969759	2.04660918	492.59895640
SCHt	Great Bend - 05	0.16979245	0.02650800	-	-	0.98283634	-125.85622784	2.27565055	415.15419998
SCHt	Hutchinson - 07	0.17564320	-	-	-	0.97346887	-130.51693129	2.03325714	366.91570533
SCHt	KCI - 09	0.26617072	-	-	-	0.98166149	-134.84560876	1.45950156	802.95101780
SCHt	Manhattan - 10	0.18833088	-	-	-	0.98437210	-121.80440530	1.85388337	944.82197214
SCHt	Russell - 17	0.20038687	-	-	-	0.97452601	-138.98335609	1.83139961	612.09154230
SCHt	Salina - 18	0.20123806	-	-	-	0.93686333	-159.39743491	1.24952891	504.51427596
SCHt	Topeka - 19	0.26334404	0.08683272	-	-	0.97871999	-149.66414052	1.83823223	333.44530627
SCHt	Wichita - 20	0.16785693	-	-	-	0.97553214	-128.62987083	2.17821986	637.91905918
CNGt	Manhattan - 10	-	-	-	-	-	-	-	-
GTFk	KCI - 09	0.24424056	-	-	-	0.89246879	-172.88222261	1.86772760	132.79401428
GTFk	Wichita - 20	0.39563681	-	-	-	0.86158557	-197.55030976	1.28154636	211.63913517
LVTk	Concordia - 03	0.90353338	-	-	-	0.76768232	-229.98434683	2.15119185	23.13115440
LVTk	Emporia - 04	-	-	-	-	-	-	-	-
LVTk	KCI - 09	-	-	-	-	-	-	-	-
LVTk	Newton - 12	1.35503173	-	-	-	0.99396546	-177.69032679	2.15467786	2,635.40165615
LVTk	Olathe - 13	1.25690011	-	-	-	0.93254013	-211.92490531	1.76142410	214.26623121
LVTk	Parsons - 15	0.91282229	-	-	-	0.50279714	-256.71078356	1.76578131	16.18002413
LVTk	Salina - 18	-	-	-	-	-	-	-	-
LVTk	Topeka - 19	2.25058788	-	-	-	0.95345349	-241.60327010	1.90443745	696.45224061
LVTk	Wichita - 20	1.56114404	-	-	-	0.91168431	-230.68237893	2.18788241	165.16826840
LVTt	Concordia - 03	-	-	-	-	-	-	-	-
LVTt	Great Bend - 05	-	-	-	-	-	-	-	-
LVTt	Hutchinson - 07	-	-	-	-	-	-	-	-
LVTt	Manhattan - 10	9.36140032	-	-	-	0.92645852	-294.05362918	1.87275426	201.56430318
LVTt	Russell - 17	-	-	-	-	-	-	-	-
LVTt	Salina - 18	-	-	-	-	-	-	-	-
LVTt	Topeka - 19	-	-	-	-	-	-	-	-
LVTt	Wichita - 20	-	-	-	-	-	-	-	-
LVFk	Emporia - 04	8.24637840	-	-	-	0.45014312	-341.38920520	2.14916876	13.09848103
LVFk	KCI - 09	-	-	-	-	-	-	-	-
LVFk	Olathe - 13	-	-	-	-	-	-	-	-
LVFk	Parsons - 15	-	-	-	-	-	-	-	-
LVFk	Topeka - 19	-	-	-	-	-	-	-	-
LVFk	Wichita - 20	3.88013402	-	-	-	0.73560018	-292.48918130	2.43189806	44.51441256
LVFt	Concordia - 03	-	-	-	-	-	-	-	-
LVFt	Great Bend - 05	-	-	-	-	-	-	-	-
LVFt	Hutchinson - 07	-	16.48525571	-	-	0.43563616	-361.93456579	1.83397851	7.71906576
LVFt	Russell - 17	-	-	-	-	-	-	-	-
LVFt	Salina - 18	-	-	-	-	-	-	-	-
LVFt	Wichita - 20	-	-	-	-	-	-	-	-
WTt	Concordia - 03	6.05083884	-	-	-	0.99053021	-234.32897650	2.05729495	1,045.98953922
WTt	Great Bend - 05	1.89137574	-	-	-	0.91022598	-234.41240699	2.28605069	101.39080381
WTt	Hutchinson - 07	1.01709244	-	-	-	0.47026049	-262.63187848	2.16632162	8.87720258
WTt	Manhattan - 10	7.34833672	-	-	-	0.98027208	-260.14499573	1.98161284	795.03317988
WTt	Russell - 17	1.74606533	-	-	-	0.71112140	-269.22995649	1.72406117	39.38658847
WTt	Salina - 18	0.39553960	-	-	-	0.94050750	-182.58486906	2.52845579	537.50065648
WTt	Topeka - 19	12.86688805	-	-	-	0.99044815	-266.28298171	1.619473694	1,659.06803945
WTt	Wichita - 20	-	-	-	-	-	-	-	-
WTFt	Great Bend - 05	-	-	-	-	-	-	-	-
WTFt	Topeka - 19	-	-	-	-	-	-	-	-
WTFt	Wichita - 20	-	-	-	-	-	-	-	-
ITt	Topeka - 19	-	-	-	-	-	-	-	-
SCTt	Russell - 17	-	-	-	-	-	-	-	-
SCTt	Topeka - 19	-	-	-	-	-	-	-	-

Customer Coefficients

Rate Class	Weather Station	Customer Coefficient	R-squared	Log likelihood	Durbin-Watson statistic	F-statistic
RESk	Concordia - 03	-6.94323313	0.70452720	-189.70341221	1.97964538	38.15050038
RESk	Emporia - 04	-18.81236983	0.74218266	-223.10561949	1.78865356	46.05944042
RESk	Great Bend - 05	-	-	-	-	-
RESk	Hutchinson - 07	-3.48626838	0.29196211	-196.24992896	1.89655747	14.02002899
RESk	KCI - 09	-	-	-	-	-
RESk	Newton - 12	-	-	-	-	-
RESk	Olathe - 13	140.24900576	0.70683316	-290.01028160	1.88764321	38.57643180
RESk	Parsons - 15	-37.16148733	0.78988371	-232.75661581	2.43494232	36.33960361
RESk	Russell - 17	-	-	-	-	-
RESk	Salina - 18	-	-	-	-	-
RESk	Topeka - 19	-	-	-	-	-
RESk	Wichita - 20	-	-	-	-	-
RESt	Concordia - 03	-	-	-	-	-
RESt	Great Bend - 05	-	-	-	-	-
RESt	Hutchinson - 07	-	-	-	-	-
RESt	KCI - 09	-	-	-	-	-
RESt	Manhattan - 10	-	-	-	-	-
RESt	Russell - 17	-	-	-	-	-
RESt	Salina - 18	-	-	-	-	-
RESt	Topeka - 19	-	-	-	-	-
RESt	Wichita - 20	-	-	-	-	-
COMk	Concordia - 03	-1.27088882	0.53411712	-141.51579370	1.84533639	38.97971574
COMk	Emporia - 04	-2.65742122	0.57399117	-161.19800098	2.16156136	21.55790685
COMk	Great Bend - 05	-	-	-	-	-
COMk	Hutchinson - 07	-	-	-	-	-
COMk	KCI - 09	-11.85918744	0.61490358	-213.76285691	1.86394861	25.54803619
COMk	Newton - 12	-	-	-	-	-
COMk	Olathe - 13	-	-	-	-	-
COMk	Parsons - 15	-4.09192530	0.46770441	-188.39934097	1.45293838	29.87428415
COMk	Russell - 17	-	-	-	-	-
COMk	Salina - 18	-	-	-	-	-
COMk	Topeka - 19	-5.57362764	0.46523617	-199.70295603	2.10001057	29.57946871
COMk	Wichita - 20	-13.82051194	0.53742980	-229.68673909	1.96197883	18.58934442
COMt	Concordia - 03	-	-	-	-	-
COMt	Great Bend - 05	-4.57928520	0.10905967	-227.92868135	2.40244368	4.16192716
COMt	Hutchinson - 07	-	-	-	-	-
COMt	KCI - 09	-	-	-	-	-
COMt	Manhattan - 10	-	-	-	-	-
COMt	Russell - 17	-	-	-	-	-
COMt	Salina - 18	-3.16020206	0.52436775	-176.00259051	1.77801600	17.63943454
COMt	Topeka - 19	-	-	-	-	-
COMt	Wichita - 20	-1.87104390	0.64119174	-149.75520153	2.19142154	28.59206104
GIS	Concordia - 03	-0.26085800	0.79143903	-60.96259964	2.11678384	60.71617567
GIS	Great Bend - 05	-	-	-	-	-
GIS	Hutchinson - 07	-0.35353077	0.82476633	-70.03236845	1.34197119	160.02663769
GIS	Manhattan - 10	-	-	-	-	-
GIS	Salina - 18	-	-	-	-	-
GIS	Topeka - 19	-	-	-	-	-
GIS	Wichita - 20	-	-	-	-	-
KGSSD (Sales)	Wichita - 20	-0.12536611	0.19765795	-85.80959159	1.81823145	8.37594182
SGS	Emporia - 04	0.09992540	0.95442839	6.85591711	1.87421171	335.09575219
SGS	KCI - 09	0.12611569	0.50494731	-59.29356043	2.02401647	16.31979202
SGS	Newton - 12	0.04242946	0.75131831	-2.22464603	2.20158967	48.33927641
SGS	Olathe - 13	-	-	-	-	-
SGS	Parsons - 15	0.07918304	0.37658964	-53.12338030	2.03258829	20.53871536
SGS	Topeka - 19	0.08558916	0.85018615	-14.50935038	2.39274150	90.79920294
SGS	Wichita - 20	-	-	-	-	-
INDk	Concordia - 03	-	-	-	-	-
INDk	Emporia - 04	0.07410563	0.63118010	-27.87731701	2.11880910	27.38160723
INDk	KCI - 09	-	-	-	-	-
INDk	Newton - 12	0.04507628	0.87975243	15.21731276	1.94222232	117.05882353
INDk	Olathe - 13	-	-	-	-	-

INDk	Parsons - 15	-	-	-	-	-
INDk	Salina - 18	-	-	-	-	-
INDk	Topeka - 19	0.05093319	0.54607634	-25.39639184	1.73010605	19.24821799
INDk	Wichita - 20	-	-	-	-	-
INDt	Concordia - 03	-	-	-	-	-
INDt	Great Bend - 05	-0.25275340	0.83728590	-56.34690356	1.68113678	174.95546411
INDt	Hutchinson - 07	-0.13341585	0.51921224	-61.44805549	1.47362020	36.71727474
INDt	Manhattan - 10	-0.06555496	0.38095209	-45.99022939	1.89875291	20.92305128
INDt	Salina - 18	-0.16207723	0.58487252	-63.66714140	1.93751844	47.90255273
INDt	Topeka - 19	-	-	-	-	-
INDt	Wichita - 20	-	-	-	-	-
SSRk	Wichita - 20	-	-	-	-	-
KGSSD (Resale)	Wichita - 20	-	-	-	-	-
AAGS	Topeka - 19	-	-	-	-	-
STSk	Concordia - 03	-	-	-	-	-
STSk	Emporia - 04	-	-	-	-	-
STSk	KCI - 09	-	-	-	-	-
STSk	Newton - 12	-	-	-	-	-
STSk	Olathe - 13	-	-	-	-	-
STSk	Parsons - 15	-	-	-	-	-
STSk	Topeka - 19	-	-	-	-	-
STSk	Wichita - 20	-	-	-	-	-
STSt	Concordia - 03	0.14175243	0.65149076	-44.54242164	1.88518010	29.90983063
STSt	Great Bend - 05	-	-	-	-	-
STSt	Hutchinson - 07	-	-	-	-	-
STSt	Manhattan - 10	-	-	-	-	-
STSt	Salina - 18	-	-	-	-	-
STSt	Wichita - 20	-	-	-	-	-
GTk	Concordia - 03	-	-	-	-	-
GTk	Emporia - 04	-	-	-	-	-
GTk	Great Bend - 05	-	-	-	-	-
GTk	Hutchinson - 07	0.04142812	0.88946807	13.84590323	1.83788598	128.75454897
GTk	KCI - 09	-2.09884532	0.29613241	-177.62030387	1.98122202	14.30453970
GTk	Newton - 12	0.10353195	0.64378849	-43.04953385	1.52874525	61.44890914
GTk	Olathe - 13	2.31221997	0.82320764	-134.34528805	2.14642559	74.50164811
GTk	Parsons - 15	-	-	-	-	-
GTk	Russell - 17	-	-	-	-	-
GTk	Salina - 18	0.04439610	0.62609141	-10.37640589	1.88841506	25.11675671
GTk	Topeka - 19	0.69520967	0.31736632	-136.04498083	1.98405139	15.80709397
GTk	Wichita - 20	1.13340512	0.57415108	-134.47586534	2.09979613	45.84052222
GTt	Concordia - 03	0.31588382	0.84943337	-56.73648795	2.40639096	90.26524814
GTt	Great Bend - 05	-	-	-	-	-
GTt	Hutchinson - 07	0.73095308	0.31374972	-138.15128164	2.17939816	15.54460620
GTt	Manhattan - 10	-	-	-	-	-
GTt	Russell - 17	-	-	-	-	-
GTt	Salina - 18	-	-	-	-	-
GTt	Topeka - 19	-	-	-	-	-
GTt	Wichita - 20	0.20847601	0.85507873	-50.96414917	1.71611308	94.40477340
GITt	Concordia - 03	-0.04953620	0.69424734	-14.03811729	1.90393125	36.32987920
GITt	Great Bend - 05	-	-	-	-	-
GITt	Hutchinson - 07	-0.43368188	0.80926087	-79.25640677	1.50558688	144.25393427
GITt	Manhattan - 10	-	-	-	-	-
GITt	Salina - 18	-	-	-	-	-
GITt	Wichita - 20	-	-	-	-	-
SCHk	Concordia - 03	0.13166210	0.82866933	-40.31985271	2.06961824	77.38666469
SCHk	Emporia - 04	-	-	-	-	-
SCHk	Great Bend - 05	-	-	-	-	-
SCHk	Hutchinson - 07	-	-	-	-	-
SCHk	KCI - 09	-	-	-	-	-
SCHk	Newton - 12	0.03239284	0.64103408	-3.61896624	1.98121604	28.57247658
SCHk	Olathe - 13	-0.11993306	0.26802043	-77.08108848	2.06676457	12.44938392
SCHk	Parsons - 15	-	-	-	-	-
SCHk	Russell - 17	-	-	-	-	-
SCHk	Salina - 18	-	-	-	-	-
SCHk	Topeka - 19	-	-	-	-	-
SCHk	Wichita - 20	0.72192808	0.93854761	-73.36865177	1.89998216	244.36414744
SCHt	Concordia - 03	-0.11085721	0.88697439	-25.68404396	1.90775485	125.56084089

SCHt	Great Bend - 05	0.13677703	0.86981031	-24.89334581	1.73998341	106.89759827
SCHt	Hutchinson - 07	0.13398111	0.89532889	-28.00912816	1.88475537	85.53734913
SCHt	KCI - 09	-	-	-	-	-
SCHt	Manhattan - 10	-	-	-	-	-
SCHt	Russell - 17	-	-	-	-	-
SCHt	Salina - 18	-	-	-	-	-
SCHt	Topeka - 19	-	-	-	-	-
SCHt	Wichita - 20	0.15009681	0.86800459	-29.16858716	1.85271117	105.21633314
CNGt	Manhattan - 10	-0.03618582	0.58860418	-12.71584829	2.13187457	22.89198490
GTFk	KCI - 09	-	-	-	-	-
GTFk	Wichita - 20	-	-	-	-	-
LVTk	Concordia - 03	-0.05475699	0.49138861	-31.39172810	1.56065875	32.84867976
LVTk	Emporia - 04	-	-	-	-	-
LVTk	KCI - 09	-	-	-	-	-
LVTk	Newton - 12	0.10006583	0.93626141	3.44876122	2.09185969	235.02531912
LVTk	Olathe - 13	-	-	-	-	-
LVTk	Parsons - 15	-	-	-	-	-
LVTk	Salina - 18	-0.04520548	0.89865872	15.37376262	1.89268661	141.88235294
LVTk	Topeka - 19	-	-	-	-	-
LVTk	Wichita - 20	-	-	-	-	-
LVTt	Concordia - 03	-	-	-	-	-
LVTt	Great Bend - 05	-	-	-	-	-
LVTt	Hutchinson - 07	-	-	-	-	-
LVTt	Manhattan - 10	0.10600405	0.24595014	-74.71818105	1.63254837	11.08985655
LVTt	Russell - 17	-	-	-	-	-
LVTt	Salina - 18	0.14796801	0.81895762	-36.42548000	1.72724952	72.37709660
LVTt	Topeka - 19	-	-	-	-	-
LVTt	Wichita - 20	-	-	-	-	-
LVFk	Emporia - 04	-	-	-	-	-
LVFk	KCI - 09	0.09496326	0.73138290	-36.17522720	2.23653185	43.56433876
LVFk	Olathe - 13	-	-	-	-	-
LVFk	Parsons - 15	-0.03930307	0.59467489	-18.70011711	1.74826204	13.69344968
LVFk	Topeka - 19	-	-	-	-	-
LVFk	Wichita - 20	0.14216916	0.40828620	-71.83755310	2.40019588	11.04009957
LVFt	Concordia - 03	-	-	-	-	-
LVFt	Great Bend - 05	-	-	-	-	-
LVFt	Hutchinson - 07	-	-	-	-	-
LVFt	Russell - 17	-	-	-	-	-
LVFt	Salina - 18	0.03674408	0.51847616	-15.07934932	1.56674144	36.60917240
LVFt	Wichita - 20	-	-	-	-	-
WTt	Concordia - 03	-	-	-	-	-
WTt	Great Bend - 05	-	-	-	-	-
WTt	Hutchinson - 07	-	-	-	-	-
WTt	Manhattan - 10	-	-	-	-	-
WTt	Russell - 17	-	-	-	-	-
WTt	Salina - 18	-	-	-	-	-
WTt	Topeka - 19	-	-	-	-	-
WTt	Wichita - 20	-	-	-	-	-
WTFt	Great Bend - 05	-	-	-	-	-
WTFt	Topeka - 19	-	-	-	-	-
WTFt	Wichita - 20	-	-	-	-	-
ITt	Topeka - 19	-	-	-	-	-
SCTt	Russell - 17	-	-	-	-	-
SCTt	Topeka - 19	-	-	-	-	-

Summary of Weather/Annualization Adjustments

	Customers			Volumes					
Class	Actual Average	Annualized Average	Annualized Year End	Actual	Adjusted	Revenues	Peak	WN Adjustment	Annualization Adjustment
RESk	460,630	460,896	465,195	36,185,434	38,057,185	$ 115,967,089	8,461,091	$ 3,205,805	$ 91,795
RESt	111,898	111,898	112,830	7,857,650	8,099,107	$ 26,162,947	1,811,103	$ 421,705	$ (0)
COMk	38,062	37,846	38,171	9,775,674	10,219,354	$ 24,238,151	2,323,165	$ 836,678	$ (163,623)
COMt	13,185	13,133	13,175	2,935,026	3,012,724	$ 7,548,497	670,552	$ 149,755	$ (34,955)
GIS	185	182	179	59,282	58,729	$ 106,318	1,105	$ 264	$ (1,605)
KGSSD (Sales)	1	0	2	95,990	87,883	$ 61,231	21,993	$ -	$ (7,418)
SGS	374	377	365	1,746	1,378	$ 185,928	351	$ 5,186	$ (4,191)
INDk	35	36	38	21,590	23,901	$ 46,021	4,580	$ 2,723	$ 1,203
INDt	63	60	60	56,204	65,880	$ 118,650	8,419	$ 22,370	$ (7,420)
SSRk	1	1	1	406	406	$ 852	32	$ -	$ -
KGSSD (Resale)	2	2	2	86,261	90,458	$ 67,400	22,172	$ 2,877	$ -
AAGS	-	-	-	33,404,053	-	$ -	-	$ -	$ -
STSk	65	65	168	91,812	91,812	$ 161,566	-	$ -	$ (0)
STSt	18	18	56	25,457	25,491	$ 44,954	-	$ -	$ 214
GTk	1,834	1,846	1,873	3,406,037	3,502,567	$ 4,715,885	675,437	$ 102,364	$ 19,731
GTt	592	599	597	1,344,197	1,377,726	$ 2,242,282	248,215	$ 25,802	$ 27,203
GITt	323	320	315	346,278	344,802	$ 502,716	1,853	$ 318	$ (2,732)
SCHk	483	487	486	474,740	500,693	$ 719,657	124,275	$ 26,132	$ 6,881
SCHt	237	239	246	204,322	208,883	$ 370,159	54,102	$ 4,825	$ 2,542
CNGt	0	-	-	210	-	$ -	-	$ -	$ (427)
GTFk	4	4	2	9,579	9,975	$ 10,384	1,441	$ 381	$ (0)
LVTk	431	431	423	9,310,746	9,399,718	$ 7,592,542	1,326,765	$ 65,230	$ (2,521)
LVTt	103	104	107	4,318,152	4,369,232	$ 4,922,212	687,946	$ (40,936)	$ 98,958
LVFk	65	66	65	11,323,016	11,532,832	$ 2,369,897	1,065,505	$ 6,786	$ 36,066
LVFt	25	25	26	12,179,632	12,267,619	$ 3,606,875	1,069,525	$ 3,746	$ 22,190
WTt	23	23	22	1,074,430	1,105,870	$ 1,207,763	227,407	$ 34,036	$ 0
WTFt	35	35	35	1,127,697	1,127,697	$ 205,849	136,639	$ -	$ (0)
ITt	-	-	-	8,946,366	8,946,366	$ -	1,090,186	$ -	$ -
SCTt	-	-	-	19,127	19,127	$ -	8,513	$ -	$ -
Totals	628,673	628,692	634,440	144,681,114	114,547,417	$ 203,175,825	20,042,372	$ 4,876,048	$ 81,892

KANSAS GAS SERVICE COMPANY
CLASS COST OF SERVICE STUDY
TEST YEAR ENDING 12/31/2005

SUMMARY OF RESULTS

Line	Description	Total Company $	Residential RS	General Service GS	GS Irrigation GIS	Generator Service SGS	Transport GTk	Transport GTt	Transport Irrigation GITt	Large Volume Transportation LVTk	Large Volume Transportation LVTt	Wholesale Transportation WTt	Transportation Flex	KGSSD	Resale SSRk
1															
2															
3															
4															
5															
6															
7															
8	Operating Revenues	209,396,105	145,511,328	33,147,080	110,539	185,756	5,749,331	2,731,974	522,900	8,402,487	5,343,415	1,293,637	6,255,778	141,000	881
9															
10	Operating Expenses:														
11															
12	Operating & Maintenance	121,548,945	81,503,943	19,340,072	96,066	72,295	1,985,654	1,324,550	225,680	3,349,648	2,962,756	471,303	10,182,760	33,562	654
13	Depreciation & Amortization	39,843,443	24,137,283	6,166,993	27,174	20,338	855,162	603,639	84,911	1,515,674	1,410,563	206,514	4,812,311	2,666	216
14	Taxes Other Than Income	19,018,523	11,646,445	2,933,712	13,544	10,109	387,756	287,348	41,120	680,336	669,510	103,804	2,243,703	1,033	104
15															
16	Total Operating Expenses	180,410,911	117,287,671	28,440,777	136,783	102,742	3,228,573	2,215,537	351,711	5,545,657	5,042,829	781,622	17,238,774	37,261	973
17															
18	Income Before Taxes	28,985,194	28,223,657	4,706,303	(26,245)	83,014	2,520,758	516,437	171,189	2,856,830	300,586	512,015	(10,982,996)	103,739	(93)
19															
20	Income Taxes:														
21															
22	Total Current Income Taxes	(4,686,152)	(5,273,427)	(779,815)	7,206	(17,808)	(529,510)	(84,931)	(34,339)	(574,987)	6,631	(103,139)	2,721,293	(23,357)	31
23	Total Deferred Income Taxes	8,705,850	5,135,447	1,324,522	6,053	4,300	183,387	148,358	20,077	325,989	350,073	58,017	1,149,397	184	46
24	Amortization of ITC	(499,464)	(294,626)	(75,989)	(347)	(247)	(10,521)	(8,511)	(1,152)	(18,702)	(20,084)	(3,329)	(65,942)	(11)	(3)
25															
26	Total Income Taxes	3,520,234	(432,606)	468,718	12,911	(13,754)	(356,644)	54,915	(15,414)	(267,700)	336,620	(48,450)	3,804,748	(23,183)	74
27															
28	Net Income	25,464,960	28,656,263	4,237,585	(39,156)	96,768	2,877,402	461,521	186,603	3,124,530	(36,035)	560,465	(14,787,744)	126,923	(167)
29															
30	Total Rate Base	785,037,900	478,326,253	127,010,872	521,652	363,834	14,837,362	11,832,064	1,638,292	26,303,301	27,806,266	4,577,739	91,538,710	277,517	4,038
31															
32	Rate of Return - Existing Rates	3.2438%	5.9909%	3.3364%	-7.5061%	26.5968%	19.3929%	3.9006%	11.3901%	11.8789%	-0.1296%	12.2433%	-16.1546%	45.7352%	-4.1314%
33	Relative Rate of Return	1.00	1.85	1.03	(2.31)	8.20	5.98	1.20	3.51	3.66	(0.04)	3.77	(4.98)	14.10	(1.27)
34															
35	Equalized ROR:														
36	Revenue Increase	73,300,788	22,842,706	11,663,983	141,824	(107,115)	(2,593,363)	975,741	(68,641)	(1,315,526)	4,153,910	(256,651)	38,032,945	(169,896)	872
37	Net Income Increase	44,143,567	13,756,448	7,024,342	85,410	(64,507)	(1,561,788)	587,616	(41,337)	(792,243)	2,501,588	(154,561)	22,904,390	(102,316)	525
38	Income Taxes	29,157,221	9,086,257	4,639,641	56,414	(42,608)	(1,031,575)	388,126	(27,304)	(523,283)	1,652,322	(102,089)	15,128,555	(67,580)	347
39	Gross Revenue After Increase	282,696,893	168,354,033	44,811,063	252,363	78,641	3,155,968	3,707,715	454,259	7,086,961	9,497,325	1,036,987	44,288,722	(28,896)	1,752
40	Rate of Return	8.8669%	8.8669%	8.8669%	8.8669%	8.8669%	8.8669%	8.8669%	8.8669%	8.8669%	8.8669%	8.8669%	8.8669%	8.8669%	8.8669%
41	Percent Increase	35.0058%	25.1521%	35.1886%	128.3027%	-57.6644%	-45.1072%	35.7156%	-13.1270%	-15.6564%	77.7389%	-19.8395%	607.9651%	-120.4935%	98.9541%
42															
43	Proposed Rate Levels:														
44	Revenue Increase	73,300,747	52,531,915	11,965,727	39,906	0	2,067,703	994,189	188,772	3,004,955	1,950,559	467,043	89,660	0	318
45	Net Income Increase	44,143,542	31,636,033	7,206,060	24,033	0	1,245,223	598,726	113,683	1,809,659	1,174,675	281,265	53,995	0	191
46	Income Taxes	29,157,205	20,895,883	4,759,667	15,874	-	822,481	395,464	75,089	1,195,296	775,883	185,778	35,664	-	126
47	Gross Revenue After Increase	282,696,852	198,043,243	45,112,807	150,445	185,756	7,817,034	3,726,163	711,672	11,407,442	7,293,974	1,760,680	6,345,438	141,000	1,199
48	Rate of Return	8.8669%	12.6048%	9.0100%	-2.8991%	26.5968%	27.7854%	8.9608%	18.3292%	18.7588%	4.0949%	18.3875%	-16.0956%	45.7352%	0.6092%
49	Relative Rate of Return	1.00	1.42	1.02	(0.33)	3.00	3.13	1.01	2.07	2.12	0.46	2.07	(1.82)	5.16	0.07
50	Percent Increase	35.0058%	36.1016%	36.0989%	36.1017%	0.0000%	35.9642%	36.3909%	36.1009%	35.7627%	36.5040%	36.1031%	1.4332%	0.0000%	36.0899%

KANSAS GAS SERVICE COMPANY
CURRENT RATES
TEST YEAR ENDING 12/31/2005

SUMMARY OF CUSTOMER COSTS

Line		Total Company	Residential RS	General Service GS	GS Irrigation GIS	Generator Service SGS	Transport GTk	Transport GTt	Transport Irrigation GITt	Large Volume Transportation LVTk	Large Volume Transportation LVTt	Wholesale Transportation WTt	Transportation Flex	KGSSD	Resale SSRk
1	Rate Base	286,976,281	228,837,242	51,149,307	306,697	356,774	2,279,091	826,784	536,649	1,657,970	420,973	84,123	501,569	15,280	3,820
2															
3	Return @ Realized ROR	16,155,789	13,709,513	1,706,543	(23,021)	94,890	441,983	32,250	61,125	196,948	(546)	10,299	(81,027)	6,989	(158)
4	O&M Expenses	65,363,094	53,177,084	10,813,696	67,567	71,501	447,338	162,072	114,678	277,390	82,220	13,963	132,661	2,338	584
5	Depreciation Expense	16,476,098	13,235,907	2,849,468	16,682	20,035	128,686	46,045	29,277	92,755	23,471	4,690	28,015	854	213
6	Taxes, Other	8,344,679	6,724,389	1,429,337	8,465	9,975	63,430	22,664	14,772	44,308	11,208	2,240	13,380	409	102
7															
8	Income Taxes:														
9															
10	Current Income Taxes	(1,750,290)	(1,969,639)	(291,263)	2,691	(6,651)	(197,773)	(31,722)	(12,826)	(214,759)	2,477	(38,523)	1,016,410	(8,724)	11
11	Deferred Income Taxes	3,466,304	2,783,225	599,705	3,476	4,238	27,384	9,784	6,123	20,017	5,063	1,012	6,045	184	46
12	Amortization of ITC	(198,866)	(159,677)	(34,406)	(199)	(243)	(1,571)	(561)	(351)	(1,148)	(280)	(58)	(347)	(11)	(3)
13															
14	Total Income Taxes	1,517,148	653,910	274,036	5,968	(2,656)	(171,960)	(22,499)	(7,054)	(195,890)	7,250	(37,569)	1,022,108	(8,550)	55
15															
16	Total Customer-Related Costs @ Realized ROR	107,856,808	87,500,802	17,073,081	75,662	193,745	909,478	240,532	212,798	415,510	123,603	(6,376)	1,115,137	2,039	797
17	Total Bills	634,440	578,025	51,669	179	365	2,359	843	315	423	107	22	128	4	1
18	Customer Costs ($/customer/month)		$ 12.61	$ 27.54	$ 35.22	$ 44.22	$ 32.12	$ 23.78	$ 56.25	$ 81.86	$ 96.26	$ (24.15)	$ 727.50	$ 42.47	$ 66.43
19															
20															
21	Incremental Return @ Equalized ROR	9,290,111	6,581,256	2,828,815	50,216	(63,256)	(239,898)	41,061	(13,541)	(49,937)	37,873	(2,840)	125,500	(5,634)	497
22	Incremental Income Taxes	6,136,202	4,346,979	1,868,457	33,168	(41,781)	(158,455)	27,121	(8,944)	(32,984)	25,015	(1,876)	82,894	(3,721)	328
23															
24	Total Customer-Related Costs @ Equalized ROR	123,283,121	98,429,037	21,770,353	159,045	88,708	511,125	308,713	190,314	332,589	186,491	(11,092)	1,323,532	(7,316)	1,622
25	Customers	634,440	578,025	51,669	179	365	2,359	843	315	423	107	22	128	4	1
26	Dollars/Customer/Month	$ 16.19	$ 14.19	$ 35.11	$ 74.04	$ 20.25	$ 18.05	$ 30.52	$ 50.31	$ 65.52	$ 145.24	$ (42.02)	$ 863.45	$ (152.42)	$ 135.14
27															
28															
29	Incremental Return @ Proposed Rates	18,459,043	15,135,072	2,901,996	14,130	0	191,272	41,837	37,239	114,068	17,784	5,169	296	0	181
30	Incremental Income Taxes	12,192,363	9,996,851	1,916,794	9,333	0	126,337	27,634	24,596	75,343	11,746	3,414	195	0	120
31															
32	Total Customer-Related Costs @ Proposed Rates	138,508,214	112,632,725	21,891,870	99,124	193,745	1,227,087	310,002	274,633	604,921	153,134	2,207	1,115,629	2,039	1,098
33	Customers	634,440	578,025	51,669	179	365	2,359	843	315	423	107	22	128	4	1
34	Dollars/Customer/Month	$ 18.19	$ 16.24	$ 35.31	$ 46.15	$ 44.22	$ 43.34	$ 30.64	$ 72.60	$ 119.17	$ 119.26	$ 8.36	$ 727.82	$ 42.47	$ 91.49

KANSAS GAS SERVICE COMPANY
CURRENT RATES
TEST YEAR ENDING 12/31/2005

SUMMARY OF DEMAND COSTS

		Total Company $	Residential RS	General Service GS	GS Irrigation GIS	Generator Service SGS	Transport GTk	Transport GTt	Transport Irrigation GITt	Large Volume Transportation LVTk	Large Volume Transportation LVTt	Wholesale Transportation WTt	Transportation Flex	KGSSD	Resale SSRk
1	Rate Base	293,945,057	167,781,746	50,809,994	28,437	5,032	7,027,507	6,108,350	37,441	11,659,009	13,900,038	2,596,439	33,746,524	244,364	177
2															
3	Return @ Realized ROR	9,696,463	10,051,712	1,695,222	(2,134)	1,338	1,362,841	238,262	4,265	1,384,956	(18,013)	317,889	(5,451,628)	111,760	(7)
4	O&M Expenses	24,623,293	12,492,391	3,840,956	2,471	351	783,399	670,618	4,111	1,299,700	1,526,045	281,680	3,720,769	801	1
5	Depreciation Expense	12,493,240	6,499,093	1,978,702	1,166	191	410,557	310,347	1,902	681,136	706,219	116,701	1,785,952	1,273	1
6	Taxes, Other	5,533,723	2,811,472	861,705	539	80	182,150	147,609	905	302,196	335,895	59,237	831,936	0	0
7															
8	Income Taxes:														
9															
10	Current Income Taxes	(1,687,853)	(1,889,377)	(280,873)	2,595	(6,414)	(190,718)	(30,590)	(12,368)	(207,098)	2,388	(37,148)	980,152	(8,413)	11
11	Deferred Income Taxes	2,750,556	1,384,801	426,717	280	38	87,558	76,521	469	145,264	174,130	32,662	422,116	0	0
12	Amortization of ITC	(157,802)	(79,448)	(24,481)	(16)	(2)	(5,023)	(4,390)	(27)	(8,334)	(9,990)	(1,874)	(24,217)	0	0
13															
14	Total Income Taxes	904,901	(594,024)	121,363	2,859	(6,378)	(108,183)	41,541	(11,926)	(70,168)	166,528	(6,360)	1,378,051	(8,413)	11
15															
16	Total Demand-Related Costs @ Realized ROR	53,251,620	31,260,644	8,497,947	4,901	(4,418)	2,630,763	1,408,377	(744)	3,597,821	2,716,675	769,147	2,265,080	105,422	5
17															
18															
19	Incremental Return @ Equalized ROR	16,367,351	4,825,328	2,810,049	4,656	(892)	(739,719)	303,359	(945)	(351,164)	1,250,516	(87,665)	8,443,898	(90,093)	23
20	Incremental Income Taxes	10,810,782	3,187,172	1,856,062	3,075	(589)	(488,591)	200,371	(624)	(231,947)	825,977	(57,904)	5,577,270	(59,507)	15
21															
22	Total Demand-Related Costs @ Equalized ROR	80,429,753	39,273,144	13,164,059	12,632	(5,900)	1,402,454	1,912,107	(2,313)	3,014,710	4,793,167	623,578	16,286,249	(44,178)	43
23															
24															
25	Incremental Return @ Proposed Rates	16,451,238	11,096,921	2,882,744	1,310	0	589,782	309,094	2,598	802,136	587,207	159,530	19,906	0	8
26	Incremental Income Taxes	10,866,190	7,329,616	1,904,078	865	0	389,556	204,160	1,716	529,818	387,855	105,371	13,148	0	6
27															
28	Total Demand-Related Costs @ Proposed Rates	80,569,048	49,687,181	13,284,770	7,076	(4,418)	3,610,102	1,921,631	3,570	4,929,775	3,691,737	1,034,048	2,298,134	105,422	19

KANSAS GAS SERVICE COMPANY
CURRENT RATES
TEST YEAR ENDING 12/31/2005

SUMMARY OF COMMODITY COSTS

		Total Company $	Residential RS	General Service GS	GS Irrigation GIS	Generator Service SGS	Transport GTk	Transport GTt	Transport Irrigation GITt	Large Volume Transportation LVTk	Large Volume Transportation LVTt	Wholesale Transportation WTt	Transportation Flex	KGSSD	Resale SSRk
1	Rate Base	204,116,562	81,707,264	25,051,571	186,518	2,028	5,530,764	4,896,931	1,064,202	12,986,322	13,485,255	1,897,178	57,290,617	17,873	41
2															
3	Return @ Realized ROR	(387,283)	4,895,037	835,820	(14,000)	539	1,072,578	191,010	121,214	1,542,626	(17,476)	232,277	(9,255,090)	8,174	(2)
4	O&M Expenses	31,562,558	15,834,468	4,685,420	26,028	443	754,917	491,860	106,891	1,772,557	1,354,492	175,660	6,329,330	30,423	69
5	Depreciation Expense	10,874,105	4,402,284	1,338,823	9,326	113	315,919	247,247	53,732	741,782	680,873	85,123	2,998,344	539	1
6	Taxes, Other	5,140,120	2,110,584	642,671	4,539	54	142,176	117,076	25,443	333,832	322,406	42,327	1,398,387	623	1
7															
8	Income Taxes:														
9															
10	Current Income Taxes	(1,248,009)	(1,404,411)	(207,679)	1,919	(4,742)	(141,018)	(22,619)	(9,145)	(153,130)	1,766	(27,468)	724,731	(6,220)	8
11	Deferred Income Taxes	2,488,990	967,421	298,100	2,297	24	68,444	62,052	13,485	160,708	170,880	24,343	721,236	0	0
12	Amortization of ITC	(142,796)	(55,502)	(17,102)	(132)	(1)	(3,927)	(3,560)	(774)	(9,220)	(9,804)	(1,397)	(41,378)	0	0
13															
14	Total Income Taxes	1,098,185	(492,492)	73,318	4,084	(4,720)	(76,501)	35,873	3,566	(1,642)	162,842	(4,521)	1,404,589	(6,220)	8
15															
16	Total Commodity-Related Costs @ Realized ROR	48,287,676	26,749,882	7,576,052	29,976	(3,571)	2,209,090	1,083,065	310,846	4,389,156	2,503,137	530,866	2,875,560	33,539	78
17	Total Throughput	105,581,924	46,156,292	13,439,163	58,729	1,378	4,003,260	1,586,609	344,802	9,399,718	4,369,232	1,105,870	24,938,124	178,341	406
18	Commodity Costs ($/Mcf)		$ 0.58	$ 0.56	$ 0.51	$ (2.59)	$ 0.55	$ 0.68	$ 0.90	$ 0.47	$ 0.57	$ 0.48	$ 0.12	$ 0.19	$ 0.19
19															
20															
21	Incremental Return @ Equalized ROR	18,486,105	2,349,864	1,385,478	30,539	(359)	(582,171)	243,196	(26,852)	(391,142)	1,213,200	(64,056)	14,334,992	(6,589)	5
22	Incremental Income Taxes	12,210,238	1,552,106	915,121	20,171	(237)	(384,529)	160,633	(17,736)	(258,353)	801,329	(42,309)	9,468,390	(4,352)	3
23															
24	Total Commodity-Related Costs @ Equalized ROR	78,984,019	30,651,852	9,876,651	80,686	(4,168)	1,242,389	1,486,895	266,258	3,739,662	4,517,666	424,500	26,878,942	22,598	87
25	Total Throughput	105,581,924	46,156,292	13,439,163	58,729	1,378	4,003,260	1,586,609	344,802	9,399,718	4,369,232	1,105,870	24,938,124	178,341	406
26	Commodity Costs ($/Mcf)	$ 0.75	$ 0.66	$ 0.73	$ 1.37	$ (3.02)	$ 0.31	$ 0.94	$ 0.77	$ 0.40	$ 1.03	$ 0.38	$ 1.07	$ 0.13	$ 0.21
27															
28															
29	Incremental Return @ Proposed Rates	9,233,262	5,404,039	1,421,320	8,593	0	464,168	247,794	73,846	893,455	569,684	116,566	33,794	0	2
30	Incremental Income Taxes	6,098,652	3,569,416	938,795	5,676	0	306,587	163,670	48,776	590,135	376,282	76,993	22,321	0	1
31															
32	Total Commodity-Related Costs @ Proposed Rates	63,619,590	35,723,337	9,936,167	44,245	(3,571)	2,979,845	1,494,530	433,488	5,872,746	3,449,103	724,425	2,931,675	33,539	82
33	Total Throughput	105,581,924	46,156,292	13,439,163	58,729	1,378	4,003,260	1,586,609	344,802	9,399,718	4,369,232	1,105,870	24,938,124	178,341	406
34	Commodity Costs ($/Mcf)	$ 0.60	$ 0.77	$ 0.74	$ 0.75	$ (2.59)	$ 0.74	$ 0.94	$ 1.26	$ 0.62	$ 0.79	$ 0.66	$ 0.12	$ 0.19	$ 0.20

KANSAS GAS SERVICE COMPANY
CURRENT RATES
TEST YEAR ENDING 12/31/2005

TOTAL COST OF SERVICE

Line		Total Company $	Residential RS	General Service GS	GS Irrigation GIS	Generator Service SGS	Transport GTk	Transport GTt	Transport Irrigation GITt	Large Volume Transportation LVTk	Large Volume Transportation LVTt	Wholesale Transportation WTt	Transportation Flex	KGSSD	Resale SSRk
1	Rate Base	785,037,900	478,326,253	127,010,872	521,652	363,834	14,837,362	11,832,064	1,638,292	26,303,301	27,806,266	4,577,739	91,538,710	277,517	4,038
2															
3	Return @ Realized ROR	25,464,960	28,656,263	4,237,585	(39,156)	96,768	2,877,402	461,521	186,603	3,124,530	(36,035)	560,465	(14,787,744)	126,923	(167)
4	O&M Expenses	121,548,945	81,503,943	19,340,072	96,066	72,295	1,985,654	1,324,550	225,680	3,349,648	2,962,756	471,303	10,182,760	33,562	654
5	Depreciation Expense	39,843,443	24,137,283	6,166,993	27,174	20,338	855,162	603,639	84,911	1,515,674	1,410,563	206,514	4,812,311	2,666	216
6	Taxes, Other	19,018,523	11,646,445	2,933,712	13,544	10,109	387,756	287,348	41,120	680,336	669,510	103,804	2,243,703	1,033	104
7															
8	Income Taxes:														
9															
10	Current Income Taxes	(4,686,152)	(5,273,427)	(779,815)	7,206	(17,808)	(529,510)	(84,931)	(34,339)	(574,987)	6,631	(103,139)	2,721,293	(23,357)	31
11	Deferred Income Taxes	8,705,850	5,135,447	1,324,522	6,053	4,300	183,387	148,358	20,077	325,989	350,073	58,017	1,149,397	184	46
12	Amortization of ITC	(499,464)	(294,626)	(75,989)	(347)	(247)	(10,521)	(8,511)	(1,152)	(18,702)	(20,084)	(3,329)	(65,942)	(11)	(3)
13															
14	Total Income Taxes	3,520,234	(432,606)	468,718	12,911	(13,754)	(356,644)	54,915	(15,414)	(267,700)	336,620	(48,450)	3,804,748	(23,183)	74
15															
16	Total Cost of Service @ Realized ROR	209,396,105	145,511,328	33,147,080	110,539	185,756	5,749,331	2,731,974	522,900	8,402,487	5,343,415	1,293,637	6,255,778	141,000	881
17															
18															
19	Incremental Return @ Equalized ROR	44,143,567	13,756,448	7,024,342	85,410	(64,507)	(1,561,788)	587,616	(41,337)	(792,243)	2,501,588	(154,561)	22,904,390	(102,316)	525
20	Incremental Income Taxes	29,157,221	9,086,257	4,639,641	56,414	(42,608)	(1,031,575)	388,126	(27,304)	(523,283)	1,652,322	(102,088)	15,128,555	(67,580)	347
21															
22	Total Cost of Service @ Equalized ROR	282,696,893	168,354,033	44,811,063	252,363	78,641	3,155,968	3,707,715	454,259	7,086,961	9,497,325	1,036,987	44,288,722	(28,896)	1,752
23															
24															
25	Incremental Return @ Proposed Rates	44,143,542	31,636,033	7,206,060	24,033	0	1,245,223	598,726	113,683	1,809,659	1,174,675	281,265	53,995	0	191
26	Incremental Income Taxes	29,157,205	20,895,883	4,759,667	15,874	0	822,481	395,464	75,089	1,185,296	775,883	185,778	35,664	0	126
27															
28	Total Cost of Service @ Proposed Rates	282,696,852	198,043,243	45,112,807	150,445	185,756	7,817,034	3,726,163	711,672	11,407,442	7,293,974	1,760,680	6,345,438	141,000	1,199

		RESIDENTIAL			GENERAL SERVICE								
Tariff Rates		Tot RSk	Tot RSt	Total RS	COMk	INDk	STSk	Tot GSk	COMt	INDt	STSt	Tot GSt	Total GS
Current Rates													
Service Charge		8.95	8.95		17.00	17.00	17.00		17.00	17.00	17.00		
Margin Step 1		1.7465	1.7465		1.6163	1.6163	1.6163		1.6163	1.6163	1.6163		
Margin Step 2		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		
Margin Step 3		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		
		RESIDENTIAL			GENERAL SERVICE								
	Total	Tot RSk	Tot RSt	Total RS	COMk	INDk	STSk	Tot GSk	COMt	INDt	STSt	Tot GSt	Total GS
Billing Determinants													
Customers	628,692	460,896	111,898	572,794	37,846	36	65	37,947	13,133	60	18	13,211	51,157
Volumes Step 1	105,581,924	38,057,184.846	8,099,107.349	46,156,292.195	10,219,354.030	23,901.247	91,812.000	10,335,067.277	3,012,724.182	65,880.284	25,491.062	3,104,095.529	13,439,162.806
Volumes Step 2	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Volumes Step 3	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Volumes	105,581,924	38,057,184.846	8,099,107.349	46,156,292.195	10,219,354.030	23,901.247	91,812.000	10,335,067.277	3,012,724.182	65,880.284	25,491.062	3,104,095.529	13,439,162.806
Existing Rate Revenue													
Service Charge	74,379,127	49,500,216	12,017,856	61,518,072	7,720,609	7,389	13,170	7,741,168	2,679,031	12,168	3,753	2,694,952	10,436,120
Margin	128,796,698	66,466,873	14,145,091	80,611,964	16,517,542	38,632	148,396	16,704,569	4,869,466	106,482	41,201	5,017,150	21,721,719
Total Existing Revenue	203,175,825	115,967,089	26,162,947	142,130,036	24,238,151	46,021	161,566	24,445,738	7,548,497	118,650	44,954	7,712,101	32,157,839
Proposed Rates													
Service Charge		12.25	12.25		23.35	23.35	23.35		23.35	23.35	23.35		
Margin Step 1		2.3932	2.3932		2.2166	2.2166	2.2166		2.2166	2.2166	2.2166		
Margin Step 2		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		
Margin Step 3		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		
Proposed Rate Revenue													
Service Charge	101,818,006	67,751,692	16,449,021	84,200,713	10,604,484	10,149	18,089	10,632,722	3,679,727	16,713	5,155	3,701,595	14,334,318
Margin	174,658,566	91,078,455	19,382,784	110,461,238	22,652,220	52,980	203,510	22,908,710	6,678,004	146,030	56,503	6,880,538	29,789,248
Total Proposed Revenue	276,476,572	158,830,147	35,831,805	194,661,951	33,256,704	63,129	221,600	33,541,433	10,357,732	162,743	61,658	10,582,133	44,123,566
Rate Change													
Service Charge	27,438,878	18,251,476	4,431,165	22,682,641	2,883,875	2,760	4,919	2,891,554	1,000,697	4,545	1,402	1,006,644	3,898,198
Margin	45,861,869	24,611,581	5,237,693	29,849,274	6,134,678	14,348	55,115	6,204,141	1,808,538	39,548	15,302	1,863,389	8,067,529
Total Delivery Increase	73,300,747	42,863,058	9,668,858	52,531,915	9,018,553	17,108	60,034	9,095,695	2,809,235	44,093	16,704	2,870,032	11,965,727

		IRRIGATION SALES			SMALL GENERATOR SALES			General Service Transportation			Irrigation Transportation			LARGE VOLUME TRANSPORTATION		
Tariff Rates		GIS - Irr k	GIS - Irr t	Total Irr	SGSk	SGSt	Total SGS	GTk	GTt	Total GT	GITk	GITt	Total GIT	LVTk	LVTt	Total LVT
Current Rates																
Service Charge		17.00	17.00		41.00	41.00		17.00	17.00		17.00	17.00		187.00	220.00	
Margin Step 1		1.1785	1.1785		0.4810	0.4810		1.2389	1.5389		1.2685	1.2685		0.7048	1.0637	
Margin Step 2		0.0000	0.0000		1.3988	1.3988		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	
Margin Step 3		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	
		IRRIGATION SALES			SMALL GENERATOR SALES			General Service Transportation			Irrigation Transportation			LARGE VOLUME TRANSPORTATION		
	Total	GIS - Irr k	GIS - Irr t	Total Irr	SGSk	SGSt	Total SGS	GTk	GTt	Total GT	GITk	GITt	Total GIT	LVTk	LVTt	Total LVT
Billing Determinants																
Customers	628,692	0	182	182	377	0	377	2,333	837	3,170	0	320	320	431	104	535
Volumes Step 1	105,581,924	0.000	58,728.549	58,728.549	1,378.340	0.000	1,378.340	4,003,259.884	1,586,609.009	5,589,868.892	0.000	344,802.321	344,802.321	9,399,718.326	4,369,232.198	13,768,950.524
Volumes Step 2	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Volumes Step 3	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Volumes	105,581,924	0.000	58,728.549	58,728.549	1,378.340	0.000	1,378.340	4,003,259.884	1,586,609.009	5,589,868.892	0.000	344,802.321	344,802.321	9,399,718.326	4,369,232.198	13,768,950.524
Existing Rate Revenue																
Service Charge	74,379,127	0	37,106	37,106	185,265	0	185,265	475,904	170,808	646,712	0	65,334	65,334	967,620	274,660	1,242,280
Margin	128,796,698	0	69,212	69,212	663	0	663	4,959,639	2,441,633	7,401,271	0	437,382	437,382	6,624,921	4,647,552	11,272,474
Total Existing Revenue	203,175,825	0	106,318	106,318	185,928	0	185,928	5,435,543	2,612,440	8,047,983	0	502,716	502,716	7,592,542	4,922,212	12,514,754
Proposed Rates																
Service Charge		23.35	23.35		$41.00	$41.00		23.35	23.35		23.35	23.35		260.00	305.50	
Margin Step 1		1.6220	1.6220		0.4810	0.4810		1.7110	2.1253		1.7452	1.7452		0.9843	1.4857	
Margin Step 2		0.0000	0.0000		1.3988	1.3988		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	
Margin Step 3		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	
Proposed Rate Revenue																
Service Charge	101,818,006	0	50,966	50,966	185,265	0	185,265	653,668	234,610	888,278	0	89,739	89,739	1,345,354	381,402	1,726,757
Margin	174,658,566	0	95,258	95,258	663	0	663	6,849,578	3,372,020	10,221,598	0	601,749	601,749	9,252,143	6,491,368	15,743,511
Total Proposed Revenue	276,476,572	0	146,224	146,224	185,928	0	185,928	7,503,246	3,606,630	11,109,876	0	691,488	691,488	10,597,497	6,872,771	17,470,268
Rate Change																
Service Charge	27,438,878	0	13,860	13,860	0	0	0	177,764	63,802	241,566	0	24,404	24,404	377,734	106,743	484,477
Margin	45,861,869	0	26,046	26,046	0	0	0	1,889,939	930,388	2,820,327	0	164,367	164,367	2,627,221	1,843,816	4,471,037
Total Delivery Increase	73,300,747	0	39,906	39,906	0	0	0	2,067,703	994,189	3,061,892	0	188,772	188,772	3,004,955	1,950,559	4,955,514

		WHOLESALE TRANSPORTATION			FLEX							WHOLESALE SALES			
Tariff Rates		WTk	WTt	Total WT	LVT Flex k	GTS Flex k	Total Flex k	LVT Flex t	WT Flex t	Total Flex t	Total Flex	SSR	KGSSD-resale	KGSSD-sales	Total SSR
Current Rates															
Service Charge		38.50	38.50		187.00	17.00		220.00	38.50			38.50	225.00	225.00	
Margin Step 1		0.8526	1.0826		0.1926	0.9626		0.2887	0.1682			0.9800	0.6854	0.6854	
Margin Step 2		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	
Margin Step 3		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	
		WHOLESALE TRANSPORTATION			FLEX							WHOLESALE SALES			
	Total	WTk	WTt	Total WT	LVT Flex k	GTS Flex k	Total Flex k	LVT Flex t	WT Flex t	Total Flex t	Total Flex	SSR	KGSSD-resale	KGSSD-sales	Total SSR
Billing Determinants															
Customers	628,692	0	23	23	66	4	70	25	35	60	130	1	2	0	3
Volumes Step 1	105,581,924	0.000	1,105,869.584	1,105,869.584	11,532,832.259	9,975.263	11,542,807.522	12,267,619.373	1,127,697.000	13,395,316.373	24,938,123.895	405.700	90,458.362	87,882.912	178,746.974
Volumes Step 2	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Volumes Step 3	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Volumes	105,581,924	0.000	1,105,869.584	1,105,869.584	11,532,832.259	9,975.263	11,542,807.522	12,267,619.373	1,127,697.000	13,395,316.373	24,938,123.895	405.700	90,458.362	87,882.912	178,746.974
Existing Rate Revenue															
Service Charge	74,379,127	0	10,549	10,549	148,674	782	149,456	65,214	16,170	81,384	230,839	454	5,400	996	6,850
Margin	128,796,698	0	1,197,214	1,197,214	2,221,223	9,602	2,230,826	3,541,662	189,679	3,731,340	5,962,166	398	62,000	60,235	122,633
Total Existing Revenue	203,175,825	0	1,207,763	1,207,763	2,369,897	10,384	2,380,281	3,606,875	205,849	3,812,724	6,193,005	852	67,400	61,231	129,483
Proposed Rates															
Service Charge		52.75	52.75		260.00	23.35		305.50	52.75			52.75	225.00	225.00	
Margin Step 1		1.1824	1.5014		0.1926	0.9626		0.2887	0.1682			1.3490	0.6854	0.6854	
Margin Step 2		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	
Margin Step 3		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	
Proposed Rate Revenue															
Service Charge	101,818,006	0	14,454	14,454	206,712	1,074	207,786	90,558	22,155	112,713	320,499	622	5,400	996	7,018
Margin	174,658,566	0	1,660,353	1,660,353	2,221,223	9,602	2,230,826	3,541,662	189,679	3,731,340	5,962,166	547	62,000	60,235	122,782
Total Proposed Revenue	276,476,572	0	1,674,806	1,674,806	2,427,935	10,676	2,438,612	3,632,220	211,834	3,844,053	6,282,665	1,170	67,400	61,231	129,801
Rate Change															
Service Charge	27,438,878	0	3,905	3,905	58,038	292	58,330	25,344	5,985	31,329	89,660	168	0	0	168
Margin	45,861,869	0	463,138	463,138	0	0	0	0	0	0	0	150	0	0	150
Total Delivery Increase	73,300,747	0	467,043	467,043	58,038	292	58,330	25,344	5,985	31,329	89,660	318	0	0	318

Line No.		Unit Charges/Billing Determinants		Revenues		Cost of Service		Absolute Cost of Service Difference		Percentage Cost of Service Difference	
		RS (A)	GS (B)	RS (C)	GS (D)	RS (E)	GS (F)	RS (G)	GS (H)	RS (I)	GS (J)
1	Traditional										
2											
3	Rates:										
4	Fixed Charges ($/customer/month)	$ 12.25	$ 23.35	$ 84,200,713	$ 14,334,318	$ 159,548,537	$ 34,405,281	$ (75,347,824)	$ (20,070,963)	-89.49%	-140.02%
5	Volumetric Charges ($/Mcf)	$ 2.3932	$ 2.2166	$ 110,461,238	$ 29,789,248	$ 35,113,414	$ 9,718,285	$ 75,347,824	$ 20,070,963	68.21%	67.38%
6	Totals			$ 194,661,951	$ 44,123,566	$ 194,661,951	$ 44,123,566	$ -	$ -	0.00%	0.00%
7											
8	Cost-Based Proposed										
9											
10	Full Cost of Service										
11	Fixed Charges ($/customer/month)	$ 23.20	$ 56.05	$ 159,465,840	$ 34,408,502	$ 159,548,537	$ 34,405,281	$ (82,697)	$ 3,220	-0.05%	0.01%
12	Volumetric Charges ($/Mcf)	$ 0.7625	$ 0.7229	$ 35,194,173	$ 9,715,171	$ 35,113,414	$ 9,718,285	$ 80,759	$ (3,114)	0.23%	-0.03%
13	Totals			$ 194,660,013	$ 44,123,672	$ 194,661,951	$ 44,123,566	$ (1,939)	$ 106	0.00%	0.00%
14											
15	Full Cost of Service Phase-in										
16											
17	Breakpoint (Mcfs/year):	80.00	265.01								
18											
19	Less Than or Equal to Breakpoint:										
20	Fixed Charges ($/customer/month)	$ 12.25	$ 23.35	$ 51,462,070	$ 10,235,809	$ 97,513,402	$ 24,568,025	$ (46,051,332)	$ (14,332,216)	-89.49%	-140.02%
21	Volumetric Charges ($/Mcf)	$ 2.6631	$ 2.8885	$ 55,277,904	$ 10,008,330	$ 15,790,876	$ 2,505,571	$ 39,487,027	$ 7,502,760	71.43%	74.97%
22	Totals			$ 106,739,973	$ 20,244,139	$ 113,304,278	$ 27,073,596	$ (6,564,305)	$ (6,829,456)	-6.15%	-33.74%
23											
24	Greater Than Breakpoint:										
25	Fixed Charges ($/customer/month)	$ 23.20	$ 56.05	$ 62,002,981	$ 9,838,177	$ 62,035,135	$ 9,837,256	$ (32,154)	$ 921	-0.05%	0.01%
26	Volumetric Charges ($/Mcf)	$ 1.0205	$ 1.4078	$ 25,920,002	$ 14,041,783	$ 19,322,538	$ 7,212,714	$ 6,597,464	$ 6,829,069	25.45%	48.63%
27	Totals			$ 87,922,983	$ 23,879,961	$ 81,357,673	$ 17,049,971	$ 6,565,310	$ 6,829,990	7.47%	28.60%
28											
29	All Customers:	0.2754	$ 0.6849								
30	Fixed Charges ($/customer/month)	$ (46,083,486)	$ (14,331,295)	$ 113,465,051	$ 20,073,986	$ 159,548,537	$ 34,405,281	$ (46,083,486)	$ (14,331,295)	-40.61%	-71.39%
31	Volumetric Charges ($/Mcf)	$ 46,084,491	$ 14,331,829	$ 81,197,906	$ 24,050,114	$ 35,113,414	$ 9,718,285	$ 46,084,491	$ 14,331,829	56.76%	59.59%
32	Totals	$ 1,005	$ 534	$ 194,662,957	$ 44,124,100	$ 194,661,951	$ 44,123,566	$ 1,005	$ 534	0.00%	0.00%

Annual Bill Impacts of Full Cost of Service Phase-in Rate Relative to Traditional Rates, <=80 Mcf/year

Line Number				$ 12.25	$ 2.39320	$ 2.39320			$ 12.25	$ 2.66310	$ 2.66310						
	Consumption			Annual Charges - Traditional Rate					Annual Charges - Option A Rate					Absolute Change		Percentage Change	
	Low	High	Customers	Customer	Low Cons	High Cons	Low Total	High Total	Customer	Low Cons	High Cons	Low Total	High Total	Low	High	Low	High
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)	(P)	(Q)
1	0	10	1,176	$ 147.00	$ -	$ 23.93	$ 147.00	$ 170.93	$ 147.00	$ -	$ 26.63	$ 147.00	$ 173.63	$ -	$ 0.22	0%	2%
2	11	20	4,802	$ 147.00	$ 26.33	$ 47.86	$ 173.33	$ 194.86	$ 147.00	$ 29.29	$ 53.26	$ 176.29	$ 200.26	$ 0.25	$ 0.45	2%	3%
3	21	30	13,129	$ 147.00	$ 50.26	$ 71.80	$ 197.26	$ 218.80	$ 147.00	$ 55.93	$ 79.89	$ 202.93	$ 226.89	$ 0.47	$ 0.67	3%	4%
4	31	40	29,742	$ 147.00	$ 74.19	$ 95.73	$ 221.19	$ 242.73	$ 147.00	$ 82.56	$ 106.52	$ 229.56	$ 253.52	$ 0.70	$ 0.90	4%	4%
5	41	50	55,858	$ 147.00	$ 98.12	$ 119.66	$ 245.12	$ 266.66	$ 147.00	$ 109.19	$ 133.16	$ 256.19	$ 280.16	$ 0.92	$ 1.12	5%	5%
6	51	60	79,970	$ 147.00	$ 122.05	$ 143.59	$ 269.05	$ 290.59	$ 147.00	$ 135.82	$ 159.79	$ 282.82	$ 306.79	$ 1.15	$ 1.35	5%	6%
7	61	70	86,739	$ 147.00	$ 145.99	$ 167.52	$ 292.99	$ 314.52	$ 147.00	$ 162.45	$ 186.42	$ 309.45	$ 333.42	$ 1.37	$ 1.57	6%	6%
8	71	80	78,666	$ 147.00	$ 169.92	$ 191.46	$ 316.92	$ 338.46	$ 147.00	$ 189.08	$ 213.05	$ 336.08	$ 360.05	$ 1.60	$ 1.80	6%	6%
9	81	90	63,705	$ 147.00	$ 193.85	$ 215.39	$ 340.85	$ 362.39	$ 147.00	$ 215.71	$ 239.68	$ 362.71	$ 386.68	$ 1.82	$ 2.02	6%	7%
10	91	100	47,017	$ 147.00	$ 217.78	$ 239.32	$ 364.78	$ 386.32	$ 147.00	$ 242.34	$ 266.31	$ 389.34	$ 413.31	$ 2.05	$ 2.25	7%	7%
11	101	110	33,984	$ 147.00	$ 241.71	$ 263.25	$ 388.71	$ 410.25	$ 147.00	$ 268.97	$ 292.94	$ 415.97	$ 439.94	$ 2.27	$ 2.47	7%	7%
12	111	120	23,923	$ 147.00	$ 265.65	$ 287.18	$ 412.65	$ 434.18	$ 147.00	$ 295.60	$ 319.57	$ 442.60	$ 466.57	$ 2.50	$ 2.70	7%	7%
13	121	130	16,407	$ 147.00	$ 289.58	$ 311.12	$ 436.58	$ 458.12	$ 147.00	$ 322.24	$ 346.20	$ 469.24	$ 493.20	$ 2.72	$ 2.92	7%	8%
14	131	140	10,945	$ 147.00	$ 313.51	$ 335.05	$ 460.51	$ 482.05	$ 147.00	$ 348.87	$ 372.83	$ 495.87	$ 519.83	$ 2.95	$ 3.15	8%	8%
15	141	150	7,522	$ 147.00	$ 337.44	$ 358.98	$ 484.44	$ 505.98	$ 147.00	$ 375.50	$ 399.47	$ 522.50	$ 546.47	$ 3.17	$ 3.37	8%	8%
16	151	160	5,196	$ 147.00	$ 361.37	$ 382.91	$ 508.37	$ 529.91	$ 147.00	$ 402.13	$ 426.10	$ 549.13	$ 573.10	$ 3.40	$ 3.60	8%	9%
17	161	170	3,528	$ 147.00	$ 385.31	$ 406.84	$ 532.31	$ 553.84	$ 147.00	$ 428.76	$ 452.73	$ 575.76	$ 599.73	$ 3.62	$ 3.82	8%	9%
18	171	180	2,613	$ 147.00	$ 409.24	$ 430.78	$ 556.24	$ 577.78	$ 147.00	$ 455.39	$ 479.36	$ 602.39	$ 626.36	$ 3.85	$ 4.05	8%	8%
19	181	190	1,785	$ 147.00	$ 433.17	$ 454.71	$ 580.17	$ 601.71	$ 147.00	$ 482.02	$ 505.99	$ 629.02	$ 652.99	$ 4.07	$ 4.27	8%	9%
20	191	200	1,358	$ 147.00	$ 457.10	$ 478.64	$ 604.10	$ 625.64	$ 147.00	$ 508.65	$ 532.62	$ 655.65	$ 679.62	$ 4.30	$ 4.50	9%	9%
21	201	210	919	$ 147.00	$ 481.03	$ 502.57	$ 628.03	$ 649.57	$ 147.00	$ 535.28	$ 559.25	$ 682.28	$ 706.25	$ 4.52	$ 4.72	9%	9%
22	211	220	670	$ 147.00	$ 504.97	$ 526.50	$ 651.97	$ 673.50	$ 147.00	$ 561.91	$ 585.88	$ 708.91	$ 732.88	$ 4.75	$ 4.95	9%	9%
23	221	230	576	$ 147.00	$ 528.90	$ 550.44	$ 675.90	$ 697.44	$ 147.00	$ 588.55	$ 612.51	$ 735.55	$ 759.51	$ 4.97	$ 5.17	9%	9%
24	231	240	488	$ 147.00	$ 552.83	$ 574.37	$ 699.83	$ 721.37	$ 147.00	$ 615.18	$ 639.14	$ 762.18	$ 786.14	$ 5.20	$ 5.40	9%	9%
25	241	250	359	$ 147.00	$ 576.76	$ 598.30	$ 723.76	$ 745.30	$ 147.00	$ 641.81	$ 665.78	$ 788.81	$ 812.78	$ 5.42	$ 5.62	9%	9%
26	251	260	313	$ 147.00	$ 600.69	$ 622.23	$ 747.69	$ 769.23	$ 147.00	$ 668.44	$ 692.41	$ 815.44	$ 839.41	$ 5.65	$ 5.85	9%	9%
27	261	270	238	$ 147.00	$ 624.63	$ 646.16	$ 771.63	$ 793.16	$ 147.00	$ 695.07	$ 719.04	$ 842.07	$ 866.04	$ 5.87	$ 6.07	9%	9%
28	271	280	189	$ 147.00	$ 648.56	$ 670.10	$ 795.56	$ 817.10	$ 147.00	$ 721.70	$ 745.67	$ 868.70	$ 892.67	$ 6.10	$ 6.30	9%	9%
29	281	290	170	$ 147.00	$ 672.49	$ 694.03	$ 819.49	$ 841.03	$ 147.00	$ 748.33	$ 772.30	$ 895.33	$ 919.30	$ 6.32	$ 6.52	9%	9%
30	291	300	110	$ 147.00	$ 696.42	$ 717.96	$ 843.42	$ 864.96	$ 147.00	$ 774.96	$ 798.93	$ 921.96	$ 945.93	$ 6.55	$ 6.75	9%	9%
31	301	>301	695	$ 147.00	$ 720.35	-	$ 867.35	-	$ 147.00	$ 801.59	-	$ 948.59	-	$ 6.77	-	9%	-

34 Annual Bill Impacts of Full Cost of Service Phase-in Rate Relative to Traditional Rates, >80 Mcf/year

37				$ 12.25	$ 2.39320	$ 2.39320			$ 23.20	$ 1.02050	$ 1.02050						
38	Consumption			Annual Charges - Traditional Rate					Annual Charges - Option B Rate					Absolute Change		Percentage Change	
39	Low	High	Customers	Customer	Low Cons	High Cons	Low Total	High Total	Customer	Low Cons	High Cons	Low Total	High Total	Low	High	Low	High
40	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)	(P)	(Q)
41	0	10	1,176	$ 147.00	$ -	$ 23.93	$ 147.00	$ 170.93	$ 278.40	$ -	$ 10.21	$ 278.40	$ 288.61	$ 10.95	$ 9.81	89%	69%
42	11	20	4,802	$ 147.00	$ 26.33	$ 47.86	$ 173.33	$ 194.86	$ 278.40	$ 11.23	$ 20.41	$ 289.63	$ 298.81	$ 9.69	$ 8.66	67%	53%
43	21	30	13,129	$ 147.00	$ 50.26	$ 71.80	$ 197.26	$ 218.80	$ 278.40	$ 21.43	$ 30.62	$ 299.83	$ 309.02	$ 8.55	$ 7.52	52%	41%
44	31	40	29,742	$ 147.00	$ 74.19	$ 95.73	$ 221.19	$ 242.73	$ 278.40	$ 31.64	$ 40.82	$ 310.04	$ 319.22	$ 7.40	$ 6.37	40%	32%
45	41	50	55,858	$ 147.00	$ 98.12	$ 119.66	$ 245.12	$ 266.66	$ 278.40	$ 41.84	$ 51.03	$ 320.24	$ 329.43	$ 6.26	$ 5.23	31%	24%
46	51	60	79,970	$ 147.00	$ 122.05	$ 143.59	$ 269.05	$ 290.59	$ 278.40	$ 52.05	$ 61.23	$ 330.45	$ 339.63	$ 5.12	$ 4.09	23%	17%
47	61	70	86,739	$ 147.00	$ 145.99	$ 167.52	$ 292.99	$ 314.52	$ 278.40	$ 62.25	$ 71.44	$ 340.65	$ 349.84	$ 3.97	$ 2.94	16%	11%
48	71	80	78,666	$ 147.00	$ 169.92	$ 191.46	$ 316.92	$ 338.46	$ 278.40	$ 72.46	$ 81.64	$ 350.86	$ 360.04	$ 2.83	$ 1.80	11%	6%
49	81	90	63,705	$ 147.00	$ 193.85	$ 215.39	$ 340.85	$ 362.39	$ 278.40	$ 82.66	$ 91.85	$ 361.06	$ 370.25	$ 1.68	$ 0.65	6%	2%
50	91	100	47,017	$ 147.00	$ 217.78	$ 239.32	$ 364.78	$ 386.32	$ 278.40	$ 92.87	$ 102.05	$ 371.27	$ 380.45	$ 0.54	$ (0.49)	2%	-2%
51	101	110	33,984	$ 147.00	$ 241.71	$ 263.25	$ 388.71	$ 410.25	$ 278.40	$ 103.07	$ 112.26	$ 381.47	$ 390.66	$ (0.60)	$ (1.63)	-2%	-5%
52	111	120	23,923	$ 147.00	$ 265.65	$ 287.18	$ 412.65	$ 434.18	$ 278.40	$ 113.28	$ 122.46	$ 391.68	$ 400.86	$ (1.75)	$ (2.78)	-5%	-8%
53	121	130	16,407	$ 147.00	$ 289.58	$ 311.12	$ 436.58	$ 458.12	$ 278.40	$ 123.48	$ 132.67	$ 401.88	$ 411.07	$ (2.89)	$ (3.92)	-8%	-10%
54	131	140	10,945	$ 147.00	$ 313.51	$ 335.05	$ 460.51	$ 482.05	$ 278.40	$ 133.69	$ 142.87	$ 412.09	$ 421.27	$ (4.04)	$ (5.06)	-11%	-13%
55	141	150	7,522	$ 147.00	$ 337.44	$ 358.98	$ 484.44	$ 505.98	$ 278.40	$ 143.89	$ 153.08	$ 422.29	$ 431.48	$ (5.18)	$ (6.21)	-13%	-15%
56	151	160	5,196	$ 147.00	$ 361.37	$ 382.91	$ 508.37	$ 529.91	$ 278.40	$ 154.10	$ 163.28	$ 432.50	$ 441.68	$ (6.32)	$ (7.35)	-15%	-17%
57	161	170	3,528	$ 147.00	$ 385.31	$ 406.84	$ 532.31	$ 553.84	$ 278.40	$ 164.30	$ 173.49	$ 442.70	$ 451.89	$ (7.47)	$ (8.50)	-17%	-18%
58	171	180	2,613	$ 147.00	$ 409.24	$ 430.78	$ 556.24	$ 577.78	$ 278.40	$ 174.51	$ 183.69	$ 452.91	$ 462.09	$ (8.61)	$ (9.64)	-19%	-20%
59	181	190	1,785	$ 147.00	$ 433.17	$ 454.71	$ 580.17	$ 601.71	$ 278.40	$ 184.71	$ 193.90	$ 463.11	$ 472.30	$ (9.75)	$ (10.78)	-20%	-22%
60	191	200	1,358	$ 147.00	$ 457.10	$ 478.64	$ 604.10	$ 625.64	$ 278.40	$ 194.92	$ 204.10	$ 473.32	$ 482.50	$ (10.90)	$ (11.93)	-22%	-23%
61	201	210	919	$ 147.00	$ 481.03	$ 502.57	$ 628.03	$ 649.57	$ 278.40	$ 205.12	$ 214.31	$ 483.52	$ 492.71	$ (12.04)	$ (13.07)	-23%	-24%
62	211	220	670	$ 147.00	$ 504.97	$ 526.50	$ 651.97	$ 673.50	$ 278.40	$ 215.33	$ 224.51	$ 493.73	$ 502.91	$ (13.19)	$ (14.22)	-24%	-25%
63	221	230	576	$ 147.00	$ 528.90	$ 550.44	$ 675.90	$ 697.44	$ 278.40	$ 225.53	$ 234.72	$ 503.93	$ 513.12	$ (14.33)	$ (15.36)	-25%	-26%
64	231	240	488	$ 147.00	$ 552.83	$ 574.37	$ 699.83	$ 721.37	$ 278.40	$ 235.74	$ 244.92	$ 514.14	$ 523.32	$ (15.47)	$ (16.50)	-27%	-27%
65	241	250	359	$ 147.00	$ 576.76	$ 598.30	$ 723.76	$ 745.30	$ 278.40	$ 245.94	$ 255.13	$ 524.34	$ 533.53	$ (16.62)	$ (17.65)	-28%	-28%
66	251	260	313	$ 147.00	$ 600.69	$ 622.23	$ 747.69	$ 769.23	$ 278.40	$ 256.15	$ 265.33	$ 534.55	$ 543.73	$ (17.76)	$ (18.79)	-29%	-29%
67	261	270	238	$ 147.00	$ 624.63	$ 646.16	$ 771.63	$ 793.16	$ 278.40	$ 266.35	$ 275.54	$ 544.75	$ 553.94	$ (18.91)	$ (19.94)	-29%	-30%
68	271	280	189	$ 147.00	$ 648.56	$ 670.10	$ 795.56	$ 817.10	$ 278.40	$ 276.56	$ 285.74	$ 554.96	$ 564.14	$ (20.05)	$ (21.08)	-30%	-31%
69	281	290	170	$ 147.00	$ 672.49	$ 694.03	$ 819.49	$ 841.03	$ 278.40	$ 286.76	$ 295.95	$ 565.16	$ 574.35	$ (21.19)	$ (22.22)	-31%	-32%
70	291	300	110	$ 147.00	$ 696.42	$ 717.96	$ 843.42	$ 864.96	$ 278.40	$ 296.97	$ 306.15	$ 575.37	$ 584.55	$ (22.34)	$ (23.37)	-32%	-32%
71	301	>301	695	$ 147.00	$ 720.35	-	$ 867.35	-	$ 278.40	$ 307.17	-	$ 585.57	-	$ (23.48)	-	-32%	-

74 Annual Bill Impacts of Full Cost of Service Phase-in Rate <=80 Mcf/year Relative to Full Cost of Service Phase-in Rate, >80 Mcf/year

77				$ 12.25	$ 2.66310	$ 2.66310			$ 23.20	$ 1.02050	$ 1.02050						
78	Consumption			Annual Charges - Option A Rate					Annual Charges - Option B Rate					Absolute Change		Percentage Change	
79	Low	High	Customers	Customer	Low Cons	High Cons	Low Total	High Total	Customer	Low Cons	High Cons	Low Total	High Total	Low	High	Low	High
80	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)	(P)	(Q)
81	0	10	1,176	$ 147.00	$ -	$ 26.63	$ 147.00	$ 173.63	$ 278.40	$ -	$ 10.21	$ 278.40	$ 288.61	$ 10.95	$ 9.58	89%	66%
82	11	20	4,802	$ 147.00	$ 29.29	$ 53.26	$ 176.29	$ 200.26	$ 278.40	$ 11.23	$ 20.41	$ 289.63	$ 298.81	$ 9.44	$ 8.21	64%	49%
83	21	30	13,129	$ 147.00	$ 55.93	$ 79.89	$ 202.93	$ 226.89	$ 278.40	$ 21.43	$ 30.62	$ 299.83	$ 309.02	$ 8.08	$ 6.84	48%	36%
84	31	40	29,742	$ 147.00	$ 82.56	$ 106.52	$ 229.56	$ 253.52	$ 278.40	$ 31.64	$ 40.82	$ 310.04	$ 319.22	$ 6.71	$ 5.47	35%	26%
85	41	50	55,858	$ 147.00	$ 109.19	$ 133.16	$ 256.19	$ 280.16	$ 278.40	$ 41.84	$ 51.03	$ 320.24	$ 329.43	$ 5.34	$ 4.11	25%	18%
86	51	60	79,970	$ 147.00	$ 135.82	$ 159.79	$ 282.82	$ 306.79	$ 278.40	$ 52.05	$ 61.23	$ 330.45	$ 339.63	$ 3.97	$ 2.74	17%	11%
87	61	70	86,739	$ 147.00	$ 162.45	$ 186.42	$ 309.45	$ 333.42	$ 278.40	$ 62.25	$ 71.44	$ 340.65	$ 349.84	$ 2.60	$ 1.37	10%	5%
88	71	80	78,666	$ 147.00	$ 189.08	$ 213.05	$ 336.08	$ 360.05	$ 278.40	$ 72.46	$ 81.64	$ 350.86	$ 360.04	$ 1.23	$ (0.00)	4%	0%
89	81	90	63,705	$ 147.00	$ 215.71	$ 239.68	$ 362.71	$ 386.68	$ 278.40	$ 82.66	$ 91.85	$ 361.06	$ 370.25	$ (0.14)	$ (1.37)	0%	-4%
90	91	100	47,017	$ 147.00	$ 242.34	$ 266.31	$ 389.34	$ 413.31	$ 278.40	$ 92.87	$ 102.05	$ 371.27	$ 380.45	$ (1.51)	$ (2.74)	-5%	-8%
91	101	110	33,984	$ 147.00	$ 268.97	$ 292.94	$ 415.97	$ 439.94	$ 278.40	$ 103.07	$ 112.26	$ 381.47	$ 390.66	$ (2.88)	$ (4.11)	-8%	-11%
92	111	120	23,923	$ 147.00	$ 295.60	$ 319.57	$ 442.60	$ 466.57	$ 278.40	$ 113.28	$ 122.46	$ 391.68	$ 400.86	$ (4.24)	$ (5.48)	-12%	-14%
93	121	130	16,407	$ 147.00	$ 322.24	$ 346.20	$ 469.24	$ 493.20	$ 278.40	$ 123.48	$ 132.67	$ 401.88	$ 411.07	$ (5.61)	$ (6.84)	-14%	-17%
94	131	140	10,945	$ 147.00	$ 348.87	$ 372.83	$ 495.87	$ 519.83	$ 278.40	$ 133.69	$ 142.87	$ 412.09	$ 421.27	$ (6.98)	$ (8.21)	-17%	-19%
95	141	150	7,522	$ 147.00	$ 375.50	$ 399.47	$ 522.50	$ 546.47	$ 278.40	$ 143.89	$ 153.08	$ 422.29	$ 431.48	$ (8.35)	$ (9.58)	-19%	-21%
96	151	160	5,196	$ 147.00	$ 402.13	$ 426.10	$ 549.13	$ 573.10	$ 278.40	$ 154.10	$ 163.28	$ 432.50	$ 441.68	$ (9.72)	$ (10.95)	-21%	-23%
97	161	170	3,528	$ 147.00	$ 428.76	$ 452.73	$ 575.76	$ 599.73	$ 278.40	$ 164.30	$ 173.49	$ 442.70	$ 451.89	$ (11.09)	$ (12.32)	-23%	-25%
98	171	180	2,613	$ 147.00	$ 455.39	$ 479.36	$ 602.39	$ 626.36	$ 278.40	$ 174.51	$ 183.69	$ 452.91	$ 462.09	$ (12.46)	$ (13.69)	-25%	-26%
99	181	190	1,785	$ 147.00	$ 482.02	$ 505.99	$ 629.02	$ 652.99	$ 278.40	$ 184.71	$ 193.90	$ 463.11	$ 472.30	$ (13.83)	$ (15.06)	-26%	-28%
100	191	200	1,358	$ 147.00	$ 508.65	$ 532.62	$ 655.65	$ 679.62	$ 278.40	$ 194.92	$ 204.10	$ 473.32	$ 482.50	$ (15.19)	$ (16.43)	-28%	-29%
101	201	210	919	$ 147.00	$ 535.28	$ 559.25	$ 682.28	$ 706.25	$ 278.40	$ 205.12	$ 214.31	$ 483.52	$ 492.71	$ (16.56)	$ (17.80)	-29%	-30%
102	211	220	670	$ 147.00	$ 561.91	$ 585.88	$ 708.91	$ 732.88	$ 278.40	$ 215.33	$ 224.51	$ 493.73	$ 502.91	$ (17.93)	$ (19.16)	-30%	-31%
103	221	230	576	$ 147.00	$ 588.55	$ 612.51	$ 735.55	$ 759.51	$ 278.40	$ 225.53	$ 234.72	$ 503.93	$ 513.12	$ (19.30)	$ (20.53)	-31%	-32%
104	231	240	488	$ 147.00	$ 615.18	$ 639.14	$ 762.18	$ 786.14	$ 278.40	$ 235.74	$ 244.92	$ 514.14	$ 523.32	$ (20.67)	$ (21.90)	-33%	-33%
105	241	250	359	$ 147.00	$ 641.81	$ 665.78	$ 788.81	$ 812.78	$ 278.40	$ 245.94	$ 255.13	$ 524.34	$ 533.53	$ (22.04)	$ (23.27)	-34%	-34%
106	251	260	313	$ 147.00	$ 668.44	$ 692.41	$ 815.44	$ 839.41	$ 278.40	$ 256.15	$ 265.33	$ 534.55	$ 543.73	$ (23.41)	$ (24.64)	-34%	-35%
107	261	270	238	$ 147.00	$ 695.07	$ 719.04	$ 842.07	$ 866.04	$ 278.40	$ 266.35	$ 275.54	$ 544.75	$ 553.94	$ (24.78)	$ (26.01)	-35%	-36%
108	271	280	189	$ 147.00	$ 721.70	$ 745.67	$ 868.70	$ 892.67	$ 278.40	$ 276.56	$ 285.74	$ 554.96	$ 564.14	$ (26.15)	$ (27.38)	-36%	-37%
109	281	290	170	$ 147.00	$ 748.33	$ 772.30	$ 895.33	$ 919.30	$ 278.40	$ 286.76	$ 295.95	$ 565.16	$ 574.35	$ (27.51)	$ (28.75)	-37%	-38%
110	291	300	110	$ 147.00	$ 774.96	$ 798.93	$ 921.96	$ 945.93	$ 278.40	$ 296.97	$ 306.15	$ 575.37	$ 584.55	$ (28.88)	$ (30.12)	-38%	-38%
111	301	>301	695	$ 147.00	$ 801.59	-	$ 948.59	-	$ 278.40	$ 307.17	-	$ 585.57	-	$ (30.25)	-	-38%	-

Winter Bill Impacts of Full Cost of Service Phase-in Rate Relative to Traditional Rates, <=80 Mcf/year

				$ 12.25	$ 2.39320	$ 2.39320			$ 12.25	$ 2.66310	$ 2.66310					
Line	Consumption					Current Charges					Proposed Charges			Absolute Change		Percentage Change
Number	Low	High	Customers	Customer	Low Cons	High Cons	Low Total	High Total	Customer	Low Cons	High Cons	Low Total	High Total	Low	High	Low	High
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)	(P)	(Q)
1	0	10	3,955	61.25	-	23.93	61.25	85.18	61.25	-	26.63	61.25	87.88	-	0.54	0%	3%
2	11	20	14,107	61.25	26.33	47.86	87.58	109.11	61.25	29.29	53.26	90.54	114.51	0.59	1.08	3%	5%
3	21	30	39,607	61.25	50.26	71.80	111.51	133.05	61.25	55.93	79.89	117.18	141.14	1.13	1.62	5%	6%
4	31	40	84,462	61.25	74.19	95.73	135.44	156.98	61.25	82.56	106.52	143.81	167.77	1.67	2.16	6%	7%
5	41	50	108,718	61.25	98.12	119.66	159.37	180.91	61.25	109.19	133.16	170.44	194.41	2.21	2.70	7%	7%
6	51	60	82,362	61.25	122.05	143.59	183.30	204.84	61.25	135.82	159.79	197.07	221.04	2.75	3.24	8%	8%
7	61	70	16,792	61.25	145.99	167.52	207.24	228.77	61.25	162.45	186.42	223.70	247.67	3.29	3.78	8%	8%
8	71	80	79	61.25	169.92	191.46	231.17	252.71	61.25	189.08	213.05	250.33	274.30	3.83	4.32	8%	9%
9	81	90	-	61.25	193.85	215.39	255.10	276.64	61.25	215.71	239.68	276.96	300.93	4.37	4.86	9%	9%
10	91	100	-	61.25	217.78	239.32	279.03	300.57	61.25	242.34	266.31	303.59	327.56	4.91	5.40	9%	9%
11	101	110	-	61.25	241.71	263.25	302.96	324.50	61.25	268.97	292.94	330.22	354.19	5.45	5.94	9%	9%
12	111	120	-	61.25	265.65	287.18	326.90	348.43	61.25	295.60	319.57	356.85	380.82	5.99	6.48	9%	9%
13	121	130	-	61.25	289.58	311.12	350.83	372.37	61.25	322.24	346.20	383.49	407.45	6.53	7.02	9%	9%
14	131	140	-	61.25	313.51	335.05	374.76	396.30	61.25	348.87	372.83	410.12	434.08	7.07	7.56	9%	10%
15	141	150	-	61.25	337.44	358.98	398.69	420.23	61.25	375.50	399.47	436.75	460.72	7.61	8.10	10%	10%
16	151	160	-	61.25	361.37	382.91	422.62	444.16	61.25	402.13	426.10	463.38	487.35	8.15	8.64	10%	10%
17	161	170	-	61.25	385.31	406.84	446.56	468.09	61.25	428.76	452.73	490.01	513.98	8.69	9.18	10%	10%
18	171	180	-	61.25	409.24	430.78	470.49	492.03	61.25	455.39	479.36	516.64	540.61	9.23	9.72	10%	10%
19	181	190	-	61.25	433.17	454.71	494.42	515.96	61.25	482.02	505.99	543.27	567.24	9.77	10.26	10%	10%
20	191	200	-	61.25	457.10	478.64	518.35	539.89	61.25	508.65	532.62	569.90	593.87	10.31	10.80	10%	10%
21	201	210	-	61.25	481.03	502.57	542.28	563.82	61.25	535.28	559.25	596.53	620.50	10.85	11.34	10%	10%
22	211	220	-	61.25	504.97	526.50	566.22	587.75	61.25	561.91	585.88	623.16	647.13	11.39	11.88	10%	10%
23	221	230	-	61.25	528.90	550.44	590.15	611.69	61.25	588.55	612.51	649.80	673.76	11.93	12.42	10%	10%
24	231	240	-	61.25	552.83	574.37	614.08	635.62	61.25	615.18	639.14	676.43	700.39	12.47	12.96	10%	10%
25	241	250	-	61.25	576.76	598.30	638.01	659.55	61.25	641.81	665.78	703.06	727.03	13.01	13.50	10%	10%
26	251	260	-	61.25	600.69	622.23	661.94	683.48	61.25	668.44	692.41	729.69	753.66	13.55	14.03	10%	10%
27	261	270	-	61.25	624.63	646.16	685.88	707.41	61.25	695.07	719.04	756.32	780.29	14.09	14.57	10%	10%
28	271	280	-	61.25	648.56	670.10	709.81	731.35	61.25	721.70	745.67	782.95	806.92	14.63	15.11	10%	10%
29	281	290	-	61.25	672.49	694.03	733.74	755.28	61.25	748.33	772.30	809.58	833.55	15.17	15.65	10%	10%
30	291	300	-	61.25	696.42	717.96	757.67	779.21	61.25	774.96	798.93	836.21	860.18	15.71	16.19	10%	10%
31	301	>301	-	61.25	720.35	-	781.60	-	61.25	801.59	-	862.84	-	16.25	-	10%	-

32
33
34 Winter Bill Impacts of Full Cost of Service Phase-in Rate Relative to Traditional Rates, >80 Mcf/year
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36

37				$ 12.25	$ 2.39320	$ 2.39320			$ 23.20	$ 1.02050	$ 1.02050						
38	Consumption					Current Charges					Proposed Charges			Absolute Change		Percentage Change	
39	Low	High	Customers	Customer	Low Cons	High Cons	Low Total	High Total	Customer	Low Cons	High Cons	Low Total	High Total	Low	High	Low	High
40	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)	(P)	(Q)
41	0	10	2	61.25	-	23.93	61.25	85.18	116.00	-	10.21	116.00	126.21	10.95	8.20	89%	48%
42	11	20	7	61.25	26.33	47.86	87.58	109.11	116.00	11.23	20.41	127.23	136.41	7.93	5.46	45%	25%
43	21	30	12	61.25	50.26	71.80	111.51	133.05	116.00	21.43	30.62	137.43	146.62	5.18	2.71	23%	10%
44	31	40	49	61.25	74.19	95.73	135.44	156.98	116.00	31.64	40.82	147.64	156.82	2.44	(0.03)	9%	0%
45	41	50	1,059	61.25	98.12	119.66	159.37	180.91	116.00	41.84	51.03	157.84	167.03	(0.31)	(2.78)	-1%	-8%
46	51	60	17,194	61.25	122.05	143.59	183.30	204.84	116.00	52.05	61.23	168.05	177.23	(3.05)	(5.52)	-8%	-13%
47	61	70	58,653	61.25	145.99	167.52	207.24	228.77	116.00	62.25	71.44	178.25	187.44	(5.80)	(8.27)	-14%	-18%
48	71	80	51,348	61.25	169.92	191.46	231.17	252.71	116.00	72.46	81.64	188.46	197.64	(8.54)	(11.01)	-18%	-22%
49	81	90	34,224	61.25	193.85	215.39	255.10	276.64	116.00	82.66	91.85	198.66	207.85	(11.29)	(13.76)	-22%	-25%
50	91	100	21,830	61.25	217.78	239.32	279.03	300.57	116.00	92.87	102.05	208.87	218.05	(14.03)	(16.50)	-25%	-27%
51	101	110	13,934	61.25	241.71	263.25	302.96	324.50	116.00	103.07	112.26	219.07	228.26	(16.78)	(19.25)	-28%	-30%
52	111	120	8,369	61.25	265.65	287.18	326.90	348.43	116.00	113.28	122.46	229.28	238.46	(19.52)	(21.99)	-30%	-32%
53	121	130	5,338	61.25	289.58	311.12	350.83	372.37	116.00	123.48	132.67	239.48	248.67	(22.27)	(24.74)	-32%	-33%
54	131	140	3,596	61.25	313.51	335.05	374.76	396.30	116.00	133.69	142.87	249.69	258.87	(25.01)	(27.49)	-33%	-35%
55	141	150	2,163	61.25	337.44	358.98	398.69	420.23	116.00	143.89	153.08	259.89	269.08	(27.76)	(30.23)	-35%	-36%
56	151	160	1,300	61.25	361.37	382.91	422.62	444.16	116.00	154.10	163.28	270.10	279.28	(30.51)	(32.98)	-36%	-37%
57	161	170	968	61.25	385.31	406.84	446.56	468.09	116.00	164.30	173.49	280.30	289.49	(33.25)	(35.72)	-37%	-38%
58	171	180	614	61.25	409.24	430.78	470.49	492.03	116.00	174.51	183.69	290.51	299.69	(36.00)	(38.47)	-38%	-39%
59	181	190	453	61.25	433.17	454.71	494.42	515.96	116.00	184.71	193.90	300.71	309.90	(38.74)	(41.21)	-39%	-40%
60	191	200	394	61.25	457.10	478.64	518.35	539.89	116.00	194.92	204.10	310.92	320.10	(41.49)	(43.96)	-40%	-41%
61	201	210	310	61.25	481.03	502.57	542.28	563.82	116.00	205.12	214.31	321.12	330.31	(44.23)	(46.70)	-41%	-41%
62	211	220	187	61.25	504.97	526.50	566.22	587.75	116.00	215.33	224.51	331.33	340.51	(46.98)	(49.45)	-41%	-42%
63	221	230	168	61.25	528.90	550.44	590.15	611.69	116.00	225.53	234.72	341.53	350.72	(49.72)	(52.19)	-42%	-43%
64	231	240	124	61.25	552.83	574.37	614.08	635.62	116.00	235.74	244.92	351.74	360.92	(52.47)	(54.94)	-43%	-43%
65	241	250	82	61.25	576.76	598.30	638.01	659.55	116.00	245.94	255.13	361.94	371.13	(55.21)	(57.69)	-43%	-44%
66	251	260	63	61.25	600.69	622.23	661.94	683.48	116.00	256.15	265.33	372.15	381.33	(57.96)	(60.43)	-44%	-44%
67	261	270	37	61.25	624.63	646.16	685.88	707.41	116.00	266.35	275.54	382.35	391.54	(60.70)	(63.18)	-44%	-45%
68	271	280	30	61.25	648.56	670.10	709.81	731.35	116.00	276.56	285.74	392.56	401.74	(63.45)	(65.92)	-45%	-45%
69	281	290	26	61.25	672.49	694.03	733.74	755.28	116.00	286.76	295.95	402.76	411.95	(66.20)	(68.67)	-45%	-45%
70	291	300	19	61.25	696.42	717.96	757.67	779.21	116.00	296.97	306.15	412.97	422.15	(68.94)	(71.41)	-45%	-46%
71	301	>301	159	61.25	720.35	-	781.60	-	116.00	307.17	-	423.17	-	(71.69)	-	-46%	-

72
73
74 Winter Bill Impacts of Full Cost of Service Phase-in Rate <=80 Mcf/year Relative to Full Cost of Service Phase-in Rate, >80 Mcf/year
75
76

77				$ 12.25	$ 2.66310	$ 2.66310			$ 23.20	$ 1.02050	$ 1.02050						
78	Consumption					Current Charges					Proposed Charges			Absolute Change		Percentage Change	
79	Low	High	Customers	Customer	Low Cons	High Cons	Low Total	High Total	Customer	Low Cons	High Cons	Low Total	High Total	Low	High	Low	High
80	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)	(P)	(Q)
81	0	10	2	61.25	-	26.63	61.25	87.88	116.00	-	10.21	116.00	126.21	10.95	7.66	89%	44%
82	11	20	7	61.25	29.29	53.26	90.54	114.51	116.00	11.23	20.41	127.23	136.41	7.34	4.38	41%	19%
83	21	30	12	61.25	55.93	79.89	117.18	141.14	116.00	21.43	30.62	137.43	146.62	4.05	1.09	17%	4%
84	31	40	49	61.25	82.56	106.52	143.81	167.77	116.00	31.64	40.82	147.64	156.82	0.77	(2.19)	3%	-7%
85	41	50	1,059	61.25	109.19	133.16	170.44	194.41	116.00	41.84	51.03	157.84	167.03	(2.52)	(5.48)	-7%	-14%
86	51	60	17,194	61.25	135.82	159.79	197.07	221.04	116.00	52.05	61.23	168.05	177.23	(5.80)	(8.76)	-15%	-20%
87	61	70	58,653	61.25	162.45	186.42	223.70	247.67	116.00	62.25	71.44	178.25	187.44	(9.09)	(12.05)	-20%	-24%
88	71	80	51,348	61.25	189.08	213.05	250.33	274.30	116.00	72.46	81.64	188.46	197.64	(12.37)	(15.33)	-25%	-28%
89	81	90	34,224	61.25	215.71	239.68	276.96	300.93	116.00	82.66	91.85	198.66	207.85	(15.66)	(18.62)	-28%	-31%
90	91	100	21,830	61.25	242.34	266.31	303.59	327.56	116.00	92.87	102.05	208.87	218.05	(18.95)	(21.90)	-31%	-33%
91	101	110	13,934	61.25	268.97	292.94	330.22	354.19	116.00	103.07	112.26	219.07	228.26	(22.23)	(25.19)	-34%	-36%
92	111	120	8,369	61.25	295.60	319.57	356.85	380.82	116.00	113.28	122.46	229.28	238.46	(25.52)	(28.47)	-36%	-37%
93	121	130	5,338	61.25	322.24	346.20	383.49	407.45	116.00	123.48	132.67	239.48	248.67	(28.80)	(31.76)	-38%	-39%
94	131	140	3,596	61.25	348.87	372.83	410.12	434.08	116.00	133.69	142.87	249.69	258.87	(32.09)	(35.04)	-39%	-40%
95	141	150	2,163	61.25	375.50	399.47	436.75	460.72	116.00	143.89	153.08	259.89	269.08	(35.37)	(38.33)	-40%	-42%
96	151	160	1,300	61.25	402.13	426.10	463.38	487.35	116.00	154.10	163.28	270.10	279.28	(38.66)	(41.61)	-42%	-43%
97	161	170	968	61.25	428.76	452.73	490.01	513.98	116.00	164.30	173.49	280.30	289.49	(41.94)	(44.90)	-43%	-44%
98	171	180	614	61.25	455.39	479.36	516.64	540.61	116.00	174.51	183.69	290.51	299.69	(45.23)	(48.18)	-44%	-45%
99	181	190	453	61.25	482.02	505.99	543.27	567.24	116.00	184.71	193.90	300.71	309.90	(48.51)	(51.47)	-45%	-45%
100	191	200	394	61.25	508.65	532.62	569.90	593.87	116.00	194.92	204.10	310.92	320.10	(51.80)	(54.75)	-45%	-46%
101	201	210	310	61.25	535.28	559.25	596.53	620.50	116.00	205.12	214.31	321.12	330.31	(55.08)	(58.04)	-46%	-47%
102	211	220	187	61.25	561.91	585.88	623.16	647.13	116.00	215.33	224.51	331.33	340.51	(58.37)	(61.32)	-47%	-47%
103	221	230	168	61.25	588.55	612.51	649.80	673.76	116.00	225.53	234.72	341.53	350.72	(61.65)	(64.61)	-47%	-48%
104	231	240	124	61.25	615.18	639.14	676.43	700.39	116.00	235.74	244.92	351.74	360.92	(64.94)	(67.89)	-48%	-48%
105	241	250	82	61.25	641.81	665.78	703.06	727.03	116.00	245.94	255.13	361.94	371.13	(68.22)	(71.18)	-49%	-49%
106	251	260	63	61.25	668.44	692.41	729.69	753.66	116.00	256.15	265.33	372.15	381.33	(71.51)	(74.47)	-49%	-49%
107	261	270	37	61.25	695.07	719.04	756.32	780.29	116.00	266.35	275.54	382.35	391.54	(74.79)	(77.75)	-49%	-50%
108	271	280	30	61.25	721.70	745.67	782.95	806.92	116.00	276.56	285.74	392.56	401.74	(78.08)	(81.04)	-50%	-50%
109	281	290	26	61.25	748.33	772.30	809.58	833.55	116.00	286.76	295.95	402.76	411.95	(81.36)	(84.32)	-50%	-51%
110	291	300	19	61.25	774.96	798.93	836.21	860.18	116.00	296.97	306.15	412.97	422.15	(84.65)	(87.61)	-51%	-51%
111	301	>301	159	61.25	801.59	-	862.84	-	116.00	307.17	-	423.17	-	(87.93)	-	-51%	-

Annual Bill Impacts of Full Cost of Service Phase-in Rate Relative to Traditional Rates, <=265 Mcf/year

Line Number	Consumption Low (A)	Consumption High (B)	Customers (C)	Current Charges Customer (D)	Current Charges Low Cons (E)	Current Charges High Cons (F)	Low Total (G)	High Total (H)	Proposed Charges Customer (I)	Proposed Charges Low Cons (J)	Proposed Charges High Cons (K)	Low Total (L)	High Total (M)	Absolute Change Low (N)	Absolute Change High (O)	Percentage Change Low (P)	Percentage Change High (Q)
				$ 23.35	$ 2.21660	$ 2.21660			$ 23.35	$ 2.88850	$ 2.88850						
1	0	50	8,661	280.20	-	110.83	280.20	391.03	280.20	-	144.43	280.20	424.63	-	2.80	0%	9%
2	51	100	11,362	280.20	113.05	221.66	393.25	501.86	280.20	147.31	288.85	427.51	569.05	2.86	5.60	9%	13%
3	101	150	7,376	280.20	223.88	332.49	504.08	612.69	280.20	291.74	433.28	571.94	713.48	5.66	8.40	13%	16%
4	151	200	4,917	280.20	334.71	443.32	614.91	723.52	280.20	436.16	577.70	716.36	857.90	8.45	11.20	16%	19%
5	201	250	3,374	280.20	445.54	554.15	725.74	834.35	280.20	580.59	722.13	860.79	1,002.33	11.25	14.00	19%	20%
6	251	300	2,465	280.20	556.37	664.98	836.57	945.18	280.20	725.01	866.55	1,005.21	1,146.75	14.05	16.80	20%	21%
7	301	350	1,874	280.20	667.20	775.81	947.40	1,056.01	280.20	869.44	1,010.98	1,149.64	1,291.18	16.85	19.60	21%	22%
8	351	400	1,447	280.20	778.03	886.64	1,058.23	1,166.84	280.20	1,013.86	1,155.40	1,294.06	1,435.60	19.65	22.40	22%	23%
9	401	450	1,061	280.20	888.86	997.47	1,169.06	1,277.67	280.20	1,158.29	1,299.83	1,438.49	1,580.03	22.45	25.20	23%	24%
10	451	500	977	280.20	999.69	1,108.30	1,279.89	1,388.50	280.20	1,302.71	1,444.25	1,582.91	1,724.45	25.25	28.00	24%	24%
11	501	550	825	280.20	1,110.52	1,219.13	1,390.72	1,499.33	280.20	1,447.14	1,588.68	1,727.34	1,868.88	28.05	30.80	24%	25%
12	551	600	691	280.20	1,221.35	1,329.96	1,501.55	1,610.16	280.20	1,591.56	1,733.10	1,871.76	2,013.30	30.85	33.60	25%	25%
13	601	650	504	280.20	1,332.18	1,440.79	1,612.38	1,720.99	280.20	1,735.99	1,877.53	2,016.19	2,157.73	33.65	36.39	25%	25%
14	651	700	557	280.20	1,443.01	1,551.62	1,723.21	1,831.82	280.20	1,880.41	2,021.95	2,160.61	2,302.15	36.45	39.19	25%	26%
15	701	750	504	280.20	1,553.84	1,662.45	1,834.04	1,942.65	280.20	2,024.84	2,166.38	2,305.04	2,446.58	39.25	41.99	26%	26%
16	751	800	439	280.20	1,664.67	1,773.28	1,944.87	2,053.48	280.20	2,169.26	2,310.80	2,449.46	2,591.00	42.05	44.79	26%	26%
17	801	850	401	280.20	1,775.50	1,884.11	2,055.70	2,164.31	280.20	2,313.69	2,455.23	2,593.89	2,735.43	44.85	47.59	26%	26%
18	851	900	255	280.20	1,886.33	1,994.94	2,166.53	2,275.14	280.20	2,458.11	2,599.65	2,738.31	2,879.85	47.65	50.39	26%	27%
19	901	950	311	280.20	1,997.16	2,105.77	2,277.36	2,385.97	280.20	2,602.54	2,744.08	2,882.74	3,024.28	50.45	53.19	27%	27%
20	951	1000	293	280.20	2,107.99	2,216.60	2,388.19	2,496.80	280.20	2,746.96	2,888.50	3,027.16	3,168.70	53.25	55.99	27%	27%
21	1001	1050	255	280.20	2,218.82	2,327.43	2,499.02	2,607.63	280.20	2,891.39	3,032.93	3,171.59	3,313.13	56.05	58.79	27%	27%
22	1051	1100	202	280.20	2,329.65	2,438.26	2,609.85	2,718.46	280.20	3,035.81	3,177.35	3,316.01	3,457.55	58.85	61.59	27%	27%
23	1101	1150	199	280.20	2,440.48	2,549.09	2,720.68	2,829.29	280.20	3,180.24	3,321.78	3,460.44	3,601.98	61.65	64.39	27%	27%
24	1151	1200	156	280.20	2,551.31	2,659.92	2,831.51	2,940.12	280.20	3,324.66	3,466.20	3,604.86	3,746.40	64.45	67.19	27%	28%
25	1201	1250	162	280.20	2,662.14	2,770.75	2,942.34	3,050.95	280.20	3,469.09	3,610.63	3,749.29	3,890.83	67.25	69.99	27%	28%
26	1251	1300	134	280.20	2,772.97	2,881.58	3,053.17	3,161.78	280.20	3,613.51	3,755.05	3,893.71	4,035.25	70.05	72.79	28%	28%
27	1301	1350	137	280.20	2,883.80	2,992.41	3,164.00	3,272.61	280.20	3,757.94	3,899.48	4,038.14	4,179.68	72.85	75.59	28%	28%
28	1351	1400	96	280.20	2,994.63	3,103.24	3,274.83	3,383.44	280.20	3,902.36	4,043.90	4,182.56	4,324.10	75.64	78.39	28%	28%
29	1401	1450	128	280.20	3,105.46	3,214.07	3,385.66	3,494.27	280.20	4,046.79	4,188.33	4,326.99	4,468.53	78.44	81.19	28%	28%
30	1451	1500	100	280.20	3,216.29	3,324.90	3,496.49	3,605.10	280.20	4,191.21	4,332.75	4,471.41	4,612.95	81.24	83.99	28%	28%
31	1501	>1501	1,295	280.20	3,327.12	-	3,607.32	-	280.20	4,335.64	-	4,615.84	-	84.04	-	28%	0%

Annual Bill Impacts of Full Cost of Service Phase-in Rate Relative to Traditional Rates, >265 Mcf/year

Line Number	Consumption Low (A)	Consumption High (B)	Customers (C)	Current Charges Customer (D)	Current Charges Low Cons (E)	Current Charges High Cons (F)	Low Total (G)	High Total (H)	Proposed Charges Customer (I)	Proposed Charges Low Cons (J)	Proposed Charges High Cons (K)	Low Total (L)	High Total (M)	Absolute Change Low (N)	Absolute Change High (O)	Percentage Change Low (P)	Percentage Change High (Q)
				$ 23.35	$ 2.21660	$ 2.21660			$ 56.05	$ 1.40780	$ 1.40780						
41	0	50	8,661	280.20	-	110.83	280.20	391.03	672.60	-	70.39	672.60	742.99	32.70	29.33	140%	90%
42	51	100	11,362	280.20	113.05	221.66	393.25	501.86	672.60	71.80	140.78	744.40	813.38	29.26	25.96	89%	62%
43	101	150	7,376	280.20	223.88	332.49	504.08	612.69	672.60	142.19	211.17	814.79	883.77	25.89	22.59	62%	44%
44	151	200	4,917	280.20	334.71	443.32	614.91	723.52	672.60	212.58	281.56	885.18	954.16	22.52	19.22	44%	32%
45	201	250	3,374	280.20	445.54	554.15	725.74	834.35	672.60	282.97	351.95	955.57	1,024.55	19.15	15.85	32%	23%
46	251	300	2,465	280.20	556.37	664.98	836.57	945.18	672.60	353.36	422.34	1,025.96	1,094.94	15.78	12.48	23%	16%
47	301	350	1,874	280.20	667.20	775.81	947.40	1,056.01	672.60	423.75	492.73	1,096.35	1,165.33	12.41	9.11	16%	10%
48	351	400	1,447	280.20	778.03	886.64	1,058.23	1,166.84	672.60	494.14	563.12	1,166.74	1,235.72	9.04	5.74	10%	6%
49	401	450	1,061	280.20	888.86	997.47	1,169.06	1,277.67	672.60	564.53	633.51	1,237.13	1,306.11	5.67	2.37	6%	2%
50	451	500	977	280.20	999.69	1,108.30	1,279.89	1,388.50	672.60	634.92	703.90	1,307.52	1,376.50	2.30	(1.00)	2%	-1%
51	501	550	825	280.20	1,110.52	1,219.13	1,390.72	1,499.33	672.60	705.31	774.29	1,377.91	1,446.89	(1.07)	(4.37)	-1%	-3%
52	551	600	691	280.20	1,221.35	1,329.96	1,501.55	1,610.16	672.60	775.70	844.68	1,448.30	1,517.28	(4.44)	(7.74)	-4%	-6%
53	601	650	504	280.20	1,332.18	1,440.79	1,612.38	1,720.99	672.60	846.09	915.07	1,518.69	1,587.67	(7.81)	(11.11)	-6%	-8%
54	651	700	557	280.20	1,443.01	1,551.62	1,723.21	1,831.82	672.60	916.48	985.46	1,589.08	1,658.06	(11.18)	(14.48)	-8%	-9%
55	701	750	504	280.20	1,553.84	1,662.45	1,834.04	1,942.65	672.60	986.87	1,055.85	1,659.47	1,728.45	(14.55)	(17.85)	-10%	-11%
56	751	800	439	280.20	1,664.67	1,773.28	1,944.87	2,053.48	672.60	1,057.26	1,126.24	1,729.86	1,798.84	(17.92)	(21.22)	-11%	-12%
57	801	850	401	280.20	1,775.50	1,884.11	2,055.70	2,164.31	672.60	1,127.65	1,196.63	1,800.25	1,869.23	(21.29)	(24.59)	-12%	-14%
58	851	900	255	280.20	1,886.33	1,994.94	2,166.53	2,275.14	672.60	1,198.04	1,267.02	1,870.64	1,939.62	(24.66)	(27.96)	-14%	-15%
59	901	950	311	280.20	1,997.16	2,105.77	2,277.36	2,385.97	672.60	1,268.43	1,337.41	1,941.03	2,010.01	(28.03)	(31.33)	-15%	-16%
60	951	1000	293	280.20	2,107.99	2,216.60	2,388.19	2,496.80	672.60	1,338.82	1,407.80	2,011.42	2,080.40	(31.40)	(34.70)	-16%	-17%
61	1001	1050	255	280.20	2,218.82	2,327.43	2,499.02	2,607.63	672.60	1,409.21	1,478.19	2,081.81	2,150.79	(34.77)	(38.07)	-17%	-18%
62	1051	1100	202	280.20	2,329.65	2,438.26	2,609.85	2,718.46	672.60	1,479.60	1,548.58	2,152.20	2,221.18	(38.14)	(41.44)	-18%	-18%
63	1101	1150	199	280.20	2,440.48	2,549.09	2,720.68	2,829.29	672.60	1,549.99	1,618.97	2,222.59	2,291.57	(41.51)	(44.81)	-18%	-19%
64	1151	1200	156	280.20	2,551.31	2,659.92	2,831.51	2,940.12	672.60	1,620.38	1,689.36	2,292.98	2,361.96	(44.88)	(48.18)	-19%	-20%
65	1201	1250	162	280.20	2,662.14	2,770.75	2,942.34	3,050.95	672.60	1,690.77	1,759.75	2,363.37	2,432.35	(48.25)	(51.55)	-20%	-20%
66	1251	1300	134	280.20	2,772.97	2,881.58	3,053.17	3,161.78	672.60	1,761.16	1,830.14	2,433.76	2,502.74	(51.62)	(54.92)	-20%	-21%
67	1301	1350	137	280.20	2,883.80	2,992.41	3,164.00	3,272.61	672.60	1,831.55	1,900.53	2,504.15	2,573.13	(54.99)	(58.29)	-21%	-21%
68	1351	1400	96	280.20	2,994.63	3,103.24	3,274.83	3,383.44	672.60	1,901.94	1,970.92	2,574.54	2,643.52	(58.36)	(61.66)	-21%	-22%
69	1401	1450	128	280.20	3,105.46	3,214.07	3,385.66	3,494.27	672.60	1,972.33	2,041.31	2,644.93	2,713.91	(61.73)	(65.03)	-22%	-22%
70	1451	1500	100	280.20	3,216.29	3,324.90	3,496.49	3,605.10	672.60	2,042.72	2,111.70	2,715.32	2,784.30	(65.10)	(68.40)	-22%	-23%
71	1501	>1501	1,295	280.20	3,327.12	-	3,607.32	-	672.60	2,113.11	-	2,785.71	-	(68.47)	-	-23%	0%

Annual Bill Impacts of Full Cost of Service Phase-in Rate, <=265 Mcf/year Full Cost of Service Phase-in Rates, >265 Mcf/year

Line Number	Consumption Low (A)	Consumption High (B)	Customers (C)	Current Charges Customer (D)	Current Charges Low Cons (E)	Current Charges High Cons (F)	Low Total (G)	High Total (H)	Proposed Charges Customer (I)	Proposed Charges Low Cons (J)	Proposed Charges High Cons (K)	Low Total (L)	High Total (M)	Absolute Change Low (N)	Absolute Change High (O)	Percentage Change Low (P)	Percentage Change High (Q)
				$ 23.35	$ 2.88850	$ 2.88850			$ 56.05	$ 1.40780	$ 1.40780						
81	0	50	8,661	280.20	-	144.43	280.20	424.63	672.60	-	70.39	672.60	742.99	32.70	26.53	140%	75%
82	51	100	11,362	280.20	147.31	288.85	427.51	569.05	672.60	71.80	140.78	744.40	813.38	26.41	20.36	74%	43%
83	101	150	7,376	280.20	291.74	433.28	571.94	713.48	672.60	142.19	211.17	814.79	883.77	20.24	14.19	42%	24%
84	151	200	4,917	280.20	436.16	577.70	716.36	857.90	672.60	212.58	281.56	885.18	954.16	14.07	8.02	24%	11%
85	201	250	3,374	280.20	580.59	722.13	860.79	1,002.33	672.60	282.97	351.95	955.57	1,024.55	7.90	1.85	11%	2%
86	251	300	2,465	280.20	725.01	866.55	1,005.21	1,146.75	672.60	353.36	422.34	1,025.96	1,094.94	1.73	(4.32)	2%	-5%
87	301	350	1,874	280.20	869.44	1,010.98	1,149.64	1,291.18	672.60	423.75	492.73	1,096.35	1,165.33	(4.44)	(10.49)	-5%	-10%
88	351	400	1,447	280.20	1,013.86	1,155.40	1,294.06	1,435.60	672.60	494.14	563.12	1,166.74	1,235.72	(10.61)	(16.66)	-10%	-14%
89	401	450	1,061	280.20	1,158.29	1,299.83	1,438.49	1,580.03	672.60	564.53	633.51	1,237.13	1,306.11	(16.78)	(22.83)	-14%	-17%
90	451	500	977	280.20	1,302.71	1,444.25	1,582.91	1,724.45	672.60	634.92	703.90	1,307.52	1,376.50	(22.95)	(29.00)	-17%	-20%
91	501	550	825	280.20	1,447.14	1,588.68	1,727.34	1,868.88	672.60	705.31	774.29	1,377.91	1,446.89	(29.12)	(35.17)	-20%	-23%
92	551	600	691	280.20	1,591.56	1,733.10	1,871.76	2,013.30	672.60	775.70	844.68	1,448.30	1,517.28	(35.29)	(41.34)	-23%	-25%
93	601	650	504	280.20	1,735.99	1,877.53	2,016.19	2,157.73	672.60	846.09	915.07	1,518.69	1,587.67	(41.46)	(47.50)	-25%	-26%
94	651	700	557	280.20	1,880.41	2,021.95	2,160.61	2,302.15	672.60	916.48	985.46	1,589.08	1,658.06	(47.63)	(53.67)	-26%	-28%
95	701	750	504	280.20	2,024.84	2,166.38	2,305.04	2,446.58	672.60	986.87	1,055.85	1,659.47	1,728.45	(53.80)	(59.84)	-28%	-29%
96	751	800	439	280.20	2,169.26	2,310.80	2,449.46	2,591.00	672.60	1,057.26	1,126.24	1,729.86	1,798.84	(59.97)	(66.01)	-29%	-31%
97	801	850	401	280.20	2,313.69	2,455.23	2,593.89	2,735.43	672.60	1,127.65	1,196.63	1,800.25	1,869.23	(66.14)	(72.18)	-31%	-32%
98	851	900	255	280.20	2,458.11	2,599.65	2,738.31	2,879.85	672.60	1,198.04	1,267.02	1,870.64	1,939.62	(72.31)	(78.35)	-32%	-33%
99	901	950	311	280.20	2,602.54	2,744.08	2,882.74	3,024.28	672.60	1,268.43	1,337.41	1,941.03	2,010.01	(78.48)	(84.52)	-33%	-34%
100	951	1000	293	280.20	2,746.96	2,888.50	3,027.16	3,168.70	672.60	1,338.82	1,407.80	2,011.42	2,080.40	(84.65)	(90.69)	-34%	-34%
101	1001	1050	255	280.20	2,891.39	3,032.93	3,171.59	3,313.13	672.60	1,409.21	1,478.19	2,081.81	2,150.79	(90.82)	(96.86)	-34%	-35%
102	1051	1100	202	280.20	3,035.81	3,177.35	3,316.01	3,457.55	672.60	1,479.60	1,548.58	2,152.20	2,221.18	(96.98)	(103.03)	-35%	-36%
103	1101	1150	199	280.20	3,180.24	3,321.78	3,460.44	3,601.98	672.60	1,549.99	1,618.97	2,222.59	2,291.57	(103.15)	(109.20)	-36%	-36%
104	1151	1200	156	280.20	3,324.66	3,466.20	3,604.86	3,746.40	672.60	1,620.38	1,689.36	2,292.98	2,361.96	(109.32)	(115.37)	-36%	-37%
105	1201	1250	162	280.20	3,469.09	3,610.63	3,749.29	3,890.83	672.60	1,690.77	1,759.75	2,363.37	2,432.35	(115.49)	(121.54)	-37%	-37%
106	1251	1300	134	280.20	3,613.51	3,755.05	3,893.71	4,035.25	672.60	1,761.16	1,830.14	2,433.76	2,502.74	(121.66)	(127.71)	-37%	-38%
107	1301	1350	137	280.20	3,757.94	3,899.48	4,038.14	4,179.68	672.60	1,831.55	1,900.53	2,504.15	2,573.13	(127.83)	(133.88)	-38%	-38%
108	1351	1400	96	280.20	3,902.36	4,043.90	4,182.56	4,324.10	672.60	1,901.94	1,970.92	2,574.54	2,643.52	(134.00)	(140.05)	-38%	-39%
109	1401	1450	128	280.20	4,046.79	4,188.33	4,326.99	4,468.53	672.60	1,972.33	2,041.31	2,644.93	2,713.91	(140.17)	(146.22)	-39%	-39%
110	1451	1500	100	280.20	4,191.21	4,332.75	4,471.41	4,612.95	672.60	2,042.72	2,111.70	2,715.32	2,784.30	(146.34)	(152.39)	-39%	-40%
111	1501	>1501	1,295	280.20	4,335.64	-	4,615.84	-	672.60	2,113.11	-	2,785.71	-	(152.51)	-	-40%	0%

Winter Bill Impacts of Full Cost of Service Phase-in Rate Relative to Traditional Rates, <=265 Mcf/year

Line Number	Consumption Low (A)	Consumption High (B)	Customers (C)	Current Charges Customer (D)	Current Charges Low Cons (E)	Current Charges High Cons (F)	Low Total (G)	High Total (H)	Proposed Charges Customer (I)	Proposed Charges Low Cons (J)	Proposed Charges High Cons (K)	Low Total (L)	High Total (M)	Absolute Change Low (N)	Absolute Change High (O)	Percentage Change Low (P)	Percentage Change High (Q)
				$ 23.35	$ 2.21660	$ 2.21660			$ 23.35	$ 2.88850	$ 2.88850						
1	0	50	12,343	$ 116.75	$ -	$ 110.83	$ 116.75	$ 227.58	$ 116.75	$ -	$ 144.43	$ 116.75	$ 261.18	$ -	$ 6.72	0%	15%
2	51	100	12,271	$ 116.75	$ 113.05	$ 221.66	$ 229.80	$ 338.41	$ 116.75	$ 147.31	$ 288.85	$ 264.06	$ 405.60	$ 6.85	$ 13.44	15%	20%
3	101	150	7,024	$ 116.75	$ 223.88	$ 332.49	$ 340.63	$ 449.24	$ 116.75	$ 291.74	$ 433.28	$ 408.49	$ 550.03	$ 13.57	$ 20.16	20%	22%
4	151	200	3,747	$ 116.75	$ 334.71	$ 443.32	$ 451.46	$ 560.07	$ 116.75	$ 436.16	$ 577.70	$ 552.91	$ 694.45	$ 20.29	$ 26.88	22%	24%
5	201	250	1,145	$ 116.75	$ 445.54	$ 554.15	$ 562.29	$ 670.90	$ 116.75	$ 580.59	$ 722.13	$ 697.34	$ 838.88	$ 27.01	$ 33.60	24%	25%
6	251	300	-	$ 116.75	$ 556.37	$ 664.98	$ 673.12	$ 781.73	$ 116.75	$ 725.01	$ 866.55	$ 841.76	$ 983.30	$ 33.73	$ 40.31	25%	26%
7	301	350	-	$ 116.75	$ 667.20	$ 775.81	$ 783.95	$ 892.56	$ 116.75	$ 869.44	$ 1,010.98	$ 986.19	$ 1,127.73	$ 40.45	$ 47.03	26%	26%
8	351	400	-	$ 116.75	$ 778.03	$ 886.64	$ 894.78	$ 1,003.39	$ 116.75	$ 1,013.86	$ 1,155.40	$ 1,130.61	$ 1,272.15	$ 47.17	$ 53.75	26%	27%
9	401	450	-	$ 116.75	$ 888.86	$ 997.47	$ 1,005.61	$ 1,114.22	$ 116.75	$ 1,158.29	$ 1,299.83	$ 1,275.04	$ 1,416.58	$ 53.89	$ 60.47	27%	27%
10	451	500	-	$ 116.75	$ 999.69	$ 1,108.30	$ 1,116.44	$ 1,225.05	$ 116.75	$ 1,302.71	$ 1,444.25	$ 1,419.46	$ 1,561.00	$ 60.61	$ 67.19	27%	27%
11	501	550	-	$ 116.75	$ 1,110.52	$ 1,219.13	$ 1,227.27	$ 1,335.88	$ 116.75	$ 1,447.14	$ 1,588.68	$ 1,563.89	$ 1,705.43	$ 67.32	$ 73.91	27%	28%
12	551	600	-	$ 116.75	$ 1,221.35	$ 1,329.96	$ 1,338.10	$ 1,446.71	$ 116.75	$ 1,591.56	$ 1,733.10	$ 1,708.31	$ 1,849.85	$ 74.04	$ 80.63	28%	28%
13	601	650	-	$ 116.75	$ 1,332.18	$ 1,440.79	$ 1,448.93	$ 1,557.54	$ 116.75	$ 1,735.99	$ 1,877.53	$ 1,852.74	$ 1,994.28	$ 80.76	$ 87.35	28%	28%
14	651	700	-	$ 116.75	$ 1,443.01	$ 1,551.62	$ 1,559.76	$ 1,668.37	$ 116.75	$ 1,880.41	$ 2,021.95	$ 1,997.16	$ 2,138.70	$ 87.48	$ 94.07	28%	28%
15	701	750	-	$ 116.75	$ 1,553.84	$ 1,662.45	$ 1,670.59	$ 1,779.20	$ 116.75	$ 2,024.84	$ 2,166.38	$ 2,141.59	$ 2,283.13	$ 94.20	$ 100.79	28%	28%
16	751	800	-	$ 116.75	$ 1,664.67	$ 1,773.28	$ 1,781.42	$ 1,890.03	$ 116.75	$ 2,169.26	$ 2,310.80	$ 2,286.01	$ 2,427.55	$ 100.92	$ 107.50	28%	28%
17	801	850	-	$ 116.75	$ 1,775.50	$ 1,884.11	$ 1,892.25	$ 2,000.86	$ 116.75	$ 2,313.69	$ 2,455.23	$ 2,430.44	$ 2,571.98	$ 107.64	$ 114.22	28%	29%
18	851	900	-	$ 116.75	$ 1,886.33	$ 1,994.94	$ 2,003.08	$ 2,111.69	$ 116.75	$ 2,458.11	$ 2,599.65	$ 2,574.86	$ 2,716.40	$ 114.36	$ 120.94	29%	29%
19	901	950	-	$ 116.75	$ 1,997.16	$ 2,105.77	$ 2,113.91	$ 2,222.52	$ 116.75	$ 2,602.54	$ 2,744.08	$ 2,719.29	$ 2,860.83	$ 121.08	$ 127.66	29%	29%
20	951	1000	-	$ 116.75	$ 2,107.99	$ 2,216.60	$ 2,224.74	$ 2,333.35	$ 116.75	$ 2,746.96	$ 2,888.50	$ 2,863.71	$ 3,005.25	$ 127.80	$ 134.38	29%	29%
21	1001	1050	-	$ 116.75	$ 2,218.82	$ 2,327.43	$ 2,335.57	$ 2,444.18	$ 116.75	$ 2,891.39	$ 3,032.93	$ 3,008.14	$ 3,149.68	$ 134.51	$ 141.10	29%	29%
22	1051	1100	-	$ 116.75	$ 2,329.65	$ 2,438.26	$ 2,446.40	$ 2,555.01	$ 116.75	$ 3,035.81	$ 3,177.35	$ 3,152.56	$ 3,294.10	$ 141.23	$ 147.82	29%	29%
23	1101	1150	-	$ 116.75	$ 2,440.48	$ 2,549.09	$ 2,557.23	$ 2,665.84	$ 116.75	$ 3,180.24	$ 3,321.78	$ 3,296.99	$ 3,438.53	$ 147.95	$ 154.54	29%	29%
24	1151	1200	-	$ 116.75	$ 2,551.31	$ 2,659.92	$ 2,668.06	$ 2,776.67	$ 116.75	$ 3,324.66	$ 3,466.20	$ 3,441.41	$ 3,582.95	$ 154.67	$ 161.26	29%	29%
25	1201	1250	-	$ 116.75	$ 2,662.14	$ 2,770.75	$ 2,778.89	$ 2,887.50	$ 116.75	$ 3,469.09	$ 3,610.63	$ 3,585.84	$ 3,727.38	$ 161.39	$ 167.98	29%	29%
26	1251	1300	-	$ 116.75	$ 2,772.97	$ 2,881.58	$ 2,889.72	$ 2,998.33	$ 116.75	$ 3,613.51	$ 3,755.05	$ 3,730.26	$ 3,871.80	$ 168.11	$ 174.69	29%	29%
27	1301	1350	-	$ 116.75	$ 2,883.80	$ 2,992.41	$ 3,000.55	$ 3,109.16	$ 116.75	$ 3,757.94	$ 3,899.48	$ 3,874.69	$ 4,016.23	$ 174.83	$ 181.41	29%	29%
28	1351	1400	-	$ 116.75	$ 2,994.63	$ 3,103.24	$ 3,111.38	$ 3,219.99	$ 116.75	$ 3,902.36	$ 4,043.90	$ 4,019.11	$ 4,160.65	$ 181.55	$ 188.13	29%	29%
29	1401	1450	-	$ 116.75	$ 3,105.46	$ 3,214.07	$ 3,222.21	$ 3,330.82	$ 116.75	$ 4,046.79	$ 4,188.33	$ 4,163.54	$ 4,305.08	$ 188.27	$ 194.85	29%	29%
30	1451	1500	-	$ 116.75	$ 3,216.29	$ 3,324.90	$ 3,333.04	$ 3,441.65	$ 116.75	$ 4,191.21	$ 4,332.75	$ 4,307.96	$ 4,449.50	$ 194.99	$ 201.57	29%	29%
31	1501	>1501	-	$ 116.75	$ 3,327.12	$ -	$ 3,443.87	$ -	$ 116.75	$ 4,335.64	$ -	$ 4,452.39	$ -	$ 201.70	$ -	29%	0%

Winter Bill Impacts of Full Cost of Service Phase-in Rate Relative to Traditional Rates, >265 Mcf/year

Line Number	Consumption Low (A)	Consumption High (B)	Customers (C)	Current Charges Customer (D)	Current Charges Low Cons (E)	Current Charges High Cons (F)	Low Total (G)	High Total (H)	Proposed Charges Customer (I)	Proposed Charges Low Cons (J)	Proposed Charges High Cons (K)	Low Total (L)	High Total (M)	Absolute Change Low (N)	Absolute Change High (O)	Percentage Change Low (P)	Percentage Change High (Q)
				$ 23.35	$ 2.21660	$ 2.21660			$ 56.05	$ 1.40780	$ 1.40780						
41	0	50	12	$ 116.75	$ -	$ 110.83	$ 116.75	$ 227.58	$ 280.25	$ -	$ 70.39	$ 280.25	$ 350.64	$ 32.70	$ 24.61	140%	54%
42	51	100	12	$ 116.75	$ 113.05	$ 221.66	$ 229.80	$ 338.41	$ 280.25	$ 71.80	$ 140.78	$ 352.05	$ 421.03	$ 24.45	$ 16.52	53%	24%
43	101	150	311	$ 116.75	$ 223.88	$ 332.49	$ 340.63	$ 449.24	$ 280.25	$ 142.19	$ 211.17	$ 422.44	$ 491.42	$ 16.36	$ 8.44	24%	9%
44	151	200	909	$ 116.75	$ 334.71	$ 443.32	$ 451.46	$ 560.07	$ 280.25	$ 212.58	$ 281.56	$ 492.83	$ 561.81	$ 8.27	$ 0.35	9%	0%
45	201	250	1,852	$ 116.75	$ 445.54	$ 554.15	$ 562.29	$ 670.90	$ 280.25	$ 282.97	$ 351.95	$ 563.22	$ 632.20	$ 0.19	$ (7.74)	0%	-6%
46	251	300	2,191	$ 116.75	$ 556.37	$ 664.98	$ 673.12	$ 781.73	$ 280.25	$ 353.36	$ 422.34	$ 633.61	$ 702.59	$ (7.90)	$ (15.83)	-6%	-10%
47	301	350	1,544	$ 116.75	$ 667.20	$ 775.81	$ 783.95	$ 892.56	$ 280.25	$ 423.75	$ 492.73	$ 704.00	$ 772.98	$ (15.99)	$ (23.92)	-10%	-13%
48	351	400	1,220	$ 116.75	$ 778.03	$ 886.64	$ 894.78	$ 1,003.39	$ 280.25	$ 494.14	$ 563.12	$ 774.39	$ 843.37	$ (24.08)	$ (32.00)	-13%	-16%
49	401	450	924	$ 116.75	$ 888.86	$ 997.47	$ 1,005.61	$ 1,114.22	$ 280.25	$ 564.53	$ 633.51	$ 844.78	$ 913.76	$ (32.17)	$ (40.09)	-16%	-18%
50	451	500	800	$ 116.75	$ 999.69	$ 1,108.30	$ 1,116.44	$ 1,225.05	$ 280.25	$ 634.92	$ 703.90	$ 915.17	$ 984.15	$ (40.25)	$ (48.18)	-18%	-20%
51	501	550	654	$ 116.75	$ 1,110.52	$ 1,219.13	$ 1,227.27	$ 1,335.88	$ 280.25	$ 705.31	$ 774.29	$ 985.56	$ 1,054.54	$ (48.34)	$ (56.27)	-20%	-21%
52	551	600	566	$ 116.75	$ 1,221.35	$ 1,329.96	$ 1,338.10	$ 1,446.71	$ 280.25	$ 775.70	$ 844.68	$ 1,055.95	$ 1,124.93	$ (56.43)	$ (64.36)	-21%	-22%
53	601	650	451	$ 116.75	$ 1,332.18	$ 1,440.79	$ 1,448.93	$ 1,557.54	$ 280.25	$ 846.09	$ 915.07	$ 1,126.34	$ 1,195.32	$ (64.52)	$ (72.44)	-22%	-23%
54	651	700	392	$ 116.75	$ 1,443.01	$ 1,551.62	$ 1,559.76	$ 1,668.37	$ 280.25	$ 916.48	$ 985.46	$ 1,196.73	$ 1,265.71	$ (72.61)	$ (80.53)	-23%	-24%
55	701	750	321	$ 116.75	$ 1,553.84	$ 1,662.45	$ 1,670.59	$ 1,779.20	$ 280.25	$ 986.87	$ 1,055.85	$ 1,267.12	$ 1,336.10	$ (80.69)	$ (88.62)	-24%	-25%
56	751	800	252	$ 116.75	$ 1,664.67	$ 1,773.28	$ 1,781.42	$ 1,890.03	$ 280.25	$ 1,057.26	$ 1,126.24	$ 1,337.51	$ 1,406.49	$ (88.78)	$ (96.71)	-25%	-26%
57	801	850	215	$ 116.75	$ 1,775.50	$ 1,884.11	$ 1,892.25	$ 2,000.86	$ 280.25	$ 1,127.65	$ 1,196.63	$ 1,407.90	$ 1,476.88	$ (96.87)	$ (104.80)	-26%	-26%
58	851	900	230	$ 116.75	$ 1,886.33	$ 1,994.94	$ 2,003.08	$ 2,111.69	$ 280.25	$ 1,198.04	$ 1,267.02	$ 1,478.29	$ 1,547.27	$ (104.96)	$ (112.88)	-26%	-27%
59	901	950	181	$ 116.75	$ 1,997.16	$ 2,105.77	$ 2,113.91	$ 2,222.52	$ 280.25	$ 1,268.43	$ 1,337.41	$ 1,548.68	$ 1,617.66	$ (113.05)	$ (120.97)	-27%	-27%
60	951	1000	143	$ 116.75	$ 2,107.99	$ 2,216.60	$ 2,224.74	$ 2,333.35	$ 280.25	$ 1,338.82	$ 1,407.80	$ 1,619.07	$ 1,688.05	$ (121.13)	$ (129.06)	-27%	-28%
61	1001	1050	134	$ 116.75	$ 2,218.82	$ 2,327.43	$ 2,335.57	$ 2,444.18	$ 280.25	$ 1,409.21	$ 1,478.19	$ 1,689.46	$ 1,758.44	$ (129.22)	$ (137.15)	-28%	-28%
62	1051	1100	149	$ 116.75	$ 2,329.65	$ 2,438.26	$ 2,446.40	$ 2,555.01	$ 280.25	$ 1,479.60	$ 1,548.58	$ 1,759.85	$ 1,828.83	$ (137.31)	$ (145.24)	-28%	-28%
63	1101	1150	100	$ 116.75	$ 2,440.48	$ 2,549.09	$ 2,557.23	$ 2,665.84	$ 280.25	$ 1,549.99	$ 1,618.97	$ 1,830.24	$ 1,899.22	$ (145.40)	$ (153.32)	-28%	-29%
64	1151	1200	84	$ 116.75	$ 2,551.31	$ 2,659.92	$ 2,668.06	$ 2,776.67	$ 280.25	$ 1,620.38	$ 1,689.36	$ 1,900.63	$ 1,969.61	$ (153.49)	$ (161.41)	-29%	-29%
65	1201	1250	118	$ 116.75	$ 2,662.14	$ 2,770.75	$ 2,778.89	$ 2,887.50	$ 280.25	$ 1,690.77	$ 1,759.75	$ 1,971.02	$ 2,040.00	$ (161.57)	$ (169.50)	-29%	-29%
66	1251	1300	96	$ 116.75	$ 2,772.97	$ 2,881.58	$ 2,889.72	$ 2,998.33	$ 280.25	$ 1,761.16	$ 1,830.14	$ 2,041.41	$ 2,110.39	$ (169.66)	$ (177.59)	-29%	-30%
67	1301	1350	68	$ 116.75	$ 2,883.80	$ 2,992.41	$ 3,000.55	$ 3,109.16	$ 280.25	$ 1,831.55	$ 1,900.53	$ 2,111.80	$ 2,180.78	$ (177.75)	$ (185.68)	-30%	-30%
68	1351	1400	40	$ 116.75	$ 2,994.63	$ 3,103.24	$ 3,111.38	$ 3,219.99	$ 280.25	$ 1,901.94	$ 1,970.92	$ 2,182.19	$ 2,251.17	$ (185.84)	$ (193.76)	-30%	-30%
69	1401	1450	40	$ 116.75	$ 3,105.46	$ 3,214.07	$ 3,222.21	$ 3,330.82	$ 280.25	$ 1,972.33	$ 2,041.31	$ 2,252.58	$ 2,321.56	$ (193.93)	$ (201.85)	-30%	-30%
70	1451	1500	62	$ 116.75	$ 3,216.29	$ 3,324.90	$ 3,333.04	$ 3,441.65	$ 280.25	$ 2,042.72	$ 2,111.70	$ 2,322.97	$ 2,391.95	$ (202.01)	$ (209.94)	-30%	-30%
71	1501	>1501	100	$ 116.75	$ 3,327.12	$ -	$ 3,443.87	$ -	$ 280.25	$ 2,113.11	$ -	$ 2,393.36	$ -	$ (210.10)	$ -	-31%	0%

Winter Bill Impacts of Full Cost of Service Phase-in Rate, <=265 Mcf/year Full Cost of Service Phase-in Rates, >265 Mcf/year

Line Number	Consumption Low (A)	Consumption High (B)	Customers (C)	Current Charges Customer (D)	Current Charges Low Cons (E)	Current Charges High Cons (F)	Low Total (G)	High Total (H)	Proposed Charges Customer (I)	Proposed Charges Low Cons (J)	Proposed Charges High Cons (K)	Low Total (L)	High Total (M)	Absolute Change Low (N)	Absolute Change High (O)	Percentage Change Low (P)	Percentage Change High (Q)
				$ 23.35	$ 2.88850	$ 2.88850			$ 56.05	$ 1.40780	$ 1.40780						
81	0	50	12	$ 116.75	$ -	$ 144.43	$ 116.75	$ 261.18	$ 280.25	$ -	$ 70.39	$ 280.25	$ 350.64	$ 32.70	$ 17.89	140%	34%
82	51	100	12	$ 116.75	$ 147.31	$ 288.85	$ 264.06	$ 405.60	$ 280.25	$ 71.80	$ 140.78	$ 352.05	$ 421.03	$ 17.60	$ 3.09	33%	4%
83	101	150	311	$ 116.75	$ 291.74	$ 433.28	$ 408.49	$ 550.03	$ 280.25	$ 142.19	$ 211.17	$ 422.44	$ 491.42	$ 2.79	$ (11.72)	3%	-11%
84	151	200	909	$ 116.75	$ 436.16	$ 577.70	$ 552.91	$ 694.45	$ 280.25	$ 212.58	$ 281.56	$ 492.83	$ 561.81	$ (12.02)	$ (26.53)	-11%	-19%
85	201	250	1,852	$ 116.75	$ 580.59	$ 722.13	$ 697.34	$ 838.88	$ 280.25	$ 282.97	$ 351.95	$ 563.22	$ 632.20	$ (26.82)	$ (41.34)	-19%	-25%
86	251	300	2,191	$ 116.75	$ 725.01	$ 866.55	$ 841.76	$ 983.30	$ 280.25	$ 353.36	$ 422.34	$ 633.61	$ 702.59	$ (41.63)	$ (56.14)	-25%	-29%
87	301	350	1,544	$ 116.75	$ 869.44	$ 1,010.98	$ 986.19	$ 1,127.73	$ 280.25	$ 423.75	$ 492.73	$ 704.00	$ 772.98	$ (56.44)	$ (70.95)	-29%	-31%
88	351	400	1,220	$ 116.75	$ 1,013.86	$ 1,155.40	$ 1,130.61	$ 1,272.15	$ 280.25	$ 494.14	$ 563.12	$ 774.39	$ 843.37	$ (71.25)	$ (85.76)	-32%	-34%
89	401	450	924	$ 116.75	$ 1,158.29	$ 1,299.83	$ 1,275.04	$ 1,416.58	$ 280.25	$ 564.53	$ 633.51	$ 844.78	$ 913.76	$ (86.05)	$ (100.56)	-34%	-35%
90	451	500	800	$ 116.75	$ 1,302.71	$ 1,444.25	$ 1,419.46	$ 1,561.00	$ 280.25	$ 634.92	$ 703.90	$ 915.17	$ 984.15	$ (100.86)	$ (115.37)	-36%	-37%
91	501	550	654	$ 116.75	$ 1,447.14	$ 1,588.68	$ 1,563.89	$ 1,705.43	$ 280.25	$ 705.31	$ 774.29	$ 985.56	$ 1,054.54	$ (115.67)	$ (130.18)	-37%	-38%
92	551	600	566	$ 116.75	$ 1,591.56	$ 1,733.10	$ 1,708.31	$ 1,849.85	$ 280.25	$ 775.70	$ 844.68	$ 1,055.95	$ 1,124.93	$ (130.47)	$ (144.98)	-38%	-39%
93	601	650	451	$ 116.75	$ 1,735.99	$ 1,877.53	$ 1,852.74	$ 1,994.28	$ 280.25	$ 846.09	$ 915.07	$ 1,126.34	$ 1,195.32	$ (145.28)	$ (159.79)	-39%	-40%
94	651	700	392	$ 116.75	$ 1,880.41	$ 2,021.95	$ 1,997.16	$ 2,138.70	$ 280.25	$ 916.48	$ 985.46	$ 1,196.73	$ 1,265.71	$ (160.09)	$ (174.60)	-40%	-41%
95	701	750	321	$ 116.75	$ 2,024.84	$ 2,166.38	$ 2,141.59	$ 2,283.13	$ 280.25	$ 986.87	$ 1,055.85	$ 1,267.12	$ 1,336.10	$ (174.89)	$ (189.41)	-41%	-41%
96	751	800	252	$ 116.75	$ 2,169.26	$ 2,310.80	$ 2,286.01	$ 2,427.55	$ 280.25	$ 1,057.26	$ 1,126.24	$ 1,337.51	$ 1,406.49	$ (189.70)	$ (204.21)	-41%	-42%
97	801	850	215	$ 116.75	$ 2,313.69	$ 2,455.23	$ 2,430.44	$ 2,571.98	$ 280.25	$ 1,127.65	$ 1,196.63	$ 1,407.90	$ 1,476.88	$ (204.51)	$ (219.02)	-42%	-43%
98	851	900	230	$ 116.75	$ 2,458.11	$ 2,599.65	$ 2,574.86	$ 2,716.40	$ 280.25	$ 1,198.04	$ 1,267.02	$ 1,478.29	$ 1,547.27	$ (219.32)	$ (233.83)	-43%	-43%
99	901	950	181	$ 116.75	$ 2,602.54	$ 2,744.08	$ 2,719.29	$ 2,860.83	$ 280.25	$ 1,268.43	$ 1,337.41	$ 1,548.68	$ 1,617.66	$ (234.12)	$ (248.63)	-43%	-43%
100	951	1000	143	$ 116.75	$ 2,746.96	$ 2,888.50	$ 2,863.71	$ 3,005.25	$ 280.25	$ 1,338.82	$ 1,407.80	$ 1,619.07	$ 1,688.05	$ (248.93)	$ (263.44)	-43%	-44%
101	1001	1050	134	$ 116.75	$ 2,891.39	$ 3,032.93	$ 3,008.14	$ 3,149.68	$ 280.25	$ 1,409.21	$ 1,478.19	$ 1,689.46	$ 1,758.44	$ (263.74)	$ (278.25)	-44%	-44%
102	1051	1100	149	$ 116.75	$ 3,035.81	$ 3,177.35	$ 3,152.56	$ 3,294.10	$ 280.25	$ 1,479.60	$ 1,548.58	$ 1,759.85	$ 1,828.83	$ (278.54)	$ (293.05)	-44%	-44%
103	1101	1150	100	$ 116.75	$ 3,180.24	$ 3,321.78	$ 3,296.99	$ 3,438.53	$ 280.25	$ 1,549.99	$ 1,618.97	$ 1,830.24	$ 1,899.22	$ (293.35)	$ (307.86)	-44%	-45%
104	1151	1200	84	$ 116.75	$ 3,324.66	$ 3,466.20	$ 3,441.41	$ 3,582.95	$ 280.25	$ 1,620.38	$ 1,689.36	$ 1,900.63	$ 1,969.61	$ (308.16)	$ (322.67)	-45%	-45%
105	1201	1250	118	$ 116.75	$ 3,469.09	$ 3,610.63	$ 3,585.84	$ 3,727.38	$ 280.25	$ 1,690.77	$ 1,759.75	$ 1,971.02	$ 2,040.00	$ (322.96)	$ (337.48)	-45%	-45%
106	1251	1300	96	$ 116.75	$ 3,613.51	$ 3,755.05	$ 3,730.26	$ 3,871.80	$ 280.25	$ 1,761.16	$ 1,830.14	$ 2,041.41	$ 2,110.39	$ (337.77)	$ (352.28)	-45%	-45%
107	1301	1350	68	$ 116.75	$ 3,757.94	$ 3,899.48	$ 3,874.69	$ 4,016.23	$ 280.25	$ 1,831.55	$ 1,900.53	$ 2,111.80	$ 2,180.78	$ (352.58)	$ (367.09)	-45%	-46%
108	1351	1400	40	$ 116.75	$ 3,902.36	$ 4,043.90	$ 4,019.11	$ 4,160.65	$ 280.25	$ 1,901.94	$ 1,970.92	$ 2,182.19	$ 2,251.17	$ (367.39)	$ (381.90)	-46%	-46%
109	1401	1450	40	$ 116.75	$ 4,046.79	$ 4,188.33	$ 4,163.54	$ 4,305.08	$ 280.25	$ 1,972.33	$ 2,041.31	$ 2,252.58	$ 2,321.56	$ (382.19)	$ (396.70)	-46%	-46%
110	1451	1500	62	$ 116.75	$ 4,191.21	$ 4,332.75	$ 4,307.96	$ 4,449.50	$ 280.25	$ 2,042.72	$ 2,111.70	$ 2,322.97	$ 2,391.95	$ (397.00)	$ (411.51)	-46%	-46%
111	1501	>1501	100	$ 116.75	$ 4,335.64	$ -	$ 4,452.39	$ -	$ 280.25	$ 2,113.11	$ -	$ 2,393.36	$ -	$ (411.81)	$ -	-46%	0%

KANSAS GAS SERVICE COMPANY
CLASS COST OF SERVICE STUDY
TEST YEAR ENDING 12/31/2005

SUMMARY OF RESULTS

Line	Item	Total Company	Residential RS Option A	Residential RS Option B	General Service GS Option A	General Service GS Option B	GS Irrigation GIS	Generator Service SGS	Transport GTk	Transport GTt	Transport Irrigation GITt	Large Volume Transportation LVTk	Large Volume Transportation LVTt	Wholesale Transportation WTt	Transportation Flex	KGSSD	Resale SSRk
1																	
2																	
6		$															
7																	
8	Operating Revenues	209,396,105	75,378,474	70,132,853	13,312,550	19,834,530	110,539	185,756	5,749,331	2,731,974	522,900	8,402,487	5,343,415	1,293,637	6,255,778	141,000	881
9																	
10	Operating Expenses:																
11																	
12	Operating & Maintenance	121,548,945	45,146,923	36,357,020	10,048,489	9,291,583	96,066	72,295	1,985,654	1,324,550	225,680	3,349,648	2,962,756	471,303	10,182,760	33,562	654
13	Depreciation & Amortization	39,843,443	12,964,253	11,173,030	2,971,342	3,195,650	27,174	20,338	855,162	603,639	84,911	1,515,674	1,410,563	206,514	4,812,311	2,666	216
14	Taxes Other Than Income	19,018,523	6,311,319	5,335,126	1,443,910	1,489,802	13,544	10,109	387,756	287,348	41,120	680,336	669,510	103,804	2,243,703	1,033	104
15																	
16	Total Operating Expenses	180,410,911	64,422,495	52,865,176	14,463,742	13,977,035	136,783	102,742	3,228,573	2,215,537	351,711	5,545,657	5,042,829	781,622	17,238,774	37,261	973
17																	
18	Income Before Taxes	28,985,194	10,955,980	17,267,677	(1,151,192)	5,857,495	(26,245)	83,014	2,520,758	516,437	171,189	2,856,830	300,586	512,015	(10,982,996)	103,739	(93)
19																	
20	Income Taxes:																
21																	
22	Total Current Income Taxes	(4,686,152)	(1,885,610)	(3,387,817)	394,113	(1,173,929)	7,206	(17,808)	(529,510)	(84,931)	(34,339)	(574,987)	6,631	(103,139)	2,721,293	(23,357)	31
23	Total Deferred Income Taxes	8,705,850	2,752,962	2,382,486	632,636	691,886	6,053	4,300	183,387	148,358	20,077	325,989	350,073	58,017	1,149,397	184	46
24	Amortization of ITC	(499,464)	(157,940)	(136,686)	(36,295)	(39,694)	(347)	(247)	(10,521)	(8,511)	(1,152)	(18,702)	(20,084)	(3,329)	(65,942)	(11)	(3)
25																	
26	Total Income Taxes	3,520,234	709,411	(1,142,017)	990,455	(521,737)	12,911	(13,754)	(356,644)	54,915	(15,414)	(267,700)	336,620	(48,450)	3,804,748	(23,183)	74
27																	
28	Net Income	25,464,960	10,246,569	18,409,694	(2,141,646)	6,379,232	(39,156)	96,768	2,877,402	461,521	186,603	3,124,530	(36,035)	560,465	(14,787,744)	126,923	(167)
29																	
30	Total Rate Base	785,037,900	251,342,211	226,984,042	58,170,283	68,840,589	521,652	363,834	14,837,362	11,832,064	1,638,292	26,303,301	27,806,266	4,577,739	91,538,710	277,517	4,038
31																	
32	Rate of Return - Existing Rates	3.2438%	4.0767%	8.1106%	-3.6817%	9.2667%	-7.5061%	26.5968%	19.3929%	3.9006%	11.3901%	11.8789%	-0.1296%	12.2433%	-16.1546%	45.7352%	-4.1314%
33	Relative Rate of Return	1.00	1.26	2.50	(1.13)	2.86	(2.31)	8.20	5.98	1.20	3.51	3.66	(0.04)	3.77	(4.98)	14.10	(1.27)
34																	
35	Equalized ROR:																
36	Revenue Increase	73,300,788	19,992,020	2,850,686	12,120,963	(456,981)	141,824	(107,115)	(2,593,363)	975,741	(68,641)	(1,315,526)	4,153,910	(256,651)	38,032,945	(169,896)	872
37	Net Income Increase	44,143,567	12,039,694	1,716,754	7,299,547	(275,205)	85,410	(64,507)	(1,561,788)	587,616	(41,337)	(792,243)	2,501,588	(154,561)	22,904,390	(102,316)	525
38	Income Taxes	29,157,221	7,952,326	1,133,931	4,821,416	(181,776)	56,414	(42,608)	(1,031,575)	388,126	(27,304)	(523,283)	1,652,322	(102,089)	15,128,555	(67,580)	347
39	Gross Revenue After Increase	282,696,893	95,370,495	72,983,539	25,433,514	19,377,549	252,363	78,641	3,155,968	3,707,715	454,259	7,086,961	9,497,325	1,036,987	44,288,722	(28,896)	1,752
40	Rate of Return	8.8669%	8.8669%	8.8669%	8.8669%	8.8669%	8.8669%	8.8669%	8.8669%	8.8669%	8.8669%	8.8669%	8.8669%	8.8669%	8.8669%	8.8669%	8.8669%
41	Percent Increase	35.0058%	42.4945%	4.0647%	91.0491%	-2.3040%	128.3027%	-57.6644%	-45.1072%	35.7156%	-13.1270%	-15.6564%	77.7389%	-19.8395%	607.9651%	-120.4935%	98.9541%
42																	
43	Proposed Rate Levels:																
44	Revenue Increase	73,302,286	32,889,096	19,643,824	7,191,645	4,774,616	39,906	0	2,067,703	994,189	188,772	3,004,955	1,950,559	467,043	89,660	0	318
45	Net Income Increase	44,144,469	19,806,636	11,830,002	4,330,988	2,875,393	24,033	0	1,245,223	598,726	113,683	1,809,659	1,174,675	281,265	53,995	0	191
46	Income Taxes	29,157,817	13,082,460	7,813,822	2,860,657	1,899,223	15,874	-	822,481	395,464	75,089	1,195,296	775,883	185,778	35,664	-	126
47	Gross Revenue After Increase	282,698,391	108,267,570	89,776,678	20,504,195	24,609,146	150,445	185,756	7,817,034	3,726,163	711,672	11,407,442	7,293,974	1,760,680	6,345,438	141,000	1,199
48	Rate of Return	8.8670%	11.9571%	13.3224%	3.7637%	13.4436%	-2.8991%	26.5968%	27.7854%	8.9608%	18.3292%	18.7588%	4.0949%	18.3875%	-16.0956%	45.7352%	0.6092%
49	Relative Rate of Return	1.00	1.35	1.50	0.42	1.52	(0.33)	3.00	3.13	1.01	2.07	2.12	0.46	2.07	(1.82)	5.16	0.07
50	Percent Increase	35.0065%	43.6319%	28.0094%	54.0215%	24.0722%	36.1017%	0.0000%	35.9642%	36.3909%	36.1009%	35.7627%	36.5040%	36.1031%	1.4332%	0.0000%	36.0899%

		RESIDENTIAL SERVICE			GENERAL SERVICE			IRRIGATION SALES			SMALL GENERATOR SALES		
Tariff Rates		Tot RS Option A	Tot RS Option B	Total RS	Tot GS Option A	Tot GS Option B	Total GS	GIS - Irr k	GIS - Irr t	Total Irr	SGSk	SGSt	Total SGS
Current Rates													
Service Charge		8.95	8.95		17.00	17.00		17.00	17.00		41.00	41.00	
Margin Step 1		1.7465	1.7465		1.6163	1.6163		1.1785	1.1785		0.4810	0.4810	
Margin Step 2		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		1.3988	1.3988	
Margin Step 3		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	

		RESIDENTIAL SERVICE			GENERAL SERVICE			IRRIGATION SALES			SMALL GENERATOR SALES		
	Total	Tot RS Option A	Tot RS Option B	Total RS	Tot GS Option A	Tot GS Option B	Total GS	GIS - Irr k	GIS - Irr t	Total Irr	SGSk	SGSt	Total SGS
Billing Determinants													
Customers	628,692	350,082	222,712	572,794	36,530	14,627	51,157	0	182	182	377	0	377
Volumes Step 1	105,581,924	20,756,976.364	25,399,315.830	46,156,292.195	3,464,888.518	9,974,274.288	13,439,162.806	0.000	58,728.549	58,728.549	1,378.340	0.000	1,378.340
Volumes Step 2	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Volumes Step 3	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Volumes	105,581,924	20,756,976.364	25,399,315.830	46,156,292.195	3,464,888.518	9,974,274.288	13,439,162.806	0.000	58,728.549	58,728.549	1,378.340	0.000	1,378.340
Existing Rate Revenue													
Service Charge	74,379,127	37,598,818	23,919,254	61,518,072	7,452,195	2,983,925	10,436,120	0	37,106	37,106	185,265	0	185,265
Margin	128,796,698	36,252,059	44,359,905	80,611,964	5,600,299	16,121,420	21,721,719	0	69,212	69,212	663	0	663
Total Existing Revenue	203,175,825	73,850,877	68,279,159	142,130,036	13,052,494	19,105,345	32,157,839	0	106,318	106,318	185,928	0	185,928
Proposed Rates													
Service Charge		12.25	23.20		23.35	56.05		23.35	23.35		$41.00	$41.00	
Margin Step 1		2.6631	1.0205		2.8885	1.4078		1.6220	1.6220		0.4810	0.4810	
Margin Step 2		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		1.3988	1.3988	
Margin Step 3		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	
Proposed Rate Revenue													
Service Charge	136,822,012	51,462,070	62,002,981	113,465,051	10,235,809	9,838,177	20,073,986	0	50,966	50,966	185,265	0	185,265
Margin	139,656,099	55,277,904	25,920,002	81,197,906	10,008,330	14,041,783	24,050,114	0	95,258	95,258	663	0	663
Total Proposed Revenue	276,478,111	106,739,973	87,922,983	194,662,957	20,244,139	23,879,961	44,124,100	0	146,224	146,224	185,928	0	185,928
Rate Change													
Service Charge	62,442,885	13,863,251	38,083,728	51,946,979	2,783,614	6,854,252	9,637,866	0	13,860	13,860	0	0	0
Margin	10,859,401	19,025,845	(18,439,903)	585,941	4,408,031	(2,079,636)	2,328,395	0	26,046	26,046	0	0	0
Total Delivery Increase	73,302,286	32,889,096	19,643,824	52,532,920	7,191,645	4,774,616	11,966,261	0	39,906	39,906	0	0	0

	General Service Transportation			Irrigation Transportation			LARGE VOLUME TRANSPORTATION			WHOLESALE TRANSPORTATION		
	GTk	GTt	Total GT	GITk	GITt	Total GIT	LVTk	LVTt	Total LVT	WTk	WTt	Total WT
Tariff Rates												
Current Rates												
Service Charge	17.00	17.00		17.00	17.00		187.00	220.00		38.50	38.50	
Margin Step 1	1.2389	1.5389		1.2685	1.2685		0.7048	1.0637		0.8526	1.0826	
Margin Step 2	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	
Margin Step 3	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	

		General Service Transportation			Irrigation Transportation			LARGE VOLUME TRANSPORTATION			WHOLESALE TRANSPORTATION		
	Total	GTk	GTt	Total GT	GITk	GITt	Total GIT	LVTk	LVTt	Total LVT	WTk	WTt	Total WT
Billing Determinants													
Customers	628,692	2,333	837	3,170	0	320	320	431	104	535	0	23	23
Volumes Step 1	105,581,924	4,003,259.884	1,586,609.009	5,589,868.892	0.000	344,802.321	344,802.321	9,399,718.326	4,369,232.198	13,768,950.524	0.000	1,105,869.584	1,105,869.584
Volumes Step 2	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Volumes Step 3	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Volumes	105,581,924	4,003,259.884	1,586,609.009	5,589,868.892	0.000	344,802.321	344,802.321	9,399,718.326	4,369,232.198	13,768,950.524	0.000	1,105,869.584	1,105,869.584
Existing Rate Revenue													
Service Charge	74,379,127	475,904	170,808	646,712	0	65,334	65,334	967,620	274,660	1,242,280	0	10,549	10,549
Margin	128,796,698	4,959,639	2,441,633	7,401,271	0	437,382	437,382	6,624,921	4,647,552	11,272,474	0	1,197,214	1,197,214
Total Existing Revenue	203,175,825	5,435,543	2,612,440	8,047,983	0	502,716	502,716	7,592,542	4,922,212	12,514,754	0	1,207,763	1,207,763
Proposed Rates													
Service Charge		23.35	23.35		23.35	23.35		260.00	305.50		52.75	52.75	
Margin Step 1		1.7110	2.1253		1.7452	1.7452		0.9843	1.4857		1.1824	1.5014	
Margin Step 2		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	
Margin Step 3		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	
Proposed Rate Revenue													
Service Charge	136,822,012	653,668	234,610	888,278	0	89,739	89,739	1,345,354	381,402	1,726,757	0	14,454	14,454
Margin	139,656,099	6,849,578	3,372,020	10,221,598	0	601,749	601,749	9,252,143	6,491,368	15,743,511	0	1,660,353	1,660,353
Total Proposed Revenue	276,478,111	7,503,246	3,606,630	11,109,876	0	691,488	691,488	10,597,497	6,872,771	17,470,268	0	1,674,806	1,674,806
Rate Change													
Service Charge	62,442,885	177,764	63,802	241,566	0	24,404	24,404	377,734	106,743	484,477	0	3,905	3,905
Margin	10,859,401	1,889,939	930,388	2,820,327	0	164,367	164,367	2,627,221	1,843,816	4,471,037	0	463,138	463,138
Total Delivery Increase	73,302,286	2,067,703	994,189	3,061,892	0	188,772	188,772	3,004,955	1,950,559	4,955,514	0	467,043	467,043

		FLEX							WHOLESALE SALES			
Tariff Rates		LVT Flex k	GTS Flex k	Total Flex k	LVT Flex t	WT Flex t	Total Flex t	**Total Flex**	SSR	KGSSD-resale	KGSSD-sales	**Total SSR**
Current Rates												
Service Charge		187.00	17.00		220.00	38.50			38.50	225.00	225.00	
Margin Step 1		0.1926	0.9626		0.2887	0.1682			0.9800	0.6854	0.6854	
Margin Step 2		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	
Margin Step 3		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	
		FLEX							WHOLESALE SALES			
	Total	LVT Flex k	GTS Flex k	Total Flex k	LVT Flex t	WT Flex t	Total Flex t	**Total Flex**	SSR	KGSSD-resale	KGSSD-sales	**Total SSR**
Billing Determinants												
Customers	628,692	66	4	70	25	35	60	130	1	2	0	3
Volumes Step 1	105,581,924	11,532,832.259	9,975.263	11,542,807.522	12,267,619.373	1,127,697.000	13,395,316.373	24,938,123.895	405.700	90,458.362	87,882.912	178,746.974
Volumes Step 2	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Volumes Step 3	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Volumes	105,581,924	11,532,832.259	9,975.263	11,542,807.522	12,267,619.373	1,127,697.000	13,395,316.373	24,938,123.895	405.700	90,458.362	87,882.912	178,746.974
Existing Rate Revenue												
Service Charge	74,379,127	148,674	782	149,456	65,214	16,170	81,384	230,839	454	5,400	996	6,850
Margin	128,796,698	2,221,223	9,602	2,230,826	3,541,662	189,679	3,731,340	5,962,166	398	62,000	60,235	122,633
Total Existing Revenue	203,175,825	2,369,897	10,384	2,380,281	3,606,875	205,849	3,812,724	6,193,005	852	67,400	61,231	129,483
Proposed Rates												
Service Charge		260.00	23.35		305.50	52.75			52.75	225.00	225.00	
Margin Step 1		0.1926	0.9626		0.2887	0.1682			1.3490	0.6854	0.6854	
Margin Step 2		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	
Margin Step 3		0.0000	0.0000		0.0000	0.0000			0.0000	0.0000	0.0000	
Proposed Rate Revenue												
Service Charge	136,822,012	206,712	1,074	207,786	90,558	22,155	112,713	320,499	622	5,400	996	7,018
Margin	139,656,099	2,221,223	9,602	2,230,826	3,541,662	189,679	3,731,340	5,962,166	547	62,000	60,235	122,782
Total Proposed Revenue	276,478,111	2,427,935	10,676	2,438,612	3,632,220	211,834	3,844,053	6,282,665	1,170	67,400	61,231	129,801
Rate Change												
Service Charge	62,442,885	58,038	292	58,330	25,344	5,985	31,329	89,660	168	0	0	168
Margin	10,859,401	0	0	0	0	0	0	0	150	0	0	150
Total Delivery Increase	73,302,286	58,038	292	58,330	25,344	5,985	31,329	89,660	318	0	0	318

Calculation of Intra-Class Subsidies Inherent in Block Rate Design

Class	Average Consumption (Mcfs)	Average Consumption, Low Use (Mcfs)	Annual Revenues at Low Use Level	Annual Costs at Low Use Level	Average Annual Sudsidy	Average Consumption, High Use (Mcfs)	Annual Revenues at High Use Level	Annual Costs at High Use Level	Average Annual Sudsidy
RS	80.58	59.29	$ 288.90	$ 323.65	$ (34.75)	114.05	$ 419.93	$ 365.30	$ 54.63
GS	262.70	94.85	$ 490.44	$ 741.13	$ (250.68)	681.90	$ 1,791.71	$ 1,165.64	$ 626.07

Calculation of Intra-Class Subsidies Inherent in Usage Level Rate Design

Class	Average Consumption (Mcfs)	Average Consumption, Low Use (Mcfs)	Annual Revenues at Low Use Level	Annual Costs at Low Use Level	Average Annual Sudsidy	Average Consumption, High Use (Mcfs)	Annual Revenues at High Use Level	Annual Costs at High Use Level	Average Annual Sudsidy
RS	80.58	59.29	$ 304.90	$ 323.65	$ (18.75)	114.05	$ 394.78	$ 365.30	$ 29.48
GS	262.70	94.85	$ 554.17	$ 741.13	$ (186.95)	681.90	$ 1,632.59	$ 1,165.64	$ 466.94

Calculation of Seasonal Subsidies Inherent in Block Rate Design

Class	Average Consumption, Summer Use (Mcfs)	Annual Revenues at Summer Use Level	Annual Costs at Summer Use Level	Average Summer Sudsidy	Average Consumption, Winter Use (Mcfs)	Annual Revenues at Winter Use Level	Annual Costs at Winter Use Level	Average Winter Sudsidy
RS	19.58	$ 132.61	$ 177.38	$ (44.77)	57.90	$ 199.81	$ 160.11	$ 39.71
GS	82.25	$ 345.77	$ 451.79	$ (106.02)	208.05	$ 577.91	$ 430.67	$ 147.24

Calculation of Seasonal Subsidies Inherent in Usage Level Rate Design

Class	Average Consumption, Summer Use (Mcfs)	Annual Revenues at Summer Use Level	Annual Costs at Summer Use Level	Average Summer Sudsidy	Average Consumption, Winter Use (Mcfs)	Annual Revenues at Winter Use Level	Annual Costs at Winter Use Level	Average Winter Sudsidy
RS	19.58	$ 137.90	$ 177.38	$ (39.48)	57.90	$ 175.09	$ 160.11	$ 14.98
GS	82.25	$ 401.03	$ 451.79	$ (50.76)	208.05	$ 573.14	$ 430.67	$ 142.47