**BEFORE THE STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS**

07-AQLG-431-RTS

In the Matter of the Application of Aquila, Inc., d/b/a Aquila Networks-KGO, For Approval of the Commission to Make Certain Changes in its Rates For Natural Gas Service.	))))	Docket No. ____________

Direct Testimony of Paul H. Raab

On behalf of Aquila, Inc.

Rate Design

November 2006

Aquila, Inc.

Kansas Division

DIRECT TESTIMONY OF PAUL H. RAAB

Q. PLEASE STATE YOUR NAME, OCCUPATION AND BUSINESS ADDRESS.

A. My name is Paul H. Raab and my business address is 4866 Cordell Avenue, Third Floor, Bethesda, MD 20814. I am an independent economic consultant.

Q. ON WHOSE BEHALF ARE YOU APPEARING TODAY?

A. I am appearing on behalf of Aquila, Inc. ("Aquila" or "Company").

I. QUALIFICATIONS

Q. WHAT IS 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, 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, costing 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 TESTIFIED PREVIOUSLY BEFORE COMMISSIONS IN REGULATORY PROCEEDINGS?

A. Yes. I have provided expert testimony before this Commission in Case 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, 05-AQLG-367-RTS and 06-KGSG-1209-RTS as well as the state regulatory authorities of the District of Columbia, Georgia, Indiana, Iowa, Kentucky, Louisiana, Maryland, Michigan, Missouri, Montana, Nebraska, Nevada, New Jersey, New Mexico, New York, Ohio, Oklahoma, Pennsylvania, Tennessee, Virginia, West Virginia, and Wisconsin. In addition, I have presented expert testimony before the Michigan House Economic Development and Energy Committee, the Province of Saskatchewan, the Federal Energy Regulatory Commission and the United States Tax Court. Details on the subject matter of the testimony presented are provided in Exhibit_____(PHR-1).

II. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. I support the Company's rate design proposals. These rate designs are a departure from existing rate designs in the sense that, by introducing them, the Company attempts to better reflect in rates the underlying costs of providing natural gas distribution service.

Q. WHY IS THE COMPANY MAKING THESE PROPOSALS?

A. Aquila, 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., peaking plant 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. This mismatch produces cost recovery risk that increases costs to consumers.

Q. BUT DIDN'T THE COMMISSION APPROVE A WEATHER NORMALIZATION ADJUSTMENT (WNA) CLAUSE FOR AQUILA IN DOCKET NO. 03-AQLG-1076-TAR?

A. Yes.

Q. WON'T THIS REDUCE THE COST RECOVERY RISK TO THE COMPANY?

A. Yes.

Q. IF THAT IS THE CASE, THEN WHAT VOLUMETRIC RISK ARE THE COMPANY'S RATE DESIGN PROPOSALS INTENDED TO ADDRESS?

A. There has been a documented and long-term decline in usage per customer in the United States and on the Aquila system in Kansas specifically that has placed additional pressure on Company earnings. This risk is not mitigated by the Company's WNA. The 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 gas lights 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 Aquila's usage per residential customer figures. Residential usage in Aquila's Kansas service territory has dropped from 101 Mcf/year in 1993 to 73.5 Mcf/year during the test year, a reduction of 27%.

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 have been significantly reduced. 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 are 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 consumers to choose an

alternative fuel that may not be the optimal choice based on the underlying economics (as documented in the AGA studies), what appears to be conservation is not, in the broader context of overall energy consumption.

Q. HAS AQUILA SUFFERED FROM THESE NEGATIVES IN KANSAS?

A. Aquila has suffered from the first one. As can be seen from the embedded cost of service study performed by Aquila witness Kimberly H. Winslow, approximately 94% 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. In contrast, under current rates, about 50% 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 to collect an additional amount of fixed costs through demand charges to customers. The purpose of my testimony is to support that initiative.

Q. HOW WILL YOU DO THIS?

A. I will do this by first compiling the customer-, demand- and commodity-related costs by customer class from the class cost of service study conducted and sponsored by Kimberly H. Winslow. This provides an indication of the level of the types of costs that are inherent in the Company's cost structure. Next, I compare the Company's proposed rates in this case to the costs identified in the cost of service study. 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.

III. IDENTIFICATION OF EXHIBITS

Q. DO YOU SPONSOR ANY EXHIBITS IN SUPPORT OF YOUR TESTIMONY?

A. Yes, I sponsor eight exhibits. Exhibit_____(PHR-1) is a summary of my qualifications and experience. Exhibit_____(PHR-2) contains a comparison of the cost of service and the revenues collected by the rate design alternatives of this case. Exhibit_____(PHR-3) summarizes the bill impacts of these rate designs. Exhibit_____(PHR-4) documents the reduction in intra-class subsidies that will occur under the proposed rate designs. A non-gas marginal cost of service study that I have developed for Aquila in this case to support the proposed rate designs is summarized in Exhibit_____(PHR-5). Exhibit_____(PHR-6) documents the reduction in seasonal subsidies that will occur under the proposed rate designs. Exhibit_______(PHR-7) summarizes available statistics that document the benefit that the three-part rate design will provide to low-income customers.

Exhibit_____(PHR-8) summarizes all of the data and analysis relevant to the calculation of marginal cost. It is comprised of five schedules. Exhibit_____(PHR-8), Schedule 1 summarizes all of the marginal cost data. This schedule summarizes transmission, distribution, and general plant investments, and customer-related operations and maintenance (O&M) cost data for Aquila for the historical period 1987 to 2005. Price levelized data for these investment and cost categories and years are presented in Exhibit_____(PHR-8), Schedule 2. Operations and Maintenance expenses for the investment cost categories are summarized in Exhibit_____(PHR-8), Schedule 3. The independent variables that drive the costs in the above categories are provided in Exhibit_____(PHR-8), Schedule 4. Operations and Maintenance expenses for the investment cost categories are summarized in Exhibit_____(PHR-8), Schedule 4. Exhibit_____(PHR-8), Schedule 5 summarizes the resulting marginal costs by function.

The above-designated exhibits were prepared by me or under my direction and supervision.

IV. ORGANIZATION OF TESTIMONY

Q. HOW IS YOUR TESTIMONY ORGANIZED?

A. My testimony is organized into three additional sections, labeled V through VII. The first section, Section V, summarizes the results of the class cost of service study and identifies the cost components by customer class.

The second section, Section VI, compares the Company's proposed rate designs to the component costs identified in the cost of service study. This is followed by an evaluation of the new rate designs in Section VII.

In addition to these three sections, my testimony includes an Appendix A that describes the marginal cost of service study I have developed for Aquila.

V. CLASS COST OF SERVICE STUDY RESULTS

Q. PLEASE DESCRIBE THE COMPANY'S CLASS COST OF SERVICE STUDY PREPARED BY WITNESS WINSLOW.

A. Company witness Winslow has prepared and sponsors a class cost of service study that first groups costs by function (gas supply demand, gas supply commodity, transmission demand, transmission commodity, distribution demand, distribution customer, services, meters and regulators, and customer accounts). The functionalized costs are then allocated to the different customer classes being studied using a variety of allocation factors such as the number of customers, throughput and peak demand as appropriate.

Q. DO YOU BELIEVE THAT MS. WINSLOW'S STUDY FORMS A PROPER BASIS FROM WHICH RATES CAN BE DESIGNED?

A. Yes. In my opinion, the study is sound and provides a reasonable starting point from which to design rates (as she has done) and then to evaluate those rates (as I do and document in my testimony). However, in my analysis, it is also important to classify the costs into those that are customer-related, those that are demand-related and those that are commodity-related. I develop these classifications, although the overall cost of service and the cost of service by class developed by Ms. Winslow and myself are exactly the same.

Q. HOW DO YOU DEVELOP THESE CLASSIFICATIONS?

A. The appropriate classification is apparent from Ms. Winslow's allocation factors. For example, Ms. Winslow allocates certain transmission costs on the basis of annual throughput. Therefore, I classify these costs as commodity-related. All of the classifications I employ can be summarized as follows:

Function	Classification
Gas Supply Demand	Demand
Gas Supply Commodity	Commodity
Transmission Demand	Demand
Transmission Commodity	Commodity
Distribution Demand	Demand
Distribution Customer	Customer
Services	Customer
Meters & Regulators	Customer
Customer Accounts	Customer

Q. PLEASE DESCRIBE THE VARIOUS TYPES OF COSTS THAT YOU HAVE IDENTIFIED FROM THE CLASS COST OF SERVICE STUDY USING THE ABOVE CLASSIFICATION STRATEGY.

A. At the overall return of 9.5998%, the embedded class cost of service study develops an overall cost of service (excluding gas costs) of $40,015,113. Of this total, $29,913,856 (75% of the total cost of service) is classified as customer-related, or is incurred simply to serve customers. 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 $7,546,912 (19% of the total). Finally, the commodity-related portion, or those costs classified according to the amount of natural gas that customers consume annually is $2,554,345 (6% of the total).

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.

VI. THE PROPOSED RATE DESIGNS

Q. PLEASE DESCRIBE THE COMPANY'S CURRENT RATE DESIGNS.

A. The Company's current rate designs for the affected classes are traditional two-part rates with a fixed monthly (customer) charge and a volumetric (commodity) charge. For these classes, the current rates are as follows:

Summary of Existing Rate Designs		
Class	Customer Charge ($/customer/month)	Commodity Charge ($/therm)
Residential	$12.00	$0.1511
Small Commercial	$17.00	$0.1511
SV Firm	$30.00	$0.1150
SV Transportation	$30.00	$0.1150
LV Firm	$225.00	$0.0590
LV Transportation	$225.00	$0.0590

In addition to the above delivery charges, customers must pay for the natural gas that they consume and must pay any applicable taxes and other charges.

Q. PLEASE DESCRIBE THE COMPANY'S PROPOSED RATE DESIGNS.

A. The Company is making two rate design proposals in this case: (1) a three-part rate design for residential, commercial, small volume firm and large volume firm customers that introduces a monthly demand charge and (2) a simple, flat rate for residential and commercial customers. The demand charge collects the identified demand-related costs from the class cost of service study described above plus the fixed charges not collected through the customer charges. Since all of the demand-related costs are currently being collected through commodity charges, the commodity charges in the proposed rate design have been reduced relative to the commodity charges in the current rate design. After this change, and after adjusting the customer charges to a more appropriate level as identified in the class cost of service study, the following rate design proposal results:

Summary of Proposed Rate Designs			
Class	Customer Charge ($/customer/ month)	Demand Charge ($/therm)	Commodity Charge ($/therm)
Residential	$13.00	$1.4346	$0.01919
Small Commercial	$20.00	$1.4346	$0.01919
SV Firm	$40.00	$0.8817	$0.01919
SV Transportation	$40.00	$0.8817	$0.01919
LV Firm	$250.00	$0.4174	$0.01919
LV Transportation	$250.00	$0.4174	$0.01919

With respect to the flat rate proposal, all identified costs of service are identified and divided by the number of annual bills to arrive at a fixed cost per month. The resulting rate design is similar to rates already in place in Georgia and North Dakota.

Q. PLEASE DESCRIBE HOW THE THREE-PART RATE DESIGN MORE ACCURATELY MATCHES THE COMPANY'S UNDERLYING COST OF SERVICE.

A. This can be seen on Exhibit_____(PHR-2), Page 1 of 2. This exhibit shows the degree of correspondence between the Company's rate design proposals in this case and cost of service. The classified cost of service by class is shown on lines 1 through 6. Lines 9 through 14 show revenues by rate component under the Company's proposed demand rate design and lines 17 through 22 show revenues by rate component under a traditional rate design where customer charges have been set equal to the proposed customer charges and volumetric rates have been adjusted to collect the same level of revenues as the proposed rate designs. The remaining sections show the absolute difference between the revenues collected under the rates and the cost of service (lines 25 through 30 and lines 33 through 38, respectively) and the percentage difference between the revenues collected under the rates and the cost of service (lines 41 through 46 and lines 49 through 54, respectively).

Looking first at the performance of the traditional 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, such a rate design significantly under-collects customer and demand costs. This under-collection is made up by significantly over-collecting volumetric costs by an equivalent amount.

This can be compared to the performance of the Company's three-part proposal in this case in the lower portion of the exhibit. The agreement of this rate with the underlying cost of service is apparent from the absolute (lines 25 through 30) and percentage (lines 41 through 46) differences between revenues and costs for both classes. This comparison makes it 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 current rates.

Q. AND HOW DOES THE FLAT RATE PROPOSAL PERFORM?

A. Its performance can be seen on page 2 of Exhibit_____(PHR-2). Since 75% of the identified costs of serving customers is customer-related, this rate design does a reasonable job of reflecting that dominance.

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

A. This is demonstrated in Exhibit_____(PHR-3). The first page of the exhibit shows the rate impacts from implementation of the Company's three-part rate design proposal for the range of consumption and load factor observed in the residential rate class. This exhibit is divided into three sections. The first section (lines 1-23) calculates typical bills under alternative rate designs. The second section (lines 31-53) calculates the differences between monthly bill amounts under different consumption patterns. The third section expresses the monthly bill differences as percentage changes.

Looking at the first section, annual consumption ranges observed in the residential class (up to over 2,500 therms) are provided in column (A) of the exhibit, with the percentage of customers that fall within each consumption range provided in column (B). The annual bills for these different consumption levels at traditional, two-part rates, adjusted for the revenue increase requested in this case, are provided in column (C).

Columns (D) through (O) of the exhibit calculate a typical bill at the consumption level of column (A) and at assumed annual load factors of between 5% and 100% under the Company's proposed rate designs. Thus, line 1 of the exhibit shows that, under a traditional rate design, a residential customer who consumes 200 therms per year (column (A)) would have an annual bill, excluding gas cost, of $231.61 (column (B)). The amount that that customer will pay under the Company's proposed rate designs will vary, depending on the efficiency with which he utilizes the distribution network. Thus, at the average annual residential class load factor of approximately 25%, the 200 therm per year customer will face a bill of $197.72 (column (G)). Similarly, a residential customer who consumes at the average annual consumption level of approximately 735 therms per year (line 18) and the average annual residential class load factor of approximately 25% will face a bill of $309.32 (column (G)).

Q. WHY ARE ALL OF THE BILLS AT A 25% LOAD FACTOR FOR AN ANNUAL CONSUMPTION OF 735 THERMS BLOCKED IN ON THE EXHIBIT?

A. Because these consumption figures characterize the usage of the typical residential consumer and, as can be seen in the bottom two sections of the exhibit, represent the approximate level at which the customer will experience no change in his annual bill between the two rate structures.

Q. PLEASE EXPLAIN.

A. The absolute bill impacts are shown by consumption range and load factor in the second section of the exhibit (lines 31-53) and the percentage bill impacts are shown in the third section of the exhibit (lines 61-83).

Q. WHAT ARE THE BILL IMPACTS?

A. The bill impacts are shown to be modest for those residential customers who consume at the typical residential annual load factor of 25%. Furthermore, the bill impacts are not greatly impacted by the annual consumption level. Rather, it is the load factor, or the efficiency with which consumers use the natural gas network that influences the amount that they will pay under the proposed rates.

Q. PLEASE DESCRIBE THE REMAINING PAGES OF EXHIBIT_____(PHR-3).

A. Certainly. Pages 2 through 4 contain a summary of these bill impact calculations for the small commercial, small volume and large volume customer classes. The information contained therein tells a similar story, i.e., modest rate impacts, particularly for those customers who consume natural gas at the class average load factor.

Pages 5 and 6 of the exhibit evaluate the rate impacts from the flat charge rate design proposal. While the proposal indicates some significant rate impacts at the lower levels of consumption, the majority of customers will experience rate increases of less than $3/month relative to the traditional rate designs.

VII. 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 traditional, volumetric-based tariffs and the new 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.

Five are related to cost, and these 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. These attributes are:

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.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.

a. Effectiveness In Yielding Total Revenue Requirements

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 94% of the costs of serving customers are fixed, while 50% of those costs are collected through volumetric 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.

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

Q. WHAT DOES THE COMPANY'S EMBEDDED 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.

Exhibit_____(PHR-2) 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 three-part rate design, which moves to correct some of this deficiency, under-collects the customer costs by $8M in the residential classes. There is a corresponding over-collection of demand costs by a similar amount.

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. With existing rate designs, any customer in that class who consumes greater than the average amount is subsidizing those customers who consume less than the average amount. I have calculated this level of subsidization for 80% of the average consumption levels experienced in the class and at 120% of the average consumption of the class. I provide this information on Exhibit_____(PHR-4). Thus, for example, residential average use per customer is approximately 735 therms per year. The annual bill at 80% of this consumption level for residential customers (588 therms) is $287.91, compared to annual costs to serve this customer of $306.39. Thus, based on the Company's current rate designs and its estimated cost of service, the average low usage residential customer receives a subsidy of $18.48 per year. This subsidy is provided by higher usage customers on the system. Thus, for example, the annual bill for residential customers who consume at 120% of the class average is $330.59, although the annual costs to serve this customer are only $312.10. Thus, based on the

Company's current rate designs and its estimated cost of service, the average high use residential customer provides a subsidy of $18.48 per year. Except for those 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 greater average consumption of the other classes, the subsidies observed there are even more pronounced. In the case of large volume customers, low usage customers receive an annual subsidy of $1,548.28, which is provided by the higher usage customers in the class.

Q. WHAT HAPPENS TO THE IDENTIFIED INTRA-CLASS SUBSIDIES UNDER THE COMPANY'S PROPOSED THREE-PART RATE DESIGNS IN THIS CASE?

A. They are virtually eliminated. As can also be seen in the second section of Exhibit_____(PHR-4), the subsidies identified above have been significantly reduced for all customer classes under the Company's proposed rate designs.

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 EMBEDDED 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 users are encouraged to use the natural gas distribution system inefficiently. In fact, the more inefficiently that one uses the system, the greater the degree to which he is subsidized.

Q. THE ABOVE DISCUSSION IS BASED ON EMBEDDED COSTS. WHEN DISCUSSING ECONOMIC EFFICIENCY ARGUMENTS, SHOULDN'T YOUR STANDARD OF COMPARISON BE MARGINAL COSTS?

A. Yes, and when we compare the Company's rate structure to its marginal costs of providing service, the subsidies are even more striking. Appendix A to my testimony describes a marginal cost of service study I have conducted on Aquila's Kansas Gas operations. On a system basis, I have developed the following marginal cost estimates:

Marginal Cost of Service Summary
Aquila, Inc.
Kansas Gas Operations

Cost Component	Marginal Cost Estimate
Transmission	$3.79/customer/month
Common Distribution	$17.59/customer/month
Customer-Specific Distribution	$18.20/customer/month
Customer-Related O&M	$8.43/customer/month

As described more fully in the Appendix, I estimated these marginal costs by first developing a total cost equation for each of the Company's major cost functions in which annual cost is a linear function of a cost driver (the number of customers served, the peak demand on the system or the annual throughput or sales). The cost driver ultimately selected for each function was chosen because it resulted in the best regression statistics, specifically t-statistics and R-squared values. Thus, the cost driver associated with each function is the one that best explains the investment in each of the evaluated cost categories.

All of the results are summarized in Exhibit_____(PHR-5). Five functions were evaluated (Transmission Plant; Common Distribution Plant; Services, Regulators and Meters; General Plant and Customer Accounting Costs) using five independent variables that were considered as candidate cost drivers (Customers, the three commodity-related variables of Gas Received, Gas Delivered and Annual Sales and Peak Day demand). For each functional cost/independent variable combination, the estimated coefficient is provided as well as the R-squared valued associated with the regression equation.

In order to select the best cost driver, I first eliminated any functional cost/independent variable combination that did not yield a significant independent variable coefficient. In other words, I did not evaluate any equation further that did not evidence a statistically significant relationship. Then, I chose among the remaining relationships based on R-squared values of the regression equations.

For example, a statistically significant relationship is estimated between customer-related operations and maintenance expenses and the number of customers and annual sales cost drivers. I chose the best driver to be the number of customers served, since this variable is demonstrated to best explain the variation in these costs with an R-squared of over 82%.

Q. WHAT DOES THIS ANALYSIS OF THE COMPANY'S LONG-RUN MARGINAL COSTS INDICATE ABOUT WHETHER THE COMPANY'S PROPOSED RATE DESIGNS WILL LEAD TO SOCIALLY UNDESIRABLE LEVELS OF CONSUMPTION?

A. It provides two important pieces of information. First, it indicates that those rate structures that include more fixed charges will more closely reflect the underlying marginal cost of providing natural gas distribution service. Other things being equal, such rate designs should produce a more economically efficient consumption outcome than the Company's current rate designs that are more heavily weighted toward commodity-related charges. Second, it indicates that, in the long-run, natural gas distribution costs are more driven by the number of customers served than any other factor. Thus, a rate structure that relies heavily on fixed (customer and demand) charges does not encourage uneconomic long-run consumption decisions. Rather, it encourages economically efficient consumption decisions that will, by definition, discourage socially undesirable levels of consumption.

Q. IS YOUR FINDING THAT CUSTOMER GROWTH IS THE DOMINANT FACTOR IN THE GROWTH OF GAS DISTRIBUTION COSTS CORROBORATED BY ANY OTHER INDEPENDENT RESEARCH?

A. Yes. Recent research by Lowry, Getachew and Fenrick found the same strong relationship between natural gas distribution utility cost increases and customer growth. Describing their econometric analysis of the 42 LDCs in the United States from 1993-2000, the authors conclude:

> These results suggest that gas distribution cost is, in the long run, much more sensitive to growth in the number of customers served than to growth in throughput. This finding clearly contrasts with the way that output growth typically affects base rate revenue. Mark Newton Lowry, Lullit Getachew, and Steven Fenrick, "Regulation of Gas Distributors with Declining Use per Customer," Dialogue, pp. 17-27.

Q. SINCE THE PROPOSED RATE DESIGNS ARE SO HEAVILY DOMINATED BY FIXED CHARGES, WILL THEY DISCOURAGE THE COMPANY FROM PROMOTING ECONOMICALLY EFFICIENT CONSERVATION?

A. No. Rate structures that are dominated by fixed 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. As the discussion above makes clear, this latter statement is true from both an embedded and a marginal standpoint in both the short-run and the long-run.

Q. WHY WILL A RATE STRUCTURE THAT IS DOMINATED BY FIXED 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 proposed 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. DO OTHERS SHARE YOUR VIEW THAT A RATE STRUCTURE THAT IS DOMINATED BY FIXED CHARGES PROVIDES STRONGER INCENTIVES FOR THE UTILITY TO PROMOTE CONSERVATION THAN A RATE STRUCTURE THAT RELIES HEAVILY ON VOLUMETRIC CHARGES?

A. Yes. In an October 2004 article in American Gas magazine, the Honorable Stan Wise, then president of the National Association of Regulatory Utility Commissioners, writes:

> The simple and rational step of aligning costs with the right type makes sense because of the economics of the industry, and it makes sense

because it increases the opportunity to make conservation work. It may be as simple as a higher customer charge, thus reducing the connection between revenue and throughput.

Q. HAVE REGULATORY AUTHORITIES THEMSELVES 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. Also, Washington Gas was allowed by the Maryland Public Service Commission to recognize and collect "lost margins" from its customers as a result of successfully implemented conservation programs.

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 Utility 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 Aquila:

> 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.

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 under its traditional rate designs.

Q. YOU MENTIONED IN AN EARLIER ANSWER THAT THE PROPOSED RATE DESIGNS 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. DO YOU ADVOCATE THAT ALL COSTS BE BILLED THROUGH NON-VOLUMETRIC CHARGES?

A. No. Both of the Company's proposed rate structures still bill per therm gas costs so that, even under the flat charge proposal for residential and small commercial customers, almost 70% of charges are billed on a volumetric basis.

b. Revenue Stability And Predictability

Q. WHICH OF THE RATE STRUCTURES PROVIDES MORE STABLE AND PREDICTABLE REVENUES FOR AQUILA?

A. As discussed above, revenue stability and predictability will be enhanced under either of the proposed rate designs for two reasons. First, they better reflect 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.

c. Rate Stability And Predictability

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

A. Rate stability and predictability are often referred to as rate continuity. In the context of these rate proposals, 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 a minimal 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. Since the customer bills that result from this rate design are much less subject to the vagaries of the weather than customer bills from existing rate designs, the new rate designs are vastly superior to the existing rate designs under this criterion. In addition, under the traditional rate design, these rates are the highest in the coldest winters, when natural gas prices are also likely to be higher. Thus, after implementation, not only will these 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 energy with different usage patterns 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. Since the proposed rate designs do not affect class returns relative to existing rate designs, all of the rate designs at issue here will satisfy this attribute of a sound rate structure equally well.

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

A. Referring back to Exhibit_____(PHR-4), it is clear that either of the Company's rate proposals 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-6) calculates the degree of seasonal subsidy in the competing rate structures in this case. Exhibit_____(PHR-6) focuses on the average customer by class. For example, the average residential customer uses approximately 735 therms per year at an annual load factor of 25%. The average winter consumption of these residential customers is about 526 therms per year. The equivalent winter load factor is 43%.

Based on the Company's existing rate designs and its estimated cost of service, the average residential customer provides a subsidy in the winter of $27.71 per year. In other words, residential consumers are paying more for the delivery of natural gas in the winter than their cost of service. This analysis demonstrates another flaw in the current rate designs that is corrected by the Company's 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 greater average consumption in the other classes, the subsidies observed in them are even more pronounced. These customers pay a non-cost based premium of between $85 and $722 in the winter. The Company's proposed three-part rate structure eliminates these subsidies for all classes. The flat rate proposal also significantly reduces the identified subsidies.

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

A. Yes. A 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, the Company's proposed rate designs better match the marginal 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, the Company's 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. Clearly, a rate that is more closely tied to the cost of serving customers will provide a better signal to customer who can avail themselves of lower quality service such as the small volume and large volume customers. Thus, the Company's three-part rate design proposal will be superior to traditional two-part rate designs at promoting static efficiency from this standpoint. In the case of the flat rate proposal, the customer classes for whom this rate has been designed do not have alternative quality service available to them. Thus, the flat rate proposal will have no impact on the quality of service decision.

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. Because externalities 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 all of the rate designs are designed to recover the same level of revenues, all reflect an equal amount of internalities and externalities. However, the ability of the Company's alternative proposals to provide better incentives to the utility to encourage energy efficient investments (thereby implicitly recognizing whatever pollution externalities might exist) makes them better rate designs.

f. Fairness

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 Aquila, 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 the Company's proposed rate designs are better at eliminating subsidies of all types and to the extent that they more accurately reflect both the marginal and embedded costs of service, it is clear that the Company's proposed alternative rate designs will be fairer than its 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 their 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 THE THREE-PART RATE DESIGN PROPOSAL FARE WHEN IT IS EVALUATED BASED ON ITS IMPACT ON LOW INCOME CONSUMERS?

A. As is clear from the bill impact analysis above, the primary factor in determining who will be advantaged from this rate structure change is customer load factor. Load factor represents the efficiency with which consumers utilize the natural gas distribution network. The higher the load factor, the more efficiently customers are using the network. Conversely, the lower the load factor, the less efficiently customers are using the network. As should be expected, the Company's three-part rate design proposal favors more efficient users of the network over less efficient users of the network. Thus, in order to determine whether low-income customers are generally advantaged or disadvantaged under the proposal, one needs to evaluate whether low-income consumers are likely to be higher load factor customers or lower load factor customers.

Q. IS IT POSSIBLE TO DETERMINE WHETHER LOW INCOME CUSTOMERS ARE GENERALLY MORE OR LESS EFFICIENT USERS OF THE DISTRIBUTION NETWORK?

A. Yes, it is. To do so, I relied on the latest *LIHEAP Home Energy Notebook*, published by the U. S. Department of Health and Human Services (HHS). From this source, I compiled data on household energy usage and appliance ownership characteristics for all households and for low-income households specifically. For purposes of this analysis, HHS defines a low-income household as one that is at 150% of the poverty line or 60% of the median state income. The data I have compiled from this source is summarized as Exhibit_____(PHR-7).

Q. AND WHAT DO THESE DATA SHOW?

A. The following findings can be drawn from the data:

1. There is little difference in natural gas penetration (60% versus 61%) between low income and all other households.
2. Relatively more non low-income households with natural gas service use natural gas for space heating (88% versus 83%) and water heating (85% versus 82%).
3. Relatively more low-income households with natural gas use other natural gas appliances (72% versus 65%).
4. Relatively more of the MMBtus consumed by non low-income households are consumed in a seasonal pattern (at lower load factor) than the MMBtus consumed by low-income households (69% versus 66%).
5. Relatively more of the MMBtus consumed by low-income households are consumed in a non-seasonal pattern (at higher load factor) than the MMBtus consumed by non low-income households (34% versus 31%).

These last two findings, working together, lead to the inescapable conclusion that low-income consumers are using the natural gas distribution network more efficiently (at a higher load factor) and will therefore benefit more from the Company's proposed rate structure than will non-low income customers.

Q. BASED ON THIS INFORMATION, WHAT DO YOU CONCLUDE WITH RESPECT TO THE COMPANY'S THREE-PART RATE DESIGN PROPOSAL?

A. Low-income consumers will benefit more from the Company's proposed three-part rate structure than will non-low income customers simply because it is a rate structure that more closely coincides with their load patterns. Furthermore, this rate design will provide the following additional significant benefits to low-income consumers:

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 les volatile 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. The 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 LESS VOLATILE 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 the Company's proposed rate design, it will have done what it can to stabilize those prices under its control.

Q. WHY WILL LESS VOLATILE 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 a customer's income level influences 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. WILL BOTH OF THE COMPANY'S RATE DESIGN PROPOSALS PROVIDE FOR MORE STABLE BILLS?

A. Yes, because, under either proposal, 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. HOW CAN ONE BE CERTAIN THAT A RATE STRUCTURE PROMOTES DYNAMIC EFFICIENCY?

A. Economic theory argues that a rate structure that is based on the long run marginal cost of providing service will promote dynamic efficiency.

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 residential consumers that each therm they conserve is worth about $.15 to the distribution system, even though the cost of service study indicates that these conserved therms are worth only a fraction of this amount. Assume now that a consumer makes an energy efficiency investment based on these numbers. Between rate cases, his investment pays off at this rate. However, when rates are reset at the next rate case, the Company has not saved the equivalent of $.15/therm, but something closer to $.02/therm. Thus, rates are reset to collect these lost revenues, the per therm rate increases, and the return on the efficiency investment declines. Setting rates closer to cost of service, as both of the Company's proposals do, will ensure that this does not happen.

Q. DOES THIS MEAN THAT THE COMPANY'S 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 the Company's traditional two-part rate design is simpler that the Company's three-part rate design proposal in this case. However, I would argue that the Company's 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 the proposed rate designs 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 ANY OF THE COMPETING RATE DESIGNS MORE FREE FROM CONTROVERSIES AS TO PROPER INTERPRETATION?

A. Probably not. All of the proposals are straightforward rate designs. Therefore, the selection of the best rate design for Aquila'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 ITS PROPOSED RATE DESIGNS IN THIS CASE BY USING BONBRIGHT'S SOUND RATE DESIGN CRITERIA.

A. Based on the above discussion, it is clear that the rate design proposals in this case are superior to the Company's traditional rate designs. The following attributes unequivocally favor the new rate designs:

1. Effectiveness in yielding total revenue requirements. The Company's 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. The Company's proposed rate designs better reflect cost causation and better match seasonal costs to seasonal revenues.

3. Rate stability and predictability. The Company's proposed rate designs incorporate lower commodity charges and therefore result in more stable and more predictable bills to customers.

4. Static efficiency. The Company's proposed rate designs promote static efficiency by better reducing intra-class and seasonal subsidies than traditional rate designs.

5. Incorporation of internalities and externalities. The Company's proposed rate designs better meet this standard than a traditional rate design because of their ability to provide better incentives to the utility to encourage energy efficient investments (thereby implicitly recognizing whatever pollution externalities might exist).

6. Fairness. Because they eliminate subsidies of all types and because they more accurately reflect both the marginal and embedded costs of service, the Company's proposed rate designs better satisfy this standard than the Company's traditional rate design.

7. Avoidance of undue discrimination. Undue discrimination is avoided under the Company's proposed rate designs. However, to

the extent that the Commission believes that it is appropriate to provide subsidies to low-income consumers, the Company's proposed rate designs are superior to the Company's traditional rate design because they better match the consumption patterns of the low income consumer, they reduce winter bills, they provide more stable bills in the winter and they could lead to reduced arrearages for low-income customers.

8. Dynamic efficiency. Dynamic efficiency is enhanced under the Company's proposals because the Company's proposed rates more closely track the long run marginal costs of service.

9. Practicality. The practicality attributes favor the Company's proposed rate designs over the Company's traditional rate designs because the Company's proposed rate design incorporates far more certainty than the Company's traditional rate design.

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

10. Freedom from controversies as to proper interpretation. All of the proposals are straightforward rate designs.

Q. DOES THAT COMPLETE YOUR DIRECT TESTIMONY AT THIS TIME?

A. Yes, it does.

VERIFICATION

STATE OF Maryland)
)ss:
COUNTY OF Montgomery)

Paul H. Raab, being first duly sworn, deposes and says that he is Paul H. Raab referred to in the foregoing document entitled "Direct Testimony of Paul H. Raab" before the State Corporation Commission of the State of Kansas and the statements therein were prepared by him or under his direction and are true and correct to the best of his information, knowledge and belief.

Paul H. Raab

Paul H. Raab

SUBSCRIBED AND SWORN to before me this 26th day of Oct, 2006.

Kiran Bhatia

Notary Public

My Appointment Expires:

KIRAN BHATIA
Notary Public, State of Maryland
My Commission Expires March 1, 2008

A. AQUILA MARGINAL COSTS

Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?

A. As is evident from the discussion of Professor Bonbright's ten attributes of a sound rate structure, it is clear that, as a general principle, rates should reflect costs. There is little disagreement over this general principle, but disagreements do arise over how to measure the costs.

Generally, two cost bases are recognized in utility ratemaking applications: embedded or accounting cost and marginal cost. In this appendix, I present the marginal cost basis for the proposed rate design changes, so this first section describes my quantification of the Company's marginal cost of providing service.

Q. WHAT APPROACH DID YOU USE TO DEVELOP MARGINAL COST ESTIMATES FOR AQUILA?

A. A review of alternative marginal cost estimating methodologies used in the industry today indicates that there are three primary methods that could be applied. First, a "production function" type approach can be applied that either rebuilds the existing distribution system or describes its cost make-up in great detail. Second, an "opportunity cost" approach can be applied. Third, a regression-based or averaging approach can be applied that relates changes in individual expenditure categories to changes in different measures of energy supply.

I rejected the production function approach for use in the current application for three reasons. First, such an approach is extremely data intensive. Second, the approach has already been rejected as a method of marginal cost estimation in the case of electric utilities. There is little reason to believe its application in the natural gas industry is surrounded by sufficiently different circumstances so as to be warranted in this case. Finally, it is my experience that the method will not produce significantly different answers from the other two approaches (that are less data intensive), properly applied.

Similarly, I also rejected the opportunity cost method. While the method requires very little data to apply, it is not possible with this approach to develop separate marginal cost estimates for the various cost components of transmission, distribution, customer accounts, and general plant. While the marginal cost of all service can be ascertained with this approach, the marginal costs of the component parts cannot. As a result, this approach is of limited use.

The regression approach is therefore adopted for purposes of the current study. It enjoys a number of advantages. First, it relates directly to the investments made by the Company for purposes of meeting load requirements. This provides a comfort level to many parties who favor a forward-looking price signal, but do not agree with all of the theoretical constraints imposed by economic theory. Second, the regression approach relies on readily available Company data. Third, the approach has been shown to produce answers similar to that of the other two approaches. Fourth, it gives the Company a sufficient level of analytical rigor to prepare marginal cost estimates. Finally, the method has previously been widely applied. Therefore, it reflects the mainstream of thinking on how marginal costs for these functions should be derived.

Q. HOW IS THE REGRESSION APPROACH APPLIED?

A. It is applied by first developing a total cost function. The following general form of the total cost function is estimated using regression techniques for the various categories of costs:

$$COST_{i,t} = f(OUTPUT)_t \qquad (1)$$

where:

$COST_{i,t}$ = total cost in category i, year t, where i = 1,...,4 and t = 1987,..., 2005.

$OUTPUT_t$ = energy supply variables.

The cost measure includes both capital investment (or fixed plant) and operating expenses (labor, supplies, maintenance contracts, etc.). In mathematical terms, COST can be further defined as:

$$COST_{i,t} = r_i * I_{i,t} + O\&M_{i,t} \qquad (2)$$

where:

r_i = real economic carrying charge rate associated with investments in plant type "i"

$I_{i,t}$ = plant investment balance of type i in year "t"

$O\&M_{i,t}$ = operations and maintenance expenses associated with investment type i in year t.

OUTPUT can be either quantity of total energy sold, the number of customers (i.e., accounts), peak day sendout, or another appropriate measure of output that is judged to be a primary determinant of the level of cost incurred.

Q. HAVING DEVELOPED A TOTAL COST FUNCTION, HOW IS THE MARGINAL COST CALCULATED?

A. Once the total cost function has been derived, marginal cost is calculated (in accordance with its definition) as the derivative of the total cost function with respect to the output measure, $\delta TC/\delta Q$. By using the regression approach, it is assumed that the cost function is linear so that marginal cost is captured by the estimated slope coefficient.

Q. ARE THERE OTHER ISSUES THAT MUST BE RESOLVED IN ORDER TO APPLY THE APPROACH?

A. Yes. Having determined that the regression approach will be used, a number of issues must still be resolved. These issues include:

1. Should historical, forecasted, or a combination of these costs be used to develop the data base upon which the regression is based?
2. By what method should plant investments be price levelized?
3. What independent variable should be chosen to represent the driving factor behind costs?

Q. HOW DID YOU RESOLVE THE ISSUE OF HISTORICAL VERSUS FORECASTED COSTS?

A. Examination of previous applications of the regression approach reveals that certain of the applications use historical data only, certain applications use forecasted data only, and certain applications use a combination of historical and forecasted data. For example, Bay State Gas uses a database of both historical only and forecast only data to develop its marginal cost estimates. On the other hand, the California natural gas distribution utilities apply the regression approach to ten years of historical data combined with five years of forecast data. Thus, in order to apply the regression approach, the first issue to resolve is the precise form of the database.

The estimation of marginal cost by Bay State Gas provides useful insight into the issue of whether and to what extent to use forecasted costs in the regression equation. In that case, the use of forecasted data with historical data tended to produce a minimal impact on the results. Of course, this result is only obtained because the forecasted data tend to behave in the same way that historical data have. Therefore, for purposes of the current study, seventeen years of historical data are used to estimate a long-run total cost function, provided that there is no reason to believe that future circumstances will render these data obsolete as measures of the costs. In order to verify that this is indeed the case, interviews have been conducted with appropriate Company personnel.

The full database used to begin the marginal cost estimation process is summarized in Exhibit_____(PHR-8), Schedule 1. It shows investments in the major investment cost categories of transmission, distribution, and general plant, plus customer-related O&M and A&G costs for the nineteen-year period 1987-2005. Distribution costs are further divided into those (customer-specific) costs related to Services Regulators and Meters (SRM), and those common costs that are incurred to serve all customers. This is an important distinction, since different cost drivers could logically explain the customer-specific costs and the common costs.

Notably absent from this database are Intangible Plant costs, Production and Gathering Plant costs Manufactured Gas Production Plant costs and Storage Plant costs. Intangible Plant costs are excluded since these are not generally considered to be "marginal" costs in studies of this type. Production and Gathering Plant costs and Manufactured Gas Production Plant costs are excluded because most of this plant was recently retired (2003 and 2005, respectively). Finally, Aquila has no Storage Plant.

Q. HOW DID YOU ADDRESS THE ISSUE OF HOW TO LEVELIZE PLANT INVESTMENT?

A. In order to apply the regression approach, one must subscribe to the belief that the plant is generally correctly sized to meet load requirements at every point in time, and incremental investments only serve to increase the capacity of that plant. In this way, marginal investments can be ascribed only to marginal increases in output requirements, and true marginal costs can be derived. Similarly, the method requires plant investment expenditures be evaluated on a constant dollar basis. Otherwise, marginal cost estimates will be overstated or understated by changes in nominal prices contained in the data.

Expressing total investment expenditures on a constant dollar basis requires that expenditures be price levelized. For this study, the vintages of additions and operations and maintenance expenditures from each of the four account categories have been price levelized to 2005 dollars using nineteen years of price index data. Retirements, adjustments, and transfers in and out of the four categories are also price levelized, but using price index data for the average service life of these categories.

Q. HOW IS THE PRICE LEVELIZATION PERFORMED?

A. The process of price levelization is applied to all of the individual component parts of the cost equation above. In the case of O&M expenses, a simple price deflation index can be applied, because the costs represent dollars expended in a particular year. In order to understand the process of price levelization that is applied to the investment accounts, consider the formula that is used to derive the investment amounts:

$$INVESTMENT_{i,t} = INVESTMENT_{i,t-1} + ADD_{i,t} - RET_{i,t} + ADJ_{i,t} + XFER_{i,t} \quad (3)$$

where:

$ADD_{i,t}$ = additions to plant in year t

$RET_{i,t}$ = retirements from the plant balance in year t

$ADJ_{i,t}$ = adjustments to the plant balance in year t

$XFER_{i,t}$ = net transfers to the plant balance in year t

and all other variables are defined as before.

Addition dollars are easily indexed by application of an appropriate index value, discussed below. Indexing of retirements, adjustments and transfers is accomplished by applying an index applicable to a year that represents "N" years prior to the year in which the accounting entry for each component was made. N is defined to be equal to the average age of the plant. For example, if the plant in question has a life of 20 years and retirements booked in 1990 are being indexed, the appropriate index year is 1970.

Thus, this method assumes that the distribution of average age around the average life is uniformly distributed (a symmetrical Iowa-type curve is assumed), and the plant is generally in equilibrium in the sense that no major expansion is occurring.

Q. HOW IS THE REAL ECONOMIC CARRYING CHARGE CALCULATED?

A. Calculation of the real economic carrying charge (RECC) rate is accomplished by summing the pre-tax rate of return and the depreciation rate for each type of plant.

Q. WHAT INFLATION INDEX IS USED?

A. The inflation indices utilized in this study are taken from the Handy-Whitman index. This index is commonly used to express utility expenditures in constant dollars. For purposes of this study, the following specific indices associated with the North Central Region are used:

1. For all expense categories (O&M and Customer Expenses), the index associated with Building Trades Labor is used (B-3, Line 16).
2. For Transmission Plant, the index associated with Total Transmission Plant is used (G-3, Line 25).
3. For Distribution and General Plant, the index associated with Total Plant is used (G-3, Line 1).

Exhibit_____(PHR-8), Schedule 2 summarizes the resulting price-levelized investments in all of the relevant cost categories.

Q. ARE CAPITAL COSTS THE ONLY COSTS THAT AFFECT THE LEVEL OF MARGINAL COSTS?

A. No. Marginal costs also include operations and maintenance expenses associated with these investments, as well as other operating expenses. Exhibit_____(PHR-8), Schedule 3 summarizes the relevant O&M costs for Aquila.

Q. WHAT INDEPENDENT VARIABLES DID YOU USE?

A. The third aspect of this methodology is the choice of an independent variable for the regression equation. Since a secondary purpose of this study is to determine those factors that most strongly influence the incurrence of these costs through time, this choice is governed by the regression results. Specifically, I allow the methodology to identify and quantify relationships in the cost data in the following manner:

1. Identify candidate cost drivers. For this purpose, I have selected five particular variables to test. The first is the number of customers (obviously, a customer-related driver). The second, third and fourth are commodity-related drivers and all are related to volumes (natural gas received, natural gas delivered, and sales). Finally, the last variable is a demand- or capacity-related driver, the peak day sendout for the system. Independent variable data used in this study are provided in Exhibit_____(PHR-8), Schedule 4.

2. Develop regressions relating each cost category to each candidate cost driver. Thus, for example, the series of annual Gas Plant costs is regressed on each of the candidate cost driver series. This step is completed for each of the five cost categories described above (transmission, common distribution, customer-specific distribution, general plant, and customer-related O&M and A&G costs).

3. Select the best regression specifications. I used two criteria to make this selection. First I rejected any specification in which the coefficient on the cost driver was not significant at the 95% confidence level. Second, for those specifications that pass this first test, I selected the specification with the highest R-squared value. In this way I ensure that the cost driver does indeed have a measurable influence upon the cost category.

Using these criteria, the following independent variables were determined to be the best driver by function:

1. transmission – total customers
2. common distribution – total customers
3. customer-specific distribution – total customers
4. customer accounts – total customers.

I was unable to develop a statistically reliable relationship between investments in general plant and any of the cost drivers tested. The results of all specifications tested have been summarized in Exhibit_____(PHR-5).

Q. WHAT MARGINAL COST RESULTS FOR TRANSMISSION INVESTMENTS DID YOU DERIVE?

A. The estimation of transmission marginal costs is accomplished by developing a levelized transmission expense per customer. The schedule shows a coefficient associated with customers of 45.445, which is significant in a statistical sense. The resulting marginal cost is $3.79 per customer per month.

Q. WHAT DISTRIBUTION MARGINAL COSTS DID YOU DERIVE?

A. Two separate distribution marginal costs are estimated. The first is for the common portion of distribution costs not associated with services, regulators and meters (SRM), and the second is for that portion associated with these investments. These marginal costs are $17.59 of non-SRM marginal costs per meter per month and $18.20 of SRM marginal costs per meter per month.

Q. WHAT IS THE MARGINAL COST FOR GENERAL PLANT?

A. As discussed above, the regression approach did not yield a statistically significant estimate of the marginal cost of general plant. Accordingly, marginal cost for general plant is estimated to be $0.00.

Q. WHAT IS THE MARGINAL COST OF CUSTOMER ACCOUNTS, CUSTOMER SERVICE AND INFORMATIONAL EXPENSE, SALES EXPENSE AND A&G EXPENSE?

A. In order to estimate these marginal costs, the regression approach is applied and the independent variable that best explains the variation in these costs is determined to be customers.

All of the marginal cost results are summarized on Schedule 5 of Exhibit_____(PHR-8).

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:

- AGL Resources
- 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

- o 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:

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

- o ONEOK, Inc./Southwest Gas Corporation
- o Western Resources
- o 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:

- o Cable Television Association of Georgia
- o Devon Energy
- o Aquila
- o Oklahoma Natural Gas
- o Semco Energy Gas Company
- o Laclede Gas
- o 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
	06-KGSG-1209-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
Missouri	GR-2002-356	Rate Design
Montana	D2005.4.48	Costing/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
Pennsylvania	R-0061346	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 PUE-2006-00059	Demand Side Planning Costing/Rate Design Costing/Rate Design Costing/Rate Design Capacity Planning Costing/Rate Design 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 Federal Energy Regulatory Commission, 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, l980.

- "The Ernst & Whinney Forecasting Model," Forecasting Energy & Demand Requirements, University of Wisconsin - Extension, October 8, l979.

- "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.

Aquila, Inc.
Rate Structure/Cost of Service Comparison

Line No.	(A)	(B) Residental	(C) Small Commercial	(D) Small Volume	(E) Large Volume	Line No.
1	Cost of Service:					1
2						2
3	Customer-Related Costs	$ 22,982,376	$ 3,915,353	$ 2,155,210	$ 737,618	3
4	Commodity-Related Costs	$ 1,341,378	$ 228,815	$ 344,673	$ 597,057	4
5	Demand-Related Costs	$ 4,748,694	$ 663,257	$ 1,038,176	$ 1,056,196	5
6	Totals	$ 29,072,449	$ 4,807,426	$ 3,538,060	$ 2,390,871	6
7						7
8						8
9	Proposed Rate Structure at Proposed Rate Levels:					9
10						10
11	Customer Charges ($/customer/month)	$ 14,665,560	$ 1,974,000	$ 816,480	$ 501,000	11
12	Commodity Charges ($/therm)	$ 1,325,322	$ 245,881	$ 344,721	$ 598,632	12
13	Demand Charges ($/peak day therm)	$ 13,081,567	$ 2,587,545	$ 2,376,859	$ 1,291,240	13
14	Totals	$ 29,072,449	$ 4,807,426	$ 3,538,060	$ 2,390,872	14
15						15
16						16
17	Traditional Rate Structure at Proposed Rate Levels:					17
18						18
19	Customer Charges ($/customer/month)	$ 19,042,666	$ 2,467,500	$ 1,020,600	$ 501,000	19
20	Commodity Charges ($/therm)	$ 10,029,783	$ 2,339,926	$ 2,517,460	$ 1,889,872	20
21	Demand Charges ($/peak day therm)	$ -	$ -	$ -	$ -	21
22	Totals	$ 29,072,449	$ 4,807,426	$ 3,538,060	$ 2,390,872	22
23						23
24						24
25	Absolute Cost of Service Difference, Proposed Rates:					25
26						26
27	Customer Charges ($/customer/month)	$ (8,316,816)	$ (1,941,353)	$ (1,338,730)	$ (236,618)	27
28	Commodity Charges ($/therm)	$ (16,056)	$ 17,066	$ 48	$ 1,575	28
29	Demand Charges ($/peak day therm)	$ 8,332,872	$ 1,924,288	$ 1,338,683	$ 235,044	29
30	Totals	$ 0	$ -	$ -	$ 1	30
31						31
32						32
33	Absolute Cost of Service Difference, Traditional Rates:					33
34						34
35	Customer Charges ($/customer/month)	$ (3,939,711)	$ (1,447,853)	$ (1,134,610)	$ (236,618)	35
36	Commodity Charges ($/therm)	$ 8,688,405	$ 2,111,111	$ 2,172,786	$ 1,292,815	36
37	Demand Charges ($/peak day therm)	$ (4,748,694)	$ (663,257)	$ (1,038,176)	$ (1,056,196)	37
38	Totals	$ 0	$ -	$ -	$ 1	38
39						39
40						40
41	Percentage Cost of Service Difference, Proposed Rates:					41
42						42
43	Customer Charges ($/customer/month)	-36%	-50%	-62%	-32%	43
44	Commodity Charges ($/therm)	-1%	7%	0%	0%	44
45	Demand Charges ($/peak day therm)	175%	290%	129%	22%	45
46	Totals	0%	0%	0%	0%	46
47						47
48						48
49	Percentage Cost of Service Difference, Traditional Rates:					49
50						50
51	Customer Charges ($/customer/month)	-17%	-37%	-53%	-32%	51
52	Commodity Charges ($/therm)	648%	923%	630%	217%	52
53	Demand Charges ($/peak day therm)	-100%	-100%	-100%	-100%	53
54	Totals	0%	0%	0%	0%	54

Aquila, Inc.
Rate Structure/Cost of Service Comparison

Line No.	(A)	(B) Residental	(C) Small Commercial	Line No.
1	Cost of Service:			1
2				2
3	Customer-Related Costs	$ 22,982,376	$ 3,915,353	3
4	Commodity-Related Costs	$ 1,341,378	$ 228,815	4
5	Demand-Related Costs	$ 4,748,694	$ 663,257	5
6	Totals	$ 29,072,449	$ 4,807,426	6
7				7
8				8
9	Flat Charge Rate Structure at Proposed Rate Levels:			9
10				10
11	Customer Charges ($/customer/month)	$ 31,154,174	$ 2,725,700	11
12	Commodity Charges ($/therm)	$ -	$ -	12
13	Demand Charges ($/peak day therm)	$ -	$ -	13
14	Totals	$ 31,154,174	$ 2,725,700	14
15				15
16				16
17	Traditional Rate Structure at Proposed Rate Levels:			17
18				18
19	Customer Charges ($/customer/month)	$ 19,042,666	$ 2,467,500	19
20	Commodity Charges ($/therm)	$ 12,111,509	$ 258,200	20
21	Demand Charges ($/peak day therm)	$ -	$ -	21
22	Totals	$ 31,154,174	$ 2,725,700	22
23				23
24				24
25	Absolute Cost of Service Difference, Proposed Rates:			25
26				26
27	Customer Charges ($/customer/month)	$ 8,171,798	$ (1,189,653)	27
28	Commodity Charges ($/therm)	$ (1,341,378)	$ (228,815)	28
29	Demand Charges ($/peak day therm)	$ (4,748,694)	$ (663,257)	29
30	Totals	$ 2,081,726	$ (2,081,726)	30
31				31
32				32
33	Absolute Cost of Service Difference, Traditional Rates:			33
34				34
35	Customer Charges ($/customer/month)	$ (3,939,711)	$ (1,447,853)	35
36	Commodity Charges ($/therm)	$ 10,770,130	$ 29,385	36
37	Demand Charges ($/peak day therm)	$ (4,748,694)	$ (663,257)	37
38	Totals	$ 2,081,726	$ (2,081,726)	38
39				39
40				40
41	Percentage Cost of Service Difference, Proposed Rates:			41
42				42
43	Customer Charges ($/customer/month)	36%	-30%	43
44	Commodity Charges ($/therm)	-100%	-100%	44
45	Demand Charges ($/peak day therm)	-100%	-100%	45
46	Totals	7%	-43%	46
47				47
48				48
49	Percentage Cost of Service Difference, Traditional Rates:			49
50				50
51	Customer Charges ($/customer/month)	-17%	-37%	51
52	Commodity Charges ($/therm)	803%	13%	52
53	Demand Charges ($/peak day therm)	-100%	-100%	53
54	Totals	7%	-76%	54

Residential Annual Bill

Line No.	(A) Annual Consumption	(B) Percent of Customers	(C) Traditional Rates N/A	(D) 5%	(E) 10%	(F) 15%	(G) 20%	(H) 25%	(I) Proposed Rates Load Factor 30%	(J) 35%	(K) 40%	(L) 45%	(M) 50%	(N) 75%	(O) 100%	Line No.
1	200	5%	$ 231.61	$ 348.50	$ 254.17	$ 222.72	$ 207.00	$ 197.72	$ 191.28	$ 186.79	$ 183.42	$ 180.80	$ 178.70	$ 172.42	$ 169.27	1
2	250	3%	$ 238.87	$ 396.62	$ 278.71	$ 239.41	$ 219.75	$ 208.15	$ 200.10	$ 194.49	$ 190.28	$ 187.00	$ 184.38	$ 176.52	$ 172.59	2
3	300	4%	$ 246.13	$ 444.75	$ 303.25	$ 256.09	$ 232.50	$ 218.58	$ 208.92	$ 202.18	$ 197.13	$ 193.20	$ 190.06	$ 180.62	$ 175.91	3
4	350	5%	$ 253.39	$ 492.87	$ 327.79	$ 272.77	$ 245.26	$ 229.01	$ 217.74	$ 209.88	$ 203.99	$ 199.40	$ 195.73	$ 184.73	$ 179.22	4
5	400	6%	$ 260.65	$ 541.00	$ 352.34	$ 289.45	$ 258.01	$ 239.44	$ 226.56	$ 217.58	$ 210.84	$ 205.60	$ 201.41	$ 188.83	$ 182.54	5
6	425	3%	$ 264.28	$ 565.06	$ 364.61	$ 297.79	$ 264.38	$ 244.66	$ 230.97	$ 221.43	$ 214.27	$ 208.70	$ 204.25	$ 190.88	$ 184.20	6
7	450	4%	$ 267.91	$ 589.12	$ 376.88	$ 306.13	$ 270.76	$ 249.87	$ 235.38	$ 225.28	$ 217.70	$ 211.80	$ 207.08	$ 192.93	$ 185.86	7
8	475	4%	$ 271.54	$ 613.18	$ 389.15	$ 314.47	$ 277.13	$ 255.09	$ 239.79	$ 229.12	$ 221.12	$ 214.90	$ 209.92	$ 194.99	$ 187.52	8
9	500	4%	$ 275.17	$ 637.24	$ 401.42	$ 322.81	$ 283.51	$ 260.30	$ 244.20	$ 232.97	$ 224.55	$ 218.00	$ 212.76	$ 197.04	$ 189.18	9
10	525	4%	$ 278.80	$ 661.31	$ 413.69	$ 331.15	$ 289.88	$ 265.52	$ 248.61	$ 236.82	$ 227.98	$ 221.10	$ 215.60	$ 199.09	$ 190.84	10
11	550	4%	$ 282.43	$ 685.37	$ 425.96	$ 339.49	$ 296.26	$ 270.73	$ 253.02	$ 240.67	$ 231.41	$ 224.20	$ 218.44	$ 201.14	$ 192.50	11
12	575	4%	$ 286.07	$ 709.43	$ 438.23	$ 347.83	$ 302.63	$ 275.95	$ 257.43	$ 244.52	$ 234.83	$ 227.30	$ 221.27	$ 203.19	$ 194.15	12
13	600	4%	$ 289.70	$ 733.49	$ 450.50	$ 356.17	$ 309.01	$ 281.16	$ 261.84	$ 248.37	$ 238.26	$ 230.40	$ 224.11	$ 205.25	$ 195.81	13
14	625	4%	$ 293.33	$ 757.56	$ 462.77	$ 364.51	$ 315.38	$ 286.38	$ 266.25	$ 252.22	$ 241.69	$ 233.50	$ 226.95	$ 207.30	$ 197.47	14
15	650	4%	$ 296.96	$ 781.62	$ 475.05	$ 372.85	$ 321.76	$ 291.59	$ 270.66	$ 256.07	$ 245.12	$ 236.60	$ 229.79	$ 209.35	$ 199.13	15
16	675	4%	$ 300.59	$ 805.68	$ 487.32	$ 381.20	$ 328.13	$ 296.81	$ 275.07	$ 259.91	$ 248.54	$ 239.70	$ 232.63	$ 211.40	$ 200.79	16
17	700	3%	$ 304.22	$ 829.74	$ 499.59	$ 389.54	$ 334.51	$ 302.02	$ 279.48	$ 263.76	$ 251.97	$ 242.80	$ 235.46	$ 213.45	$ 202.45	17
18	735	4%	$ 309.30	$ 863.43	$ 516.77	$ 401.21	$ 343.44	$ 309.32	$ 285.66	$ 269.15	$ 256.77	$ 247.14	$ 239.44	$ 216.33	$ 204.77	18
19	775	4%	$ 315.11	$ 901.93	$ 536.40	$ 414.56	$ 353.64	$ 317.67	$ 292.71	$ 275.31	$ 262.25	$ 252.10	$ 243.98	$ 219.61	$ 207.43	19
20	825	5%	$ 322.37	$ 950.05	$ 560.94	$ 431.24	$ 366.39	$ 326.10	$ 301.54	$ 283.01	$ 269.11	$ 258.30	$ 249.65	$ 223.71	$ 210.74	20
21	900	5%	$ 333.26	$ 1,022.24	$ 597.76	$ 456.26	$ 385.51	$ 343.74	$ 314.77	$ 294.55	$ 279.39	$ 267.60	$ 258.17	$ 229.87	$ 215.72	21
22	1,000	5%	$ 347.79	$ 1,118.49	$ 646.84	$ 489.62	$ 411.01	$ 364.60	$ 332.41	$ 309.95	$ 293.10	$ 280.00	$ 269.52	$ 238.08	$ 222.35	22
23	>1,000	8%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	23

Absolute Change in Residential Monthly Bills

Line No.	Annual Consumption	Percent of Customers	Current Rates N/A	5%	10%	15%	20%	25%	Proposed Rates Load Factor 30%	35%	40%	45%	50%	75%	100%	Line No.
31	200	5%	$ -	$ 9.74	$ 1.88	$ (0.74)	$ (2.05)	$ (2.82)	$ (3.36)	$ (3.73)	$ (4.02)	$ (4.23)	$ (4.41)	$ (4.93)	$ (5.19)	31
32	250	3%	$ -	$ 13.15	$ 3.32	$ 0.04	$ (1.59)	$ (2.56)	$ (3.23)	$ (3.70)	$ (4.05)	$ (4.32)	$ (4.54)	$ (5.20)	$ (5.52)	32
33	300	4%	$ -	$ 16.55	$ 4.76	$ 0.83	$ (1.14)	$ (2.30)	$ (3.10)	$ (3.66)	$ (4.08)	$ (4.41)	$ (4.67)	$ (5.46)	$ (5.85)	33
34	350	5%	$ -	$ 19.96	$ 6.20	$ 1.61	$ (0.68)	$ (2.03)	$ (2.97)	$ (3.63)	$ (4.12)	$ (4.50)	$ (4.80)	$ (5.72)	$ (6.18)	34
35	400	6%	$ -	$ 23.36	$ 7.64	$ 2.40	$ (0.22)	$ (1.77)	$ (2.84)	$ (3.59)	$ (4.15)	$ (4.59)	$ (4.94)	$ (5.98)	$ (6.51)	35
36	425	3%	$ -	$ 25.06	$ 8.36	$ 2.79	$ 0.01	$ (1.64)	$ (2.78)	$ (3.57)	$ (4.17)	$ (4.63)	$ (5.00)	$ (6.12)	$ (6.67)	36
37	450	4%	$ -	$ 26.77	$ 9.08	$ 3.18	$ 0.24	$ (1.50)	$ (2.71)	$ (3.55)	$ (4.18)	$ (4.68)	$ (5.07)	$ (6.25)	$ (6.84)	37
38	475	4%	$ -	$ 28.47	$ 9.80	$ 3.58	$ 0.47	$ (1.37)	$ (2.65)	$ (3.53)	$ (4.20)	$ (4.72)	$ (5.14)	$ (6.38)	$ (7.00)	38
39	500	4%	$ -	$ 30.17	$ 10.52	$ 3.97	$ 0.69	$ (1.24)	$ (2.58)	$ (3.52)	$ (4.22)	$ (4.76)	$ (5.20)	$ (6.51)	$ (7.17)	39
40	525	4%	$ -	$ 31.88	$ 11.24	$ 4.36	$ 0.92	$ (1.11)	$ (2.52)	$ (3.50)	$ (4.24)	$ (4.81)	$ (5.27)	$ (6.64)	$ (7.33)	40
41	550	4%	$ -	$ 33.58	$ 11.96	$ 4.75	$ 1.15	$ (0.98)	$ (2.45)	$ (3.48)	$ (4.25)	$ (4.85)	$ (5.33)	$ (6.77)	$ (7.49)	41
42	575	4%	$ -	$ 35.28	$ 12.68	$ 5.15	$ 1.38	$ (0.84)	$ (2.39)	$ (3.46)	$ (4.27)	$ (4.90)	$ (5.40)	$ (6.91)	$ (7.66)	42
43	600	4%	$ -	$ 36.98	$ 13.40	$ 5.54	$ 1.61	$ (0.71)	$ (2.32)	$ (3.44)	$ (4.29)	$ (4.94)	$ (5.47)	$ (7.04)	$ (7.82)	43
44	625	4%	$ -	$ 38.69	$ 14.12	$ 5.93	$ 1.84	$ (0.58)	$ (2.26)	$ (3.43)	$ (4.30)	$ (4.99)	$ (5.53)	$ (7.17)	$ (7.99)	44
45	650	4%	$ -	$ 40.39	$ 14.84	$ 6.32	$ 2.07	$ (0.45)	$ (2.19)	$ (3.41)	$ (4.32)	$ (5.03)	$ (5.60)	$ (7.30)	$ (8.15)	45
46	675	4%	$ -	$ 42.09	$ 15.56	$ 6.72	$ 2.30	$ (0.31)	$ (2.13)	$ (3.39)	$ (4.34)	$ (5.07)	$ (5.66)	$ (7.43)	$ (8.32)	46
47	700	3%	$ -	$ 43.79	$ 16.28	$ 7.11	$ 2.52	$ (0.18)	$ (2.06)	$ (3.37)	$ (4.35)	$ (5.12)	$ (5.73)	$ (7.56)	$ (8.48)	47
48	735	4%	$ -	$ 46.18	$ 17.29	$ 7.66	$ 2.84	$ 0.00	$ (1.97)	$ (3.35)	$ (4.38)	$ (5.18)	$ (5.82)	$ (7.75)	$ (8.71)	48
49	775	4%	$ -	$ 48.90	$ 18.44	$ 8.29	$ 3.21	$ 0.21	$ (1.87)	$ (3.32)	$ (4.40)	$ (5.25)	$ (5.93)	$ (7.98)	$ (8.97)	49
50	825	5%	$ -	$ 52.31	$ 19.88	$ 9.07	$ 3.67	$ 0.48	$ (1.74)	$ (3.28)	$ (4.44)	$ (5.34)	$ (6.06)	$ (8.22)	$ (9.30)	50
51	900	5%	$ -	$ 57.41	$ 22.04	$ 10.25	$ 4.35	$ 0.87	$ (1.54)	$ (3.23)	$ (4.49)	$ (5.47)	$ (6.26)	$ (8.62)	$ (9.80)	51
52	1,000	5%	$ -	$ 64.23	$ 24.92	$ 11.82	$ 5.27	$ 1.40	$ (1.28)	$ (3.15)	$ (4.56)	$ (5.65)	$ (6.52)	$ (9.14)	$ (10.45)	52
53	>1,000	8%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	53

Percent Change in Residential Monthly Bills

Line No.	Annual Consumption	Percent of Customers	Current Rates N/A	5%	10%	15%	20%	25%	Proposed Rates Load Factor 30%	35%	40%	45%	50%	75%	100%	Line No.
61	200	5%	0%	50%	10%	-4%	-11%	-15%	-17%	-19%	-21%	-22%	-23%	-26%	-27%	61
62	250	3%	0%	66%	17%	0%	-8%	-13%	-16%	-19%	-20%	-22%	-23%	-26%	-28%	62
63	300	4%	0%	81%	23%	4%	-6%	-11%	-15%	-18%	-20%	-22%	-23%	-27%	-29%	63
64	350	5%	0%	95%	29%	8%	-3%	-10%	-14%	-17%	-19%	-21%	-23%	-27%	-29%	64
65	400	6%	0%	108%	35%	11%	-1%	-8%	-13%	-17%	-19%	-21%	-23%	-28%	-30%	65
66	425	3%	0%	114%	38%	13%	0%	-7%	-13%	-16%	-19%	-21%	-23%	-28%	-30%	66
67	450	4%	0%	120%	41%	14%	1%	-7%	-12%	-16%	-19%	-21%	-23%	-28%	-31%	67
68	475	4%	0%	126%	43%	16%	2%	-6%	-12%	-16%	-19%	-21%	-23%	-28%	-31%	68
69	500	4%	0%	132%	46%	17%	3%	-5%	-11%	-15%	-18%	-21%	-23%	-28%	-31%	69
70	525	4%	0%	137%	48%	19%	4%	-5%	-11%	-15%	-18%	-21%	-23%	-29%	-32%	70
71	550	4%	0%	143%	51%	20%	5%	-4%	-10%	-15%	-18%	-21%	-23%	-29%	-32%	71
72	575	4%	0%	148%	53%	22%	6%	-4%	-10%	-15%	-18%	-21%	-23%	-29%	-32%	72
73	600	4%	0%	153%	56%	23%	7%	-3%	-10%	-14%	-18%	-20%	-23%	-29%	-32%	73
74	625	4%	0%	158%	58%	24%	8%	-2%	-9%	-14%	-18%	-20%	-23%	-29%	-33%	74
75	650	4%	0%	163%	60%	26%	8%	-2%	-9%	-14%	-17%	-20%	-23%	-30%	-33%	75
76	675	4%	0%	168%	62%	27%	9%	-1%	-8%	-14%	-17%	-20%	-23%	-30%	-33%	76
77	700	3%	0%	173%	64%	28%	10%	-1%	-8%	-13%	-17%	-20%	-23%	-30%	-33%	77
78	735	4%	0%	179%	67%	30%	11%	0%	-8%	-13%	-17%	-20%	-23%	-30%	-34%	78
79	775	4%	0%	186%	70%	32%	12%	1%	-7%	-13%	-17%	-20%	-23%	-30%	-34%	79
80	825	5%	0%	195%	74%	34%	14%	2%	-6%	-12%	-17%	-20%	-23%	-31%	-35%	80
81	900	5%	0%	207%	79%	37%	16%	3%	-6%	-12%	-16%	-20%	-23%	-31%	-35%	81
82	1,000	5%	0%	222%	86%	41%	18%	5%	-4%	-11%	-16%	-19%	-23%	-32%	-36%	82
83	>1,000	8%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	83

Small Commercial Annual Bill

Line No.	(A) Annual Consumption	(B) Percent of Customers	(C) Traditional Rates N/A	(D) 5%	(E) 10%	(F) 15%	(G) 20%	(H) 23%	(I) 30%	(J) 35%	(K) 40%	(L) 45%	(M) 50%	(N) 75%	(O) 100%
				Proposed Rates Load Factor											
1	50	5%	$ 309.13	$ 288.12	$ 264.54	$ 256.68	$ 252.75	$ 251.06	$ 248.82	$ 247.70	$ 246.86	$ 246.20	$ 245.68	$ 244.10	$ 243.32
2	125	4%	$ 322.83	$ 360.31	$ 301.35	$ 281.70	$ 271.88	$ 267.64	$ 262.05	$ 259.24	$ 257.14	$ 255.50	$ 254.19	$ 250.26	$ 248.29
3	200	5%	$ 336.52	$ 432.50	$ 338.17	$ 306.72	$ 291.00	$ 284.23	$ 275.28	$ 270.79	$ 267.42	$ 264.80	$ 262.70	$ 256.42	$ 253.27
4	250	4%	$ 345.66	$ 480.62	$ 362.71	$ 323.41	$ 303.75	$ 295.28	$ 284.10	$ 278.49	$ 274.28	$ 271.00	$ 268.38	$ 260.52	$ 256.59
5	300	4%	$ 354.79	$ 528.75	$ 387.25	$ 340.09	$ 316.50	$ 306.34	$ 292.92	$ 286.18	$ 281.13	$ 277.20	$ 274.06	$ 264.62	$ 259.91
6	350	4%	$ 363.92	$ 576.87	$ 411.79	$ 356.77	$ 329.26	$ 317.40	$ 301.74	$ 293.88	$ 287.99	$ 283.40	$ 279.73	$ 268.73	$ 263.22
7	400	4%	$ 373.05	$ 625.00	$ 436.34	$ 373.45	$ 342.01	$ 328.45	$ 310.56	$ 301.58	$ 294.84	$ 289.60	$ 285.41	$ 272.83	$ 266.54
8	450	4%	$ 382.18	$ 673.12	$ 460.88	$ 390.13	$ 354.76	$ 339.51	$ 319.38	$ 309.28	$ 301.70	$ 295.80	$ 291.08	$ 276.93	$ 269.86
9	525	5%	$ 395.88	$ 745.31	$ 497.69	$ 415.15	$ 373.88	$ 356.10	$ 332.61	$ 320.82	$ 311.98	$ 305.10	$ 299.60	$ 283.09	$ 274.84
10	600	5%	$ 409.57	$ 817.49	$ 534.50	$ 440.17	$ 393.01	$ 372.68	$ 345.84	$ 332.37	$ 322.26	$ 314.40	$ 308.11	$ 289.25	$ 279.81
11	675	4%	$ 423.27	$ 889.68	$ 571.32	$ 465.20	$ 412.13	$ 389.27	$ 359.07	$ 343.91	$ 332.54	$ 323.70	$ 316.63	$ 295.40	$ 284.79
12	750	4%	$ 436.97	$ 961.87	$ 608.13	$ 490.22	$ 431.26	$ 405.85	$ 372.30	$ 355.46	$ 342.83	$ 333.00	$ 325.14	$ 301.56	$ 289.77
13	875	6%	$ 459.79	$ 1,082.18	$ 669.48	$ 531.92	$ 463.14	$ 433.50	$ 394.36	$ 374.70	$ 359.96	$ 348.50	$ 339.33	$ 311.82	$ 298.06
14	1,000	5%	$ 482.62	$ 1,202.49	$ 730.84	$ 573.62	$ 495.01	$ 461.14	$ 416.41	$ 393.95	$ 377.10	$ 364.00	$ 353.52	$ 322.08	$ 306.35
15	1,150	5%	$ 510.01	$ 1,346.86	$ 804.47	$ 623.67	$ 533.27	$ 494.31	$ 442.87	$ 417.04	$ 397.67	$ 382.60	$ 370.55	$ 334.39	$ 316.31
16	1,300	4%	$ 537.41	$ 1,491.24	$ 878.09	$ 673.71	$ 571.52	$ 527.48	$ 469.33	$ 440.13	$ 418.23	$ 401.20	$ 387.58	$ 346.70	$ 326.26
17	1,500	4%	$ 573.93	$ 1,683.73	$ 976.26	$ 740.43	$ 622.52	$ 571.71	$ 504.61	$ 470.92	$ 445.65	$ 426.00	$ 410.28	$ 363.11	$ 339.53
18	1,700	4%	$ 610.46	$ 1,876.23	$ 1,074.43	$ 807.16	$ 673.52	$ 615.93	$ 539.89	$ 501.71	$ 473.07	$ 450.80	$ 432.98	$ 379.53	$ 352.80
19	2,000	4%	$ 665.24	$ 2,164.98	$ 1,221.68	$ 907.25	$ 750.03	$ 682.27	$ 592.81	$ 547.89	$ 514.20	$ 488.00	$ 467.04	$ 404.15	$ 372.71
20	2,500	5%	$ 756.55	$ 2,646.22	$ 1,467.10	$ 1,074.06	$ 877.54	$ 792.84	$ 681.02	$ 624.87	$ 582.76	$ 550.00	$ 523.80	$ 445.19	$ 405.89
21	3,000	4%	$ 847.86	$ 3,127.47	$ 1,712.52	$ 1,240.87	$ 1,005.04	$ 903.41	$ 769.22	$ 701.84	$ 651.31	$ 612.00	$ 580.56	$ 486.23	$ 439.06
22	4,000	5%	$ 1,030.49	$ 4,069.95	$ 2,203.36	$ 1,574.49	$ 1,260.06	$ 1,124.55	$ 945.63	$ 855.79	$ 788.41	$ 736.00	$ 694.08	$ 568.31	$ 505.42
23	>4,000	2%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

26 Absolute Change in Small Commercial Monthly Bills

Line No.	Annual Consumption	Percent of Customers	Current Rates N/A	5%	10%	15%	20%	23%	30%	35%	40%	45%	50%	75%	100%
				Proposed Rates Load Factor											
31	50	5%	$ -	$ (1.75)	$ (3.72)	$ (4.37)	$ (4.70)	$ (4.84)	$ (5.03)	$ (5.12)	$ (5.19)	$ (5.24)	$ (5.29)	$ (5.42)	$ (5.48)
32	125	4%	$ -	$ 3.12	$ (1.79)	$ (3.43)	$ (4.25)	$ (4.60)	$ (5.06)	$ (5.30)	$ (5.47)	$ (5.61)	$ (5.72)	$ (6.05)	$ (6.21)
33	200	5%	$ -	$ 8.00	$ 0.14	$ (2.48)	$ (3.79)	$ (4.36)	$ (5.10)	$ (5.48)	$ (5.76)	$ (5.98)	$ (6.15)	$ (6.68)	$ (6.94)
34	250	4%	$ -	$ 11.25	$ 1.42	$ (1.85)	$ (3.49)	$ (4.20)	$ (5.13)	$ (5.60)	$ (5.95)	$ (6.22)	$ (6.44)	$ (7.09)	$ (7.42)
35	300	4%	$ -	$ 14.50	$ 2.71	$ (1.22)	$ (3.19)	$ (4.04)	$ (5.16)	$ (5.72)	$ (6.14)	$ (6.47)	$ (6.73)	$ (7.51)	$ (7.91)
36	350	4%	$ -	$ 17.75	$ 3.99	$ (0.60)	$ (2.89)	$ (3.88)	$ (5.18)	$ (5.84)	$ (6.33)	$ (6.71)	$ (7.02)	$ (7.93)	$ (8.39)
37	400	4%	$ -	$ 21.00	$ 5.27	$ 0.03	$ (2.59)	$ (3.72)	$ (5.21)	$ (5.96)	$ (6.52)	$ (6.95)	$ (7.30)	$ (8.35)	$ (8.88)
38	450	4%	$ -	$ 24.25	$ 6.56	$ 0.66	$ (2.29)	$ (3.56)	$ (5.23)	$ (6.08)	$ (6.71)	$ (7.20)	$ (7.59)	$ (8.77)	$ (9.36)
39	525	5%	$ -	$ 29.12	$ 8.48	$ 1.61	$ (1.83)	$ (3.31)	$ (5.27)	$ (6.25)	$ (6.99)	$ (7.56)	$ (8.02)	$ (9.40)	$ (10.09)
40	600	5%	$ -	$ 33.99	$ 10.41	$ 2.55	$ (1.38)	$ (3.07)	$ (5.31)	$ (6.43)	$ (7.28)	$ (7.93)	$ (8.46)	$ (10.03)	$ (10.81)
41	675	4%	$ -	$ 38.87	$ 12.34	$ 3.49	$ (0.93)	$ (2.83)	$ (5.35)	$ (6.61)	$ (7.56)	$ (8.30)	$ (8.89)	$ (10.66)	$ (11.54)
42	750	4%	$ -	$ 43.74	$ 14.26	$ 4.44	$ (0.48)	$ (2.59)	$ (5.39)	$ (6.79)	$ (7.84)	$ (8.66)	$ (9.32)	$ (11.28)	$ (12.27)
43	875	6%	$ -	$ 51.87	$ 17.47	$ 6.01	$ 0.28	$ (2.19)	$ (5.45)	$ (7.09)	$ (8.32)	$ (9.27)	$ (10.04)	$ (12.33)	$ (13.48)
44	1,000	5%	$ -	$ 59.99	$ 20.68	$ 7.58	$ 1.03	$ (1.79)	$ (5.52)	$ (7.39)	$ (8.79)	$ (9.89)	$ (10.76)	$ (13.38)	$ (14.69)
45	1,150	5%	$ -	$ 69.74	$ 24.54	$ 9.47	$ 1.94	$ (1.31)	$ (5.60)	$ (7.75)	$ (9.36)	$ (10.62)	$ (11.62)	$ (14.64)	$ (16.14)
46	1,300	4%	$ -	$ 79.49	$ 28.39	$ 11.36	$ 2.84	$ (0.83)	$ (5.67)	$ (8.11)	$ (9.93)	$ (11.35)	$ (12.49)	$ (15.89)	$ (17.60)
47	1,500	4%	$ -	$ 92.48	$ 33.53	$ 13.88	$ 4.05	$ (0.19)	$ (5.78)	$ (8.58)	$ (10.69)	$ (12.33)	$ (13.64)	$ (17.57)	$ (19.53)
48	1,700	4%	$ -	$ 105.48	$ 38.66	$ 16.39	$ 5.26	$ 0.46	$ (5.88)	$ (9.06)	$ (11.45)	$ (13.30)	$ (14.79)	$ (19.24)	$ (21.47)
49	2,000	4%	$ -	$ 124.98	$ 46.37	$ 20.17	$ 7.07	$ 1.42	$ (6.04)	$ (9.78)	$ (12.59)	$ (14.77)	$ (16.52)	$ (21.76)	$ (24.38)
50	2,500	5%	$ -	$ 157.47	$ 59.21	$ 26.46	$ 10.08	$ 3.02	$ (6.29)	$ (10.97)	$ (14.48)	$ (17.21)	$ (19.40)	$ (25.95)	$ (29.22)
51	3,000	4%	$ -	$ 189.97	$ 72.05	$ 32.75	$ 13.10	$ 4.63	$ (6.55)	$ (12.17)	$ (16.38)	$ (19.66)	$ (22.28)	$ (30.14)	$ (34.07)
52	4,000	5%	$ -	$ 254.96	$ 97.74	$ 45.33	$ 19.13	$ 7.84	$ (7.07)	$ (14.56)	$ (20.17)	$ (24.54)	$ (28.03)	$ (38.52)	$ (43.76)
53	>4,000	2%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

56 Percent Change in Small Commercial Monthly Bills

Line No.	Annual Consumption	Percent of Customers	Current Rates N/A	5%	10%	15%	20%	23%	30%	35%	40%	45%	50%	75%	100%
				Proposed Rates Load Factor											
61	50	5%	0%	-7%	-14%	-17%	-18%	-19%	-20%	-20%	-20%	-20%	-21%	-21%	-21%
62	125	4%	0%	12%	-7%	-13%	-16%	-17%	-19%	-20%	-20%	-21%	-21%	-22%	-23%
63	200	5%	0%	29%	0%	-9%	-14%	-16%	-18%	-20%	-21%	-21%	-22%	-24%	-25%
64	250	4%	0%	39%	5%	-6%	-12%	-15%	-18%	-19%	-21%	-22%	-22%	-25%	-26%
65	300	4%	0%	49%	9%	-4%	-11%	-14%	-17%	-19%	-21%	-22%	-23%	-25%	-27%
66	350	4%	0%	59%	13%	-2%	-10%	-13%	-17%	-19%	-21%	-22%	-23%	-26%	-28%
67	400	4%	0%	68%	17%	0%	-8%	-12%	-17%	-19%	-21%	-22%	-23%	-27%	-29%
68	450	4%	0%	76%	21%	2%	-7%	-11%	-16%	-19%	-21%	-23%	-24%	-28%	-29%
69	525	5%	0%	88%	26%	5%	-6%	-10%	-16%	-19%	-21%	-23%	-24%	-28%	-31%
70	600	5%	0%	100%	31%	7%	-4%	-9%	-16%	-19%	-21%	-23%	-25%	-29%	-32%
71	675	4%	0%	110%	35%	10%	-3%	-8%	-15%	-19%	-21%	-24%	-25%	-30%	-33%
72	750	4%	0%	120%	39%	12%	-1%	-7%	-15%	-19%	-22%	-24%	-26%	-31%	-34%
73	875	6%	0%	135%	46%	16%	1%	-6%	-14%	-19%	-22%	-24%	-26%	-32%	-35%
74	1,000	5%	0%	149%	51%	19%	3%	-4%	-14%	-18%	-22%	-25%	-27%	-33%	-37%
75-	1,150	5%	0%	164%	58%	22%	5%	-3%	-13%	-18%	-22%	-25%	-27%	-34%	-38%
76	1,300	4%	0%	177%	63%	25%	6%	-2%	-13%	-18%	-22%	-25%	-28%	-35%	-39%
77	1,500	4%	0%	193%	70%	29%	8%	0%	-12%	-18%	-22%	-26%	-29%	-37%	-41%
78	1,700	4%	0%	207%	76%	32%	10%	1%	-12%	-18%	-23%	-26%	-29%	-38%	-42%
79	2,000	4%	0%	225%	84%	36%	13%	3%	-11%	-18%	-23%	-27%	-30%	-39%	-44%
80	2,500	5%	0%	250%	94%	42%	16%	5%	-10%	-17%	-23%	-27%	-31%	-41%	-46%
81	3,000	4%	0%	269%	102%	46%	19%	7%	-9%	-17%	-23%	-28%	-32%	-43%	-48%
82	4,000	5%	0%	297%	114%	53%	22%	9%	-8%	-17%	-23%	-29%	-33%	-45%	-51%
83	>4,000	2%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Small Volume Annual Bill

Line No.	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)	Line No.
	Annual Consumption	Percent of Customers	Traditional Rates N/A						Proposed Rates Load Factor							
				5%	10%	15%	22%	25%	30%	35%	40%	45%	50%	75%	100%	
1	750	5%	$ 705.11	$ 929.20	$ 711.80	$ 639.33	$ 593.63	$ 581.35	$ 566.86	$ 556.51	$ 548.74	$ 542.70	$ 537.87	$ 523.38	$ 516.13	1
2	1,500	6%	$ 810.21	$ 1,378.41	$ 943.60	$ 798.66	$ 707.26	$ 682.71	$ 653.72	$ 633.02	$ 617.49	$ 605.41	$ 595.75	$ 566.76	$ 552.27	2
3	2,250	4%	$ 915.32	$ 1,827.61	$ 1,175.39	$ 957.99	$ 820.89	$ 784.06	$ 740.58	$ 709.53	$ 686.23	$ 668.11	$ 653.62	$ 610.14	$ 588.40	3
4	3,000	4%	$ 1,020.43	$ 2,276.81	$ 1,407.19	$ 1,117.32	$ 934.52	$ 885.42	$ 827.44	$ 786.03	$ 754.98	$ 730.82	$ 711.49	$ 653.52	$ 624.53	4
5	4,000	5%	$ 1,160.57	$ 2,875.75	$ 1,716.26	$ 1,329.76	$ 1,086.02	$ 1,020.56	$ 943.26	$ 888.04	$ 846.63	$ 814.43	$ 788.66	$ 711.36	$ 672.71	5
6	4,500	3%	$ 1,230.64	$ 3,175.22	$ 1,870.79	$ 1,435.98	$ 1,161.77	$ 1,088.13	$ 1,001.17	$ 939.05	$ 892.46	$ 856.23	$ 827.24	$ 740.28	$ 696.80	6
7	5,000	6%	$ 1,300.71	$ 3,474.69	$ 2,025.32	$ 1,542.20	$ 1,237.53	$ 1,155.70	$ 1,059.07	$ 990.06	$ 938.29	$ 898.03	$ 865.82	$ 769.20	$ 720.89	7
8	5,500	6%	$ 1,370.78	$ 3,774.16	$ 2,179.85	$ 1,648.42	$ 1,313.28	$ 1,223.27	$ 1,116.98	$ 1,041.06	$ 984.12	$ 939.84	$ 904.41	$ 798.12	$ 744.98	8
9	6,000	6%	$ 1,440.85	$ 4,073.63	$ 2,334.38	$ 1,754.64	$ 1,389.03	$ 1,290.84	$ 1,174.89	$ 1,092.07	$ 1,029.95	$ 981.64	$ 942.99	$ 827.04	$ 769.06	9
10	6,500	4%	$ 1,510.93	$ 4,373.10	$ 2,488.92	$ 1,860.86	$ 1,464.79	$ 1,358.41	$ 1,232.80	$ 1,143.07	$ 1,075.78	$ 1,023.44	$ 981.57	$ 855.96	$ 793.15	10
11	7,000	5%	$ 1,581.00	$ 4,672.57	$ 2,643.45	$ 1,967.08	$ 1,540.54	$ 1,425.98	$ 1,290.70	$ 1,194.08	$ 1,121.61	$ 1,065.25	$ 1,020.15	$ 884.88	$ 817.24	11
12	7,500	3%	$ 1,651.07	$ 4,972.03	$ 2,797.98	$ 2,073.29	$ 1,616.29	$ 1,493.55	$ 1,348.61	$ 1,245.08	$ 1,167.44	$ 1,107.05	$ 1,058.74	$ 913.80	$ 841.33	12
13	8,000	4%	$ 1,721.14	$ 5,271.50	$ 2,952.51	$ 2,179.51	$ 1,692.04	$ 1,561.12	$ 1,406.52	$ 1,296.09	$ 1,213.27	$ 1,148.85	$ 1,097.32	$ 942.72	$ 865.42	13
14	9,000	7%	$ 1,861.28	$ 5,870.44	$ 3,261.58	$ 2,391.95	$ 1,843.55	$ 1,696.26	$ 1,522.33	$ 1,398.10	$ 1,304.93	$ 1,232.46	$ 1,174.48	$ 1,000.56	$ 913.60	14
15	10,000	5%	$ 2,001.42	$ 6,469.38	$ 3,570.64	$ 2,604.39	$ 1,995.05	$ 1,831.40	$ 1,638.15	$ 1,500.11	$ 1,396.58	$ 1,316.06	$ 1,251.65	$ 1,058.40	$ 961.77	15
16	11,000	4%	$ 2,141.57	$ 7,068.32	$ 3,879.70	$ 2,816.83	$ 2,146.56	$ 1,966.54	$ 1,753.96	$ 1,602.12	$ 1,468.24	$ 1,399.67	$ 1,328.81	$ 1,116.24	$ 1,009.95	16
17	12,000	3%	$ 2,281.71	$ 7,667.26	$ 4,188.77	$ 3,029.27	$ 2,298.07	$ 2,101.68	$ 1,869.78	$ 1,704.13	$ 1,579.90	$ 1,483.28	$ 1,405.98	$ 1,174.08	$ 1,058.13	17
18	13,000	4%	$ 2,421.85	$ 8,266.19	$ 4,497.83	$ 3,241.71	$ 2,449.57	$ 2,236.81	$ 1,985.59	$ 1,806.14	$ 1,671.56	$ 1,566.88	$ 1,483.14	$ 1,231.92	$ 1,106.31	18
19	15,000	5%	$ 2,702.14	$ 9,464.07	$ 5,115.96	$ 3,666.59	$ 2,752.58	$ 2,507.09	$ 2,217.22	$ 2,010.17	$ 1,854.88	$ 1,734.10	$ 1,637.47	$ 1,347.60	$ 1,202.66	19
20	18,000	4%	$ 3,122.56	$ 11,260.88	$ 6,043.15	$ 4,303.91	$ 3,207.10	$ 2,912.51	$ 2,564.66	$ 2,316.20	$ 2,129.85	$ 1,984.92	$ 1,868.97	$ 1,521.12	$ 1,347.19	20
21	25,000	5%	$ 4,103.56	$ 15,453.45	$ 8,206.60	$ 5,790.98	$ 4,267.64	$ 3,858.49	$ 3,375.37	$ 3,030.28	$ 2,771.46	$ 2,570.16	$ 2,409.12	$ 1,926.00	$ 1,684.43	21
22	30,000	2%	$ 4,804.27	$ 18,448.14	$ 9,751.92	$ 6,853.18	$ 5,025.16	$ 4,534.19	$ 3,954.44	$ 3,540.33	$ 3,229.75	$ 2,988.19	$ 2,794.94	$ 2,215.20	$ 1,925.32	22
23	>30,000	2%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	23
24																24
25																25

26 Absolute Change in Small Volume Monthly Bills 26

Line No.																Line No.
27																27
28			Current						Proposed Rates							28
29	Annual	Percent of	Rates						Load Factor							29
30	Consumption	Customers	N/A	5%	10%	15%	22%	25%	30%	35%	40%	45%	50%	75%	100%	30
31	750	5%	$ -	$ 18.67	$ 0.56	$ (5.48)	$ (9.29)	$ (10.31)	$ (11.52)	$ (12.38)	$ (13.03)	$ (13.53)	$ (13.94)	$ (15.14)	$ (15.75)	31
32	1,500	6%	$ -	$ 47.35	$ 11.12	$ (0.96)	$ (8.58)	$ (10.63)	$ (13.04)	$ (14.77)	$ (16.06)	$ (17.07)	$ (17.87)	$ (20.29)	$ (21.50)	32
33	2,250	4%	$ -	$ 76.02	$ 21.67	$ 3.56	$ (7.87)	$ (10.94)	$ (14.56)	$ (17.15)	$ (19.09)	$ (20.60)	$ (21.81)	$ (25.43)	$ (27.24)	33
34	3,000	4%	$ -	$ 104.70	$ 32.23	$ 8.07	$ (7.16)	$ (11.25)	$ (16.08)	$ (19.53)	$ (22.12)	$ (24.13)	$ (25.74)	$ (30.58)	$ (32.99)	34
35	4,000	5%	$ -	$ 142.93	$ 46.31	$ 14.10	$ (6.21)	$ (11.67)	$ (18.11)	$ (22.71)	$ (26.16)	$ (28.85)	$ (30.99)	$ (37.43)	$ (40.66)	35
36	4,500	3%	$ -	$ 162.05	$ 53.35	$ 17.11	$ (5.74)	$ (11.88)	$ (19.12)	$ (24.30)	$ (28.18)	$ (31.20)	$ (33.62)	$ (40.86)	$ (44.49)	36
37	5,000	6%	$ -	$ 181.16	$ 60.38	$ 20.12	$ (5.27)	$ (12.08)	$ (20.14)	$ (25.89)	$ (30.20)	$ (33.56)	$ (36.24)	$ (44.29)	$ (48.32)	37
38	5,500	6%	$ -	$ 200.28	$ 67.42	$ 23.14	$ (4.79)	$ (12.29)	$ (21.15)	$ (27.48)	$ (32.22)	$ (35.91)	$ (38.86)	$ (47.72)	$ (52.15)	38
39	6,000	6%	$ -	$ 219.40	$ 74.46	$ 26.15	$ (4.32)	$ (12.50)	$ (22.16)	$ (29.07)	$ (34.24)	$ (38.27)	$ (41.49)	$ (51.15)	$ (55.98)	39
40	6,500	4%	$ -	$ 238.51	$ 81.50	$ 29.16	$ (3.85)	$ (12.71)	$ (23.18)	$ (30.65)	$ (36.26)	$ (40.62)	$ (44.11)	$ (54.58)	$ (59.81)	40
41	7,000	5%	$ -	$ 257.63	$ 88.54	$ 32.17	$ (3.37)	$ (12.92)	$ (24.19)	$ (32.24)	$ (38.28)	$ (42.98)	$ (46.74)	$ (58.01)	$ (63.65)	41
42	7,500	3%	$ -	$ 276.75	$ 95.58	$ 35.19	$ (2.90)	$ (13.13)	$ (25.20)	$ (33.83)	$ (40.30)	$ (45.34)	$ (49.36)	$ (61.44)	$ (67.48)	42
43	8,000	4%	$ -	$ 295.86	$ 102.61	$ 38.20	$ (2.42)	$ (13.34)	$ (26.22)	$ (35.42)	$ (42.32)	$ (47.69)	$ (51.99)	$ (64.87)	$ (71.31)	43
44	9,000	7%	$ -	$ 334.10	$ 116.69	$ 44.22	$ (1.48)	$ (13.75)	$ (28.25)	$ (38.60)	$ (46.36)	$ (52.40)	$ (57.23)	$ (71.73)	$ (78.97)	44
45	10,000	5%	$ -	$ 372.33	$ 130.77	$ 50.25	$ (0.53)	$ (14.17)	$ (30.27)	$ (41.78)	$ (50.40)	$ (57.11)	$ (62.48)	$ (78.59)	$ (86.64)	45
46	11,000	4%	$ -	$ 410.56	$ 144.84	$ 56.27	$ 0.42	$ (14.59)	$ (32.30)	$ (44.95)	$ (54.44)	$ (61.82)	$ (67.73)	$ (85.44)	$ (94.30)	46
47	12,000	3%	$ -	$ 448.80	$ 158.92	$ 62.30	$ 1.36	$ (15.00)	$ (34.33)	$ (48.13)	$ (58.48)	$ (66.54)	$ (72.98)	$ (92.30)	$ (101.97)	47
48	13,000	4%	$ -	$ 487.03	$ 173.00	$ 68.32	$ 2.31	$ (15.42)	$ (36.36)	$ (51.31)	$ (62.52)	$ (71.25)	$ (78.23)	$ (99.16)	$ (109.63)	48
49	15,000	5%	$ -	$ 563.49	$ 201.15	$ 80.37	$ 4.20	$ (16.25)	$ (40.41)	$ (57.66)	$ (70.60)	$ (80.67)	$ (88.72)	$ (112.88)	$ (124.96)	49
50	18,000	4%	$ -	$ 678.19	$ 243.38	$ 98.45	$ 7.04	$ (17.50)	$ (46.49)	$ (67.20)	$ (82.73)	$ (94.80)	$ (104.47)	$ (133.45)	$ (147.95)	50
51	25,000	5%	$ -	$ 945.82	$ 341.92	$ 140.62	$ 13.67	$ (20.42)	$ (60.66)	$ (89.44)	$ (111.01)	$ (127.78)	$ (141.20)	$ (181.46)	$ (201.59)	51
52	30,000	2%	$ -	$ 1,136.99	$ 412.30	$ 170.74	$ 18.41	$ (22.51)	$ (70.82)	$ (105.33)	$ (131.21)	$ (151.34)	$ (167.44)	$ (215.76)	$ (239.91)	52
53	>30,000	2%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	53
54																54
55																55

56 Percent Change in Small Volume Monthly Bills 56

Line No.																Line No.
57																57
58			Current						Proposed Rates							58
59	Annual	Percent of	Rates						Load Factor							59
60	Consumption	Customers	N/A	5%	10%	15%	22%	25%	30%	35%	40%	45%	50%	75%	100%	60
61	750	5%	0%	32%	1%	-9%	-16%	-18%	-20%	-21%	-22%	-23%	-24%	-26%	-27%	61
62	1,500	6%	0%	70%	16%	-1%	-13%	-16%	-19%	-22%	-24%	-25%	-26%	-30%	-32%	62
63	2,250	4%	0%	100%	28%	5%	-10%	-14%	-19%	-22%	-25%	-27%	-29%	-33%	-36%	63
64	3,000	4%	0%	123%	38%	9%	-8%	-13%	-19%	-23%	-26%	-28%	-30%	-36%	-39%	64
65	4,000	5%	0%	148%	48%	15%	-8%	-12%	-19%	-23%	-27%	-30%	-32%	-39%	-42%	65
66	4,500	3%	0%	158%	52%	17%	-6%	-12%	-19%	-24%	-27%	-30%	-33%	-40%	-43%	66
67	5,000	6%	0%	167%	56%	19%	-5%	-11%	-19%	-24%	-28%	-31%	-33%	-41%	-45%	67
68	5,500	6%	0%	175%	59%	20%	-4%	-11%	-19%	-24%	-28%	-31%	-34%	-42%	-46%	68
69	6,000	6%	0%	183%	62%	22%	-4%	-10%	-18%	-24%	-29%	-32%	-35%	-43%	-47%	69
70	6,500	4%	0%	189%	65%	23%	-3%	-10%	-18%	-24%	-29%	-32%	-35%	-43%	-48%	70
71	7,000	5%	0%	196%	67%	24%	-3%	-10%	-18%	-24%	-29%	-33%	-35%	-44%	-48%	71
72	7,500	3%	0%	201%	69%	26%	-2%	-10%	-18%	-25%	-29%	-33%	-36%	-45%	-49%	72
73	8,000	4%	0%	206%	72%	27%	-2%	-9%	-18%	-25%	-30%	-33%	-36%	-45%	-50%	73
74	9,000	7%	0%	215%	75%	29%	-1%	-9%	-18%	-25%	-30%	-34%	-37%	-46%	-51%	74
75	10,000	5%	0%	223%	78%	30%	0%	-8%	-18%	-25%	-30%	-34%	-37%	-47%	-52%	75
76	11,000	4%	0%	230%	81%	32%	0%	-8%	-18%	-25%	-31%	-35%	-38%	-48%	-53%	76
77	12,000	3%	0%	236%	84%	33%	1%	-8%	-18%	-25%	-31%	-35%	-38%	-49%	-54%	77
78	13,000	4%	0%	241%	86%	34%	1%	-8%	-18%	-25%	-31%	-35%	-39%	-49%	-54%	78
79	15,000	5%	0%	250%	89%	36%	2%	-7%	-18%	-26%	-31%	-36%	-39%	-50%	-55%	79
80	18,000	4%	0%	261%	94%	38%	3%	-7%	-18%	-26%	-32%	-36%	-40%	-51%	-57%	80
81	25,000	5%	0%	277%	100%	41%	4%	-6%	-18%	-26%	-32%	-37%	-41%	-53%	-59%	81
82	30,000	2%	0%	284%	103%	43%	5%	-6%	-18%	-26%	-33%	-38%	-42%	-54%	-60%	82
83	>30,000	2%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	83

Large Volume Annual Bill

Line No.	(A) Annual Consumption	(B) Percent of Customers	(C) Traditional Rates N/A	(D) 5%	(E) 10%	(F) 15%	(G) 20%	(H) 25%	(I) Proposed Rates Load Factor 30%	(J) 33%	(K) 40%	(L) 45%	(M) 50%	(N) 75%	(O) 100%
1	5,000	3%	3,302.91	4,468.22	3,782.09	3,553.37	3,439.02	3,370.40	3,324.66	3,302.91	3,267.48	3,248.42	3,233.18	3,187.43	3,164.56
2	6,000	5%	3,363.50	4,761.87	3,938.50	3,664.05	3,526.82	3,444.49	3,389.59	3,363.50	3,320.98	3,298.11	3,279.81	3,224.92	3,197.48
3	7,000	3%	3,424.08	5,055.51	4,094.92	3,774.72	3,614.63	3,518.57	3,454.53	3,424.08	3,374.48	3,347.79	3,326.45	3,262.41	3,230.39
4	8,000	5%	3,484.66	5,349.16	4,251.34	3,885.40	3,702.43	3,592.65	3,519.46	3,484.66	3,427.97	3,397.46	3,373.08	3,299.90	3,263.30
5	20,000	5%	4,211.65	8,872.90	6,128.35	5,213.50	4,756.07	4,481.62	4,298.65	4,211.65	4,069.94	3,993.70	3,932.71	3,749.74	3,658.25
6	22,000	5%	4,332.82	9,460.19	6,441.18	5,434.85	4,931.68	4,629.78	4,428.51	4,332.82	4,176.93	4,093.07	4,025.98	3,824.71	3,724.08
7	25,000	5%	4,514.56	10,341.12	6,910.43	5,766.87	5,195.09	4,852.02	4,623.31	4,514.56	4,337.42	4,242.12	4,165.89	3,937.17	3,822.82
8	27,500	5%	4,666.02	11,075.23	7,301.48	6,043.56	5,414.60	5,037.23	4,785.64	4,666.02	4,471.16	4,366.34	4,282.46	4,030.89	3,905.10
9	30,000	5%	4,817.48	11,809.34	7,692.52	6,320.25	5,634.11	5,222.43	4,947.97	4,817.48	4,604.91	4,490.55	4,399.06	4,124.61	3,987.38
10	45,000	5%	5,726.22	16,214.02	10,038.78	7,980.37	6,951.17	6,333.64	5,921.96	5,726.22	5,407.36	5,235.82	5,098.60	4,686.91	4,481.07
11	50,000	5%	6,029.13	17,682.24	10,820.87	8,533.75	7,390.16	6,704.05	6,246.62	6,029.13	5,674.84	5,484.25	5,331.77	4,874.35	4,645.64
12	52,000	5%	6,150.29	18,269.53	11,133.70	8,755.10	7,565.79	6,852.21	6,376.49	6,150.29	5,781.84	5,583.62	5,425.04	4,949.32	4,711.46
13	54,000	3%	6,271.46	18,856.82	11,446.54	8,976.45	7,741.40	7,000.37	6,506.35	6,271.46	5,888.83	5,682.99	5,518.32	5,024.30	4,777.29
14	56,000	3%	6,392.62	19,444.11	11,759.37	9,197.80	7,917.01	7,148.53	6,636.22	6,392.62	5,995.82	5,782.36	5,611.59	5,099.27	4,843.11
15	60,000	5%	6,634.95	20,618.69	12,385.04	9,640.50	8,268.22	7,444.86	6,895.95	6,634.95	6,209.81	5,981.10	5,798.13	5,249.22	4,974.76
16	65,000	5%	6,937.87	22,086.91	13,167.13	10,193.87	8,707.24	7,815.26	7,220.61	6,937.87	6,477.30	6,229.52	6,031.31	5,436.65	5,139.33
17	70,000	5%	7,240.78	23,555.14	13,949.22	10,747.25	9,146.26	8,185.67	7,545.27	7,240.78	6,744.78	6,477.95	6,264.48	5,624.09	5,303.89
18	75,000	5%	7,543.69	25,023.36	14,731.30	11,300.62	9,585.28	8,556.07	7,869.93	7,543.69	7,012.26	6,726.37	6,497.66	5,811.52	5,468.46
19	110,000	3%	9,664.08	35,300.93	20,205.91	15,174.24	12,658.41	11,148.91	10,142.57	9,664.08	8,884.65	8,465.35	8,129.90	7,123.57	6,620.40
20	130,000	3%	10,675.73	41,173.82	23,334.26	17,387.74	14,414.48	12,630.52	11,441.22	10,675.73	9,954.59	9,459.05	9,062.61	7,873.31	7,278.66
21	135,000	5%	11,176.65	42,642.05	24,116.35	17,941.12	14,853.50	13,000.93	11,765.66	11,176.65	10,222.07	9,707.47	9,295.79	8,060.74	7,443.22
22	150,000	3%	12,087.39	47,046.72	26,462.61	19,601.24	16,170.55	14,112.14	12,739.87	12,087.39	11,024.53	10,452.75	9,995.32	8,623.05	7,936.91
23	>150,000	3%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Absolute Change in Large Volume Monthly Bills

Line No.	Annual Consumption	Percent of Customers	Current Rates N/A	5%	10%	15%	20%	25%	Proposed Rates Load Factor 30%	33%	40%	45%	50%	75%	100%
31	5,000	3%	-	97.11	39.93	20.87	11.34	5.62	1.81	-	(2.95)	(4.54)	(5.81)	(9.62)	(11.53)
32	6,000	5%	-	116.53	47.92	25.05	13.61	6.75	2.17	(0.00)	(3.54)	(5.45)	(6.97)	(11.55)	(13.83)
33	7,000	3%	-	135.95	55.90	29.22	15.88	7.87	2.54	-	(4.13)	(6.36)	(8.14)	(13.47)	(16.14)
34	8,000	5%	-	155.37	63.89	33.39	18.15	9.00	2.90	-	(4.72)	(7.27)	(9.30)	(15.40)	(18.45)
35	20,000	5%	-	388.44	159.72	83.49	45.37	22.50	7.25	-	(11.81)	(18.16)	(23.25)	(38.49)	(46.12)
36	22,000	5%	-	427.28	175.70	91.84	49.91	24.75	7.97	-	(12.99)	(19.98)	(25.57)	(42.34)	(50.73)
37	25,000	5%	-	485.55	199.66	104.36	56.71	28.12	9.06	-	(14.76)	(22.70)	(29.06)	(48.12)	(57.65)
38	27,500	5%	-	534.10	219.62	114.79	62.38	30.93	9.97	(0.00)	(16.24)	(24.97)	(31.96)	(52.93)	(63.41)
39	30,000	5%	-	582.66	239.59	125.23	68.05	33.75	10.87	-	(17.71)	(27.24)	(34.87)	(57.74)	(69.17)
40	45,000	5%	-	873.98	359.38	187.85	102.08	50.62	16.31	-	(26.57)	(40.87)	(52.30)	(86.61)	(103.76)
41	50,000	5%	-	971.09	399.31	208.72	113.42	56.24	18.12	-	(29.52)	(45.41)	(58.11)	(96.23)	(115.29)
42	52,000	5%	-	1,009.94	415.28	217.07	117.96	58.49	18.85	-	(30.70)	(47.22)	(60.44)	(100.08)	(119.90)
43	54,000	3%	-	1,048.78	431.26	225.42	122.50	60.74	19.57	-	(31.89)	(49.04)	(62.76)	(103.93)	(124.51)
44	56,000	3%	-	1,087.62	447.23	233.76	127.03	62.99	20.30	(0.00)	(33.07)	(50.86)	(65.09)	(107.78)	(129.13)
45	60,000	5%	-	1,165.31	479.17	250.46	136.11	67.49	21.75	-	(35.43)	(54.49)	(69.74)	(115.48)	(138.35)
46	65,000	5%	-	1,262.42	519.11	271.33	147.45	73.12	23.56	-	(38.38)	(59.03)	(75.55)	(125.10)	(149.88)
47	70,000	5%	-	1,359.53	559.04	292.21	158.79	78.74	25.37	(0.00)	(41.33)	(63.57)	(81.36)	(134.72)	(161.41)
48	75,000	5%	-	1,456.64	598.97	313.08	170.13	84.36	27.19	(0.00)	(44.29)	(68.11)	(87.17)	(144.35)	(172.94)
49	110,000	3%	-	2,136.40	878.49	459.18	249.53	123.74	39.87	(0.00)	(64.95)	(99.89)	(127.85)	(211.71)	(253.64)
50	130,000	3%	-	2,524.84	1,038.21	542.67	294.90	146.23	47.12	(0.00)	(76.76)	(118.06)	(151.09)	(250.20)	(299.76)
51	135,000	5%	-	2,621.95	1,078.14	563.54	306.24	151.86	48.94	(0.00)	(79.71)	(122.60)	(156.90)	(259.83)	(311.29)
52	150,000	3%	-	2,913.28	1,197.94	626.15	340.26	168.73	54.37	(0.00)	(88.57)	(136.22)	(174.34)	(288.69)	(345.87)
53	>150,000	3%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Percent Change in Large Volume Monthly Bills

Line No.	Annual Consumption	Percent of Customers	Current Rates N/A	5%	10%	15%	20%	25%	Proposed Rates Load Factor 30%	33%	40%	45%	50%	75%	100%
61	5,000	3%	0%	35%	15%	8%	4%	2%	1%	0%	-1%	-2%	-2%	-3%	-4%
62	6,000	5%	0%	42%	17%	9%	5%	2%	1%	0%	-1%	-2%	-2%	-4%	-5%
63	7,000	3%	0%	48%	20%	10%	6%	3%	1%	0%	-1%	-2%	-3%	-5%	-6%
64	8,000	5%	0%	54%	22%	12%	6%	3%	1%	0%	-2%	-3%	-3%	-5%	-6%
65	20,000	5%	0%	111%	46%	24%	13%	6%	2%	0%	-3%	-5%	-7%	-11%	-13%
66	22,000	5%	0%	118%	49%	25%	14%	7%	2%	0%	-4%	-6%	-7%	-12%	-14%
67	25,000	5%	0%	129%	53%	28%	15%	7%	2%	0%	-4%	-6%	-8%	-13%	-15%
68	27,500	5%	0%	137%	56%	30%	16%	8%	3%	0%	-4%	-6%	-8%	-14%	-16%
69	30,000	5%	0%	145%	60%	31%	17%	8%	3%	0%	-4%	-7%	-9%	-14%	-17%
70	45,000	5%	0%	183%	75%	39%	21%	11%	3%	0%	-6%	-9%	-11%	-18%	-22%
71	50,000	5%	0%	193%	79%	42%	23%	11%	4%	0%	-6%	-9%	-12%	-19%	-23%
72	52,000	5%	0%	197%	81%	42%	23%	11%	4%	0%	-6%	-9%	-12%	-20%	-23%
73	54,000	3%	0%	201%	83%	43%	23%	12%	4%	0%	-6%	-9%	-12%	-20%	-24%
74	56,000	3%	0%	204%	84%	44%	24%	12%	4%	0%	-6%	-10%	-12%	-20%	-24%
75	60,000	5%	0%	211%	87%	45%	25%	12%	4%	0%	-6%	-10%	-13%	-21%	-25%
76	65,000	5%	0%	218%	90%	47%	26%	13%	4%	0%	-7%	-10%	-13%	-22%	-26%
77	70,000	5%	0%	225%	93%	48%	26%	13%	4%	0%	-7%	-11%	-13%	-22%	-27%
78	75,000	5%	0%	232%	95%	50%	27%	13%	4%	0%	-7%	-11%	-14%	-23%	-28%
79	110,000	3%	0%	265%	109%	57%	31%	15%	5%	0%	-8%	-12%	-16%	-26%	-31%
80	130,000	3%	0%	279%	115%	60%	33%	16%	5%	0%	-8%	-13%	-17%	-28%	-33%
81	135,000	5%	0%	281%	116%	60%	33%	16%	5%	0%	-9%	-13%	-17%	-28%	-33%
82	150,000	3%	0%	289%	119%	62%	34%	17%	5%	0%	-9%	-14%	-17%	-29%	-34%
83	>150,000	3%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

	(A)	(B)	(C)	(D)	
		Residential Annual Bill			
Line No.	Annual Consumption	Percent of Customers	Traditional Rates	Flat Charge Rates	Line No.
1	200	5%	$ 231.61	$ 331.39	1
2	250	3%	$ 238.87	$ 331.39	2
3	300	4%	$ 246.13	$ 331.39	3
4	350	5%	$ 253.39	$ 331.39	4
5	400	6%	$ 260.65	$ 331.39	5
6	425	3%	$ 264.28	$ 331.39	6
7	450	4%	$ 267.91	$ 331.39	7
8	475	4%	$ 271.54	$ 331.39	8
9	500	4%	$ 275.17	$ 331.39	9
10	525	4%	$ 278.80	$ 331.39	10
11	550	4%	$ 282.43	$ 331.39	11
12	575	4%	$ 286.07	$ 331.39	12
13	600	4%	$ 289.70	$ 331.39	13
14	625	4%	$ 293.33	$ 331.39	14
15	650	4%	$ 296.96	$ 331.39	15
16	675	4%	$ 300.59	$ 331.39	16
17	700	3%	$ 304.22	$ 331.39	17
18	735	4%	$ 309.30	$ 331.39	18
19	775	4%	$ 315.11	$ 331.39	19
20	825	5%	$ 322.37	$ 331.39	20
21	900	5%	$ 333.26	$ 331.39	21
22	1,000	5%	$ 347.79	$ 331.39	22
23	>1,000	8%	N/A	N/A	23
24					24
25					25

Line No.	Absolute Change in Residential Monthly Bills				Line No.
26					26
27					27
28					28
29	Annual	Percent of	Traditional	Flat Charge	29
30	Consumption	Customers	Rates	Rates	30
31	200	5%	$ -	$ 8.32	31
32	250	3%	$ -	$ 7.71	32
33	300	4%	$ -	$ 7.11	33
34	350	5%	$ -	$ 6.50	34
35	400	6%	$ -	$ 5.90	35
36	425	3%	$ -	$ 5.59	36
37	450	4%	$ -	$ 5.29	37
38	475	4%	$ -	$ 4.99	38
39	500	4%	$ -	$ 4.68	39
40	525	4%	$ -	$ 4.38	40
41	550	4%	$ -	$ 4.08	41
42	575	4%	$ -	$ 3.78	42
43	600	4%	$ -	$ 3.47	43
44	625	4%	$ -	$ 3.17	44
45	650	4%	$ -	$ 2.87	45
46	675	4%	$ -	$ 2.57	46
47	700	3%	$ -	$ 2.26	47
48	735	4%	$ -	$ 1.84	48
49	775	4%	$ -	$ 1.36	49
50	825	5%	$ -	$ 0.75	50
51	900	5%	$ -	$ (0.16)	51
52	1,000	5%	$ -	$ (1.37)	52
53	>1,000	8%	N/A	N/A	53
54					54
55					55

Line No.	Percent Change in Residential Monthly Bills				Line No.
56					56
57					57
58					58
59	Annual	Percent of	Traditional	Flat Charge	59
60	Consumption	Customers	Rates	Rates	60
61	200	5%	0%	43%	61
62	250	3%	0%	39%	62
63	300	4%	0%	35%	63
64	350	5%	0%	31%	64
65	400	6%	0%	27%	65
66	425	3%	0%	25%	66
67	450	4%	0%	24%	67
68	475	4%	0%	22%	68
69	500	4%	0%	20%	69
70	525	4%	0%	19%	70
71	550	4%	0%	17%	71
72	575	4%	0%	16%	72
73	600	4%	0%	14%	73
74	625	4%	0%	13%	74
75	650	4%	0%	12%	75
76	675	4%	0%	10%	76
77	700	3%	0%	9%	77
78	735	4%	0%	7%	78
79	775	4%	0%	5%	79
80	825	5%	0%	3%	80
81	900	5%	0%	-1%	81
82	1,000	5%	0%	-5%	82
83	>1,000	8%	N/A	N/A	83

Line No.	(A) Annual Consumption	(B) Percent of Customers	(C) Traditional Rates	(D) Flat Charge Rates	Line No.
	Small Commercial Annual Bill				
1	50	5%	$ 309.13	$ 331.39	1
2	125	4%	$ 322.83	$ 331.39	2
3	200	5%	$ 336.52	$ 331.39	3
4	250	4%	$ 345.66	$ 331.39	4
5	300	4%	$ 354.79	$ 331.39	5
6	350	4%	$ 363.92	$ 331.39	6
7	400	4%	$ 373.05	$ 331.39	7
8	450	4%	$ 382.18	$ 331.39	8
9	525	5%	$ 395.88	$ 331.39	9
10	600	5%	$ 409.57	$ 331.39	10
11	675	4%	$ 423.27	$ 331.39	11
12	750	4%	$ 436.97	$ 331.39	12
13	875	6%	$ 459.79	$ 331.39	13
14	1,000	5%	$ 482.62	$ 331.39	14
15	1,150	5%	$ 510.01	$ 331.39	15
16	1,300	4%	$ 537.41	$ 331.39	16
17	1,500	4%	$ 573.93	$ 331.39	17
18	1,700	4%	$ 610.46	$ 331.39	18
19	2,000	4%	$ 665.24	$ 331.39	19
20	2,500	5%	$ 756.55	$ 331.39	20
21	3,000	4%	$ 847.86	$ 331.39	21
22	4,000	5%	$ 1,030.49	$ 331.39	22
23	>4,000	2%	N/A	N/A	23
24					24
25					25
26	Absolute Change in Small Commercial Monthly Bills				26
27					27
28					28
29	Annual	Percent of	Traditional	Flat Charge	29
30	Consumption	Customers	Rates	Rates	30
31	50	5%	$ -	$ 1.86	31
32	125	4%	$ -	$ 0.71	32
33	200	5%	$ -	$ (0.43)	33
34	250	4%	$ -	$ (1.19)	34
35	300	4%	$ -	$ (1.95)	35
36	350	4%	$ -	$ (2.71)	36
37	400	4%	$ -	$ (3.47)	37
38	450	4%	$ -	$ (4.23)	38
39	525	5%	$ -	$ (5.37)	39
40	600	5%	$ -	$ (6.52)	40
41	675	4%	$ -	$ (7.66)	41
42	750	4%	$ -	$ (8.80)	42
43	875	6%	$ -	$ (10.70)	43
44	1,000	5%	$ -	$ (12.60)	44
45	1,150	5%	$ -	$ (14.89)	45
46	1,300	4%	$ -	$ (17.17)	46
47	1,500	4%	$ -	$ (20.21)	47
48	1,700	4%	$ -	$ (23.26)	48
49	2,000	4%	$ -	$ (27.82)	49
50	2,500	5%	$ -	$ (35.43)	50
51	3,000	4%	$ -	$ (43.04)	51
52	4,000	5%	$ -	$ (58.26)	52
53	>4,000	2%	N/A	N/A	53
54					54
55					55
56	Percent Change in Small Commercial Monthly Bills				56
57					57
58					58
59	Annual	Percent of	Traditional	Flat Charge	59
60	Consumption	Customers	Rates	Rates	60
61	50	5%	0%	7%	61
62	125	4%	0%	3%	62
63	200	5%	0%	-2%	63
64	250	4%	0%	-4%	64
65	300	4%	0%	-7%	65
66	350	4%	0%	-9%	66
67	400	4%	0%	-11%	67
68	450	4%	0%	-13%	68
69	525	5%	0%	-16%	69
70	600	5%	0%	-19%	70
71	675	4%	0%	-22%	71
72	750	4%	0%	-24%	72
73	875	6%	0%	-28%	73
74	1,000	5%	0%	-31%	74
75	1,150	5%	0%	-35%	75
76	1,300	4%	0%	-38%	76
77	1,500	4%	0%	-42%	77
78	1,700	4%	0%	-46%	78
79	2,000	4%	0%	-50%	79
80	2,500	5%	0%	-56%	80
81	3,000	4%	0%	-61%	81
82	4,000	5%	0%	-68%	82
83	>4,000	2%	N/A	N/A	83

Line No.	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	Line No.
		Calculation of Intra-Class Subsidies Inherent in Traditional Rate Design								
1		80% of Average Annual Consumption				120% of Average Annual Consumption				1
2	Class	Average Consumption (therms)	Annual Revenues	Annual Costs	Average Annual Sudsidy	Average Consumption (therms)	Annual Revenues	Annual Costs	Average Annual Sudsidy	2
3	Residential	588	$ 287.91	$ 306.39	$ (18.48)	882	$ 330.59	$ 312.10	$ 18.48	3
4	Small Commercial	1,246	$ 527.59	$ 578.93	$ (51.33)	1,869	$ 641.39	$ 590.05	$ 51.33	4
5	Small Volume	8,448	$ 1,783.99	$ 2,039.46	$ (255.47)	12,673	$ 2,375.99	$ 2,120.51	$ 255.47	5
6	Large Volume	149,437	$ 12,053.28	$ 13,601.55	$ (1,548.28)	224,155	$ 16,579.92	$ 15,031.63	$ 1,548.29	6
7										7
8										8
9		Calculation of Intra-Class Subsidies Inherent in Proposed Rate Design								9
10										10
11		80% of Average Annual Consumption				120% of Average Annual Consumption				11
12	Class	Average Consumption (therms)	Annual Revenues	Annual Costs	Average Annual Sudsidy	Average Consumption (therms)	Annual Revenues	Annual Costs	Average Annual Sudsidy	12
13	Residential	588	$ 306.43	$ 306.39	$ 0.03	882	$ 312.07	$ 312.10	$ (0.03)	13
14	Small Commercial	1,246	$ 578.51	$ 578.93	$ (0.41)	1,869	$ 590.47	$ 590.05	$ 0.41	14
15	Small Volume	8,448	$ 2,039.46	$ 2,039.46	$ (0.01)	12,673	$ 2,120.52	$ 2,120.51	$ 0.01	15
16	Large Volume	149,437	$ 13,599.67	$ 13,601.55	$ (1.88)	224,155	$ 15,033.52	$ 15,031.63	$ 1.89	16
17										17
18										18
19		Calculation of Intra-Class Subsidies Inherent in Flat Charge Rate Design								19
20										20
21		80% of Average Annual Consumption				120% of Average Annual Consumption				21
22	Class	Average Consumption (therms)	Annual Revenues	Annual Costs	Average Annual Sudsidy	Average Consumption (therms)	Annual Revenues	Annual Costs	Average Annual Sudsidy	22
23	Residential	588	$ 331.39	$ 306.39	$ 25.00	882	$ 331.39	$ 312.10	$ 19.29	23
24	Small Commercial	1,246	$ 331.39	$ 578.93	$ (247.53)	1,869	$ 331.39	$ 590.05	$ (258.66)	24

AQUILA, INC.
MARGINAL NON GAS COST STUDY
SUMMARY OF REGRESSION EQUATIONS

Line No.	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	Line No.
1		Customers		Gas Received		Gas Delivered		Sales		Peak Day		1
2	Function	Coefficient	R^2	Coefficient	R^2	Coefficient	R^2	Coefficient	R^2	Coefficient	R^2	2
3	Transmission	**45.445**	**0.85295**	N/S	N/A	N/S	N/A	N/S	N/A	N/S	N/A	3
4	Non-SRM Distribution	**211.080**	**0.91984**	N/S	N/A	N/S	N/A	N/S	N/A	N/S	N/A	4
5	Services, Regulators & Meters	**218.426**	**0.96746**	N/S	N/A	N/S	N/A	N/S	N/A	N/S	N/A	5
6	General Plant	N/S	N/A	N/S	N/A	N/S	N/A	N/S	N/A	N/S	N/A	6
7	Customer Accounting Costs	**101.206**	**0.82777**	0.249859834	0.811219633	0.364491961	0.820021198	0.565273751	0.815024247	N/S	N/A	7

Line No.	(A)	(B)	(C)	(D)	(E)	(F)	(G)	Line No.
		Calculation of Seasonal Subsidies Inherent in Traditional Rate Design, Average Winter Load Factor						
1								1
2	Class	Average Winter (therms)	Average Winter Load Factor	Average MDQ	Winter Revenues	Winter Costs	Average Winter Sudsidy	2
3	Residential	526.40	43.13%	8.08	$ 160.85	$ 133.13	$ 27.71	3
4	Small Commercial	1167.25	42.30%	18.27	$ 338.17	$ 252.79	$ 85.37	4
5	Small Volume	7115.56	35.68%	132.07	$ 1,247.19	$ 918.76	$ 328.43	5
6	Large Volume	95246.83	40.86%	1,543.68	$ 7,020.30	$ 6,298.56	$ 721.74	6
7								7
8								8
9		Calculation of Seasonal Subsidies Inherent in Proposed Rate Design, Average Winter Load Factor						9
10								10
11								11
12	Class	Average Winter (therms)	Average Winter Load Factor	Average MDQ	Winter Revenues	Winter Costs	Average Winter Sudsidy	12
13	Residential	526.40	43.13%	8.08	$ 133.08	$ 133.13	$ (0.05)	13
14	Small Commercial	1167.25	42.30%	18.27	$ 253.48	$ 252.79	$ 0.69	14
15	Small Volume	7115.56	35.68%	132.07	$ 918.77	$ 918.76	$ 0.01	15
16	Large Volume	95246.83	40.86%	1,543.68	$ 6,299.44	$ 6,298.56	$ 0.88	16
17								17
18								18
19		Calculation of Seasonal Subsidies Inherent in Flat Charge Rate Design, Average Winter Load Factor						19
20								20
21								21
22	Class	Average Winter (therms)	Average Winter Load Factor	Average MDQ	Winter Revenues	Winter Costs	Average Winter Sudsidy	22
23	Residential	526.40	43.13%	8.08	$ 138.08	$ 133.13	$ 4.95	23
24	Small Commercial	1167.25	42.30%	18.27	$ 138.08	$ 252.79	$ (114.71)	24

Line No.	(A)	(B) All Households Households (Millions)	(C) All Households MMBtu/ Household	(D) All Households MMBtu	(E) Low Income Households Households (Millions)	(F) Low Income Households MMBtu/ Household	(G) Low Income Households MMBtu	Line No.
1	Total Number of Households	101.5	-	-	34.1	-	-	1
2								2
3	Number of Households with Natural Gas	61.9	85.3	5280.07	20.4	75.0	1530.0	3
4	Percentage of Households with Natural Gas	60.99%			59.82%			4
5								5
6								6
7	Number of Households with Natural Gas Space Heating	54.5	66.9	3646.05	17.0	59.9	1018.3	7
8	Percentage of Households with Natural Gas Space Heating	88.05%			83.33%			8
9								9
10	Number of Households with Natural Gas Water Heating	52.6	24.6	1293.96	16.8	23.5	394.8	10
11	Percentage of Households with Natural Gas Water Heating	84.98%			82.35%			11
12								12
13	Number of Households with Other Natural Gas Appliances	40.4	9.3	375.72	14.7	8.5	124.95	13
14	Percentage of Households with Other Natural Gas Appliances	65.27%			72.06%			14
15								15
16								16
17	Low Load Factor MMBtus			3646.05			1018.3	17
18	Percentage Low Load Factor MMBtus			68.59%			66.21%	18
19								19
20	High Load Factor MMBtus			1669.68			519.75	20
21	Percentage High Load Factor MMBtus			31.41%			33.79%	21

AQUILA, INC.
MARGINAL NON GAS COST STUDY
FUNCTIONAL ALLOCATION OF INVESTMENT
HISTORICAL DATA - $NOMINAL

Transmission Plant

Year	Beginning Balance	Additions	Retirements	Adjustments	Transfers	Ending Balance	Balance Check
2005	45,621,796	220,479	21,774	1,002	0	45,821,503	-
2004	45,517,803	351,532	267,034	19,495	0	45,621,796	CHECK
2003	46,774,419	594,095	1,957,632	106,921	0	45,517,803	CHECK
2002	47,330,319	631,272	651,406	-535,766	0	46,774,419	CHECK
2001	46,278,033	1,217,252	165,556	590	0	47,330,319	CHECK
2000	40,378,271	2,497,525	73,074	3,475,311	0	46,278,033	CHECK
1999	41,511,963	1,544,722	269,249	-2,409,165	0	40,378,271	CHECK
1998	39,588,095	2,222,985	116,136	-182,981	0	41,511,963	CHECK
1997	38,586,277	1,829,683	831,880	0	4,015	39,588,095	CHECK
1996	38,374,624	225,427	14,537	0	763	38,586,277	CHECK
1995	37,052,585	1,331,486	9,447	0	0	38,374,624	CHECK
1994	26,018,849	9,325,771	855,451	2,563,416	0	37,052,585	CHECK
1993	20,203,635	4,018,588	196,820	0	1,993,446	26,018,849	CHECK
1992	16,789,247	2,919,454	31,945	0	526,879	20,203,635	CHECK
1991	13,451,414	3,350,648	17,746	0	4,931	16,789,247	CHECK
1990	13,045,744	446,512	52,348	0	11,506	13,451,414	CHECK
1989	12,108,857	1,035,173	99,720	0	1,434	13,045,744	CHECK
1988	12,041,626	164,913	70,167	0	-27,515	12,108,857	CHECK
1987	12,533,942	-354,844	137,472	0	0	12,041,626	CHECK

AQUILA, INC.
MARGINAL NON GAS COST STUDY
FUNCTIONAL ALLOCATION OF INVESTMENT
HISTORICAL DATA - $NOMINAL

Distribution Plant

Year	Account	Beginning Balance	Additions	Retirements	Adjustments	Transfers	Ending Balance	Balance Check
2005	Total Distribution Plant	718,419,257	41,317,615	4,404,899	-216,025	0	755,115,948	-
	Services	218,578,654	10,206,974	1,061,262	-310,530	0	227,413,836	-
	Meters	51,115,969	2,987,868	1,162,308	-25,236	0	52,916,293	-
	Meter Installations	15,078,394	28,779	9,485	141	0	15,097,829	-
	House Regulators	44,798,307	4,356,142	276,171	-181,201	0	48,697,077	-
	House Regulator Installations	525,184	3,052	0	-3,055	0	525,181	-
	Industrial Equipment	29,154,416	1,617,085	386,493	-2,196	0	30,382,812	-
	Other Equipment	9,576,219	509,875	1,017,729	228,950	0	9,297,315	-
	Services-Regulators-Meters	368,827,143	19,709,775	3,913,448	-293,127	0	384,330,343	-
	Non S-R-M Distribution Plant	349,592,114	21,607,840	491,451	77,102	0	370,785,605	-
2004	Total Distribution Plant	687,440,385	33,277,606	3,451,054	1,152,320	0	718,419,257	CHECK
	Services	209,641,221	9,511,742	817,109	242,800	0	218,578,654	CHECK
	Meters	49,297,393	2,851,066	1,093,082	60,592	0	51,115,969	CHECK
	Meter Installations	15,081,535	82	0	-3,223	0	15,078,394	CHECK
	House Regulators	40,006,072	4,857,788	175,868	110,315	0	44,798,307	CHECK
	House Regulator Installations	525,185	0	0	-1	0	525,184	CHECK
	Industrial Equipment	27,989,163	1,374,888	249,603	39,968	0	29,154,416	CHECK
	Other Equipment	8,340,165	749,267	64,222	551,009	0	9,576,219	CHECK
	Services-Regulators-Meters	350,880,734	19,344,833	2,399,884	1,001,460	0	368,827,143	CHECK
	Non S-R-M Distribution Plant	336,559,651	13,932,773	1,051,170	150,860	0	349,592,114	CHECK
2003	Total Distribution Plant	657,439,256	36,492,471	3,113,736	-3,377,606	0	687,440,385	CHECK
	Services	202,085,446	9,282,948	842,910	-884,263	0	209,641,221	CHECK
	Meters	47,856,463	2,314,161	701,563	-171,668	0	49,297,393	CHECK
	Meter Installations	15,067,803	107,067	0	-93,335	0	15,081,535	CHECK
	House Regulators	36,172,742	4,488,487	204,107	-451,050	0	40,006,072	CHECK
	House Regulator Installations	525,185	0	0	0	0	525,185	CHECK
	Industrial Equipment	27,100,435	1,647,780	662,098	-96,954	0	27,989,163	CHECK
	Other Equipment	8,025,057	426,226	12,911	-98,207	0	8,340,165	CHECK
	Services-Regulators-Meters	336,833,131	18,266,669	2,423,589	-1,795,477	0	350,880,734	CHECK
	Non S-R-M Distribution Plant	320,606,125	18,225,802	690,147	-1,582,129	0	336,559,651	CHECK
2002	Total Distribution Plant	627,661,032	33,002,742	2,038,568	-1,185,930	0	657,439,256	CHECK
	Services	193,640,779	9,022,804	740,983	162,846	0	202,085,446	CHECK
	Meters	46,699,147	2,220,699	616,389	-446,994	0	47,856,463	CHECK
	Meter Installations	15,079,728	26,909	36	-38,798	0	15,067,803	CHECK
	House Regulators	31,863,576	4,379,089	130,109	60,186	0	36,172,742	CHECK
	House Regulator Installations	525,199	0	14	0	0	525,185	CHECK
	Industrial Equipment	25,132,586	1,850,015	69,508	187,342	0	27,100,435	CHECK
	Other Equipment	7,804,225	-19,506	18,498	258,836	0	8,025,057	CHECK
	Services-Regulators-Meters	320,745,240	17,460,010	1,575,537	183,418	0	336,833,131	CHECK
	Non S-R-M Distribution Plant	306,915,792	15,522,732	463,051	-1,369,348	0	320,606,125	CHECK
2001	Total Distribution Plant	596,813,585	33,278,870	3,090,789	659,366	0	627,661,032	CHECK
	Services	185,260,793	8,980,517	1,577,823	977,292	0	193,640,779	CHECK
	Meters	43,979,256	3,078,244	457,078	98,725	0	46,699,147	CHECK
	Meter Installations	14,657,066	392,478	14,441	44,625	0	15,079,728	CHECK
	House Regulators	27,523,385	4,352,044	200,155	188,302	0	31,863,576	CHECK
	House Regulator Installations	525,201	0	2	0	0	525,199	CHECK
	Industrial Equipment	24,742,454	623,832	103,164	-130,536	0	25,132,586	CHECK
	Other Equipment	7,083,746	515,565	53,053	257,967	0	7,804,225	CHECK
	Services-Regulators-Meters	303,771,901	17,942,680	2,405,716	1,436,375	0	320,745,240	CHECK
	Non S-R-M Distribution Plant	293,041,684	15,336,190	685,073	-777,009	0	306,915,792	CHECK
2000	Total Distribution Plant	566,814,959	37,320,405	2,717,271	-4,604,508	0	596,813,585	CHECK
	Services	176,762,550	9,465,106	747,926	-218,937	0	185,260,793	CHECK
	Meters	43,759,743	1,089,073	926,536	56,976	0	43,979,256	CHECK
	Meter Installations	14,690,760	-3,009	27,012	-3,693	0	14,657,066	CHECK
	House Regulators	23,934,117	3,767,706	56,407	-122,031	0	27,523,385	CHECK
	House Regulator Installations	525,775	0	563	-11	0	525,201	CHECK
	Industrial Equipment	22,583,051	2,453,639	168,089	-126,147	0	24,742,454	CHECK
	Other Equipment	8,204,631	30,546	39,348	-1,112,083	0	7,083,746	CHECK
	Services-Regulators-Meters	290,460,647	16,803,061	1,965,881	-1,525,926	0	303,771,901	CHECK
	Non S-R-M Distribution Plant	276,354,312	20,517,344	751,390	-3,078,582	0	293,041,684	CHECK
1999	Total Distribution Plant	542,288,468	26,165,630	3,411,898	1,772,759	0	566,814,959	CHECK
	Services	168,131,955	10,388,824	1,753,730	-4,499	0	176,762,550	CHECK
	Meters	42,216,494	2,539,641	280,877	-715,515	0	43,759,743	CHECK
	Meter Installations	14,647,742	-69,318	87,645	1	0	14,690,760	CHECK
	House Regulators	23,201,495	814,569	85,123	3,176	0	23,934,117	CHECK
	House Regulator Installations	526,104	0	329	0	0	525,775	CHECK
	Industrial Equipment	21,794,843	1,224,054	63,190	-372,656	0	22,583,051	CHECK
	Other Equipment	8,729,758	-111,042	1,028	-413,057	0	8,204,631	CHECK
	Services-Regulators-Meters	279,448,391	14,786,728	2,271,922	-1,502,550	0	290,460,647	CHECK
	Non S-R-M Distribution Plant	262,840,077	11,378,902	1,139,976	3,275,309	0	276,354,312	CHECK
1998	Total Distribution Plant	526,364,109	27,521,733	1,326,563	-10,270,811	0	542,288,468	CHECK
	Services	163,308,408	6,458,266	437,415	-1,197,304	0	168,131,955	CHECK
	Meters	39,860,586	2,387,076	0	-31,168		42,216,494	CHECK
	Meter Installations	14,613,507	89,620	15,090	159,505		14,647,742	CHECK
	House Regulators	17,417,217	5,416,431	24,822	392,669		23,201,495	CHECK
	House Regulator Installations	527,375	0	122	-1,149		526,104	CHECK
	Industrial Equipment	21,214,164	303,919	96,654	373,414	0	21,794,843	CHECK
	Other Equipment	8,653,335	223,187	524	-146,240	0	8,729,758	CHECK
	Services-Regulators-Meters	265,594,592	14,878,699	574,627	-450,273	0	279,448,391	CHECK
	Non S-R-M Distribution Plant	260,769,517	12,643,034	751,936	-9,820,538	0	262,840,077	CHECK
1997	Total Distribution Plant	495,710,993	32,705,812	2,723,312	-27,159	697,775	526,364,109	CHECK
	Services	152,682,244	11,569,672	944,366	858	0	163,308,408	CHECK
	Meters	37,881,992	2,135,963	158,349	960	0	39,860,586	CHECK
	Meter Installations	13,943,094	732,817	62,404	0	0	14,613,507	CHECK
	House Regulators	16,497,234	1,009,090	89,241	134	0	17,417,217	CHECK
	House Regulator Installations	528,393	0	1,018	0	0	527,375	CHECK
	Industrial Equipment	19,701,569	1,723,099	210,504	0	0	21,214,164	CHECK
	Other Equipment	7,711,855	1,056,001	125,016	0	10,495	8,653,335	CHECK
	Services-Regulators-Meters	248,946,381	18,226,662	1,590,898	1,952	10,495	265,594,592	CHECK
	Non S-R-M Distribution Plant	246,764,612	14,479,150	1,132,414	-29,111	687,280	260,769,517	CHECK

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Distribution Plant

Year	Account	Beginning Balance	Additions	Retirements	Adjustments	Transfers	Ending Balance	Balance Check
1996	Total Distribution Plant	453,055,111	22,909,812	1,838,869	25,751,816	-4,166,877	495,710,993	CHECK
	Services	133,230,183	8,948,347	778,838	11,283,121	-569	152,682,244	CHECK
	Meters	34,066,350	1,718,235	0	2,097,407	0	37,881,992	CHECK
	Meter Installations	13,386,016	614,794	57,624	0	-92	13,943,094	CHECK
	House Regulators	15,315,879	907,698	72,076	345,835	-102	16,497,234	CHECK
	House Regulator Installations	528,548	0	155	0	0	528,393	CHECK
	Industrial Equipment	18,510,735	1,244,276	53,442	0	0	19,701,569	CHECK
	Other Equipment	8,730,278	-555,466	60,451	0	-402,506	7,711,855	CHECK
	Services-Regulators-Meters	223,767,989	12,877,884	1,022,586	13,726,363	-403,269	248,946,381	CHECK
	Non S-R-M Distribution Plant	229,287,122	10,031,928	816,283	12,025,453	-3,763,608	246,764,612	CHECK
1995	Total Distribution Plant	431,790,322	20,163,336	3,213,040	0	4,314,493	453,055,111	CHECK
	Services	127,865,868	6,716,109	1,351,794	0	0	133,230,183	CHECK
	Meters	32,833,737	1,308,201	75,588	0	0	34,066,350	CHECK
	Meter Installations	12,876,053	551,823	41,860	0	0	13,386,016	CHECK
	House Regulators	14,604,578	777,288	65,987	0	0	15,315,879	CHECK
	House Regulator Installations	528,581	0	33	0	0	528,548	CHECK
	Industrial Equipment	17,499,715	1,366,415	355,395	0	0	18,510,735	CHECK
	Other Equipment	8,152,501	151,439	124,548	0	550,886	8,730,278	CHECK
	Services-Regulators-Meters	214,361,033	10,871,275	2,015,205	0	550,886	223,767,989	CHECK
	Non S-R-M Distribution Plant	217,429,289	9,292,061	1,197,835	0	3,763,607	229,287,122	CHECK
1994	Total Distribution Plant	365,436,536	37,146,939	5,944,685	35,151,532	0	431,790,322	CHECK
	Services	109,116,694	12,836,895	4,836,597	10,748,876	0	127,865,868	CHECK
	Meters	27,397,732	2,969,151	153,238	2,620,092	0	32,833,737	CHECK
	Meter Installations	11,730,872	1,199,856	54,675	0	0	12,876,053	CHECK
	House Regulators	11,496,090	1,302,864	96,880	1,902,504	0	14,604,578	CHECK
	House Regulator Installations	528,622	-1	40	0	0	528,581	CHECK
	Industrial Equipment	15,675,322	1,601,371	221,389	444,411	0	17,499,715	CHECK
	Other Equipment	7,667,229	491,932	17,593	10,933	0	8,152,501	CHECK
	Services-Regulators-Meters	183,612,561	20,402,068	5,380,412	15,726,816	0	214,361,033	CHECK
	Non S-R-M Distribution Plant	181,823,975	16,744,871	564,273	19,424,716	0	217,429,289	CHECK
1993	Total Distribution Plant	279,635,615	89,196,915	1,404,852	0	-1,991,142	365,436,536	CHECK
	Services	81,900,168	27,639,516	422,990	0	0	109,116,694	CHECK
	Meters	20,511,299	7,059,642	173,209	0	0	27,397,732	CHECK
	Meter Installations	5,859,541	5,913,460	42,129	0	0	11,730,872	CHECK
	House Regulators	9,612,557	1,980,370	96,837	0	0	11,496,090	CHECK
	House Regulator Installations	6,906	521,716	0	0	0	528,622	CHECK
	Industrial Equipment	11,069,470	4,726,409	120,557	0	0	15,675,322	CHECK
	Other Equipment	3,932,334	3,766,687	31,792	0	0	7,667,229	CHECK
	Services-Regulators-Meters	132,892,275	51,607,800	887,514	0	0	183,612,561	CHECK
	Non S-R-M Distribution Plant	146,743,340	37,589,115	517,338	0	-1,991,142	181,823,975	CHECK
1992	Total Distribution Plant	262,438,513	19,195,764	1,513,139	0	-485,523	279,635,615	CHECK
	Services	75,914,554	6,378,271	449,426	0	56,769	81,900,168	CHECK
	Meters	19,356,309	1,385,169	230,179	0	0	20,511,299	CHECK
	Meter Installations	5,327,489	582,462	52,611	0	2,201	5,859,541	CHECK
	House Regulators	8,776,541	921,198	92,493	0	7,311	9,612,557	CHECK
	House Regulator Installations	1,290	0	0	0	5,616	6,906	CHECK
	Industrial Equipment	10,169,193	1,054,558	160,998	0	6,717	11,069,470	CHECK
	Other Equipment	3,552,207	420,210	34,467	0	-5,616	3,932,334	CHECK
	Services-Regulators-Meters	123,117,583	10,741,868	1,040,174	0	72,998	132,892,275	CHECK
	Non S-R-M Distribution Plant	139,320,930	8,453,896	472,965	0	-558,521	146,743,340	CHECK
1991	Total Distribution Plant	233,931,039	30,358,113	1,848,474	0	-2,165	262,438,513	CHECK
	Services	68,986,605	7,321,321	397,700	0	4,328	75,914,554	CHECK
	Meters	17,836,842	1,787,995	268,528	0	0	19,356,309	CHECK
	Meter Installations	4,956,748	412,898	42,537	0	380	5,327,489	CHECK
	House Regulators	6,750,845	2,099,245	70,389	0	-3,160	8,776,541	CHECK
	House Regulator Installations	1,329,454	-1,328,164	0	0	0	1,290	CHECK
	Industrial Equipment	9,502,086	872,516	185,349	0	-60	10,189,193	CHECK
	Other Equipment	2,896,064	694,741	38,598	0	0	3,552,207	CHECK
	Services-Regulators-Meters	112,258,644	11,860,552	1,003,101	0	1,488	123,117,583	CHECK
	Non S-R-M Distribution Plant	121,672,395	18,497,561	845,373	0	-3,653	139,320,930	CHECK
1990	Total Distribution Plant	217,295,031	17,953,746	1,285,735	0	-32,003	233,931,039	CHECK
	Services	64,036,988	5,466,957	513,236	0	-4,104	68,986,605	CHECK
	Meters	17,132,239	886,857	182,254	0	0	17,836,842	CHECK
	Meter Installations	4,627,461	258,187	23,303	0	94,403	4,956,748	CHECK
	House Regulators	6,269,871	523,480	38,002	0	-4,504	6,750,845	CHECK
	House Regulator Installations	1,341,105	0	11,651	0	0	1,329,454	CHECK
	Industrial Equipment	8,911,177	737,671	147,706	0	944	9,502,086	CHECK
	Other Equipment	2,400,815	504,019	3,568	0	-5,202	2,896,064	CHECK
	Services-Regulators-Meters	104,719,656	8,377,171	919,720	0	81,537	112,258,644	CHECK
	Non S-R-M Distribution Plant	112,575,375	9,576,575	366,015	0	-113,540	121,672,395	CHECK
1989	Total Distribution Plant	203,908,625	14,493,757	1,126,107	0	18,756	217,295,031	CHECK
	Services	60,198,442	4,228,385	394,792	0	4,953	64,036,988	CHECK
	Meters	16,432,681	831,705	132,147	0	0	17,132,239	CHECK
	Meter Installations	4,442,019	208,715	13,870	0	-9,403	4,627,461	CHECK
	House Regulators	5,785,417	521,836	39,624	0	2,242	6,269,871	CHECK
	House Regulator Installations	1,353,542	1	12,438	0	0	1,341,105	CHECK
	Industrial Equipment	8,460,398	554,573	96,837	0	-6,957	8,911,177	CHECK
	Other Equipment	1,972,789	428,026	0	0	0	2,400,815	CHECK
	Services-Regulators-Meters	98,645,288	6,773,241	689,708	0	-9,165	104,719,656	CHECK
	Non S-R-M Distribution Plant	105,263,337	7,720,516	436,399	0	27,921	112,575,375	CHECK
1988	Total Distribution Plant	195,398,068	11,161,850	2,789,192	0	137,899	203,908,625	CHECK
	Services	57,775,412	2,846,610	441,329	0	17,749	60,198,442	CHECK
	Meters	16,191,746	439,062	198,127	0	0	16,432,681	CHECK
	Meter Installations	4,177,300	300,835	15,232	0	-20,884	4,442,019	CHECK
	House Regulators	5,162,926	662,466	36,441	0	-3,534	5,785,417	CHECK
	House Regulator Installations	1,367,353	27	13,379	0	-459	1,353,542	CHECK
	Industrial Equipment	8,042,692	861,591	448,311	0	4,426	8,460,398	CHECK
	Other Equipment	1,894,389	78,400	0	0	0	1,972,789	CHECK
	Services-Regulators-Meters	94,611,818	5,188,991	1,152,819	0	-2,702	98,645,288	CHECK
	Non S-R-M Distribution Plant	100,786,250	5,972,859	1,636,373	0	140,601	105,263,337	CHECK
1987	Total Distribution Plant	183,313,894	10,983,313	782,286	0	1,883,147	195,398,068	CHECK
	Services	53,901,713	3,480,895	195,819	0	588,623	57,775,412	CHECK
	Meters	15,612,282	463,112	134,800	0	251,152	16,191,746	CHECK
	Meter Installations	4,095,243	97,833	10,432	0	-5,344	4,177,300	CHECK
	House Regulators	4,853,199	252,514	21,923	0	79,136	5,162,926	CHECK
	House Regulator Installations	1,378,853	27	7,295	0	-4,232	1,367,353	CHECK
	Industrial Equipment	7,270,791	874,905	156,507	0	53,503	8,042,692	CHECK
	Other Equipment	1,837,848	44,036	0	0	12,505	1,894,389	CHECK
	Services-Regulators-Meters	88,949,929	5,213,322	526,776	0	975,343	94,611,818	CHECK
	Non S-R-M Distribution Plant	94,363,965	5,769,991	255,510	0	907,804	100,786,250	CHECK

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General Plant

Year	Beginning Balance	Additions	Retirements	Adjustments	Transfers	Ending Balance	Balance Check
2005	128,672,601	1,880,565	1,467,342	3,163,638	0	132,249,462	-
2004	122,530,620	1,672,621	293,822	4,763,182		128,672,601	CHECK
2003	127,204,803	732,783	2,388,540	-3,018,426	0	122,530,620	CHECK
2002	114,805,924	701,486	1,934,403	13,631,796	0	127,204,803	CHECK
2001	115,848,215	1,071,548	5,047,948	2,934,109	0	114,805,924	CHECK
2000	114,796,239	1,402,746	3,921,722	3,570,952	0	115,848,215	CHECK
1999	121,162,862	694,630	2,050,406	-5,010,847	0	114,796,239	CHECK
1998	31,581,126	413,820	381,451	89,549,367	0	121,162,862	CHECK
1997	37,746,429	1,109,199	6,576,727	0	-697,775	31,581,126	CHECK
1996	32,308,428	877,996	2,742,003	3,124,783	4,177,225	37,746,429	CHECK
1995	39,826,894	1,028,661	4,126,546		-4,420,581	32,308,428	CHECK
1994	32,651,258	3,280,808	3,244,449	7,139,277	0	39,826,894	CHECK
1993	28,904,415	6,194,595	2,447,752	0	0	32,651,258	CHECK
1992	25,785,593	3,611,151	492,729	400	0	28,904,415	CHECK
1991	23,467,832	5,558,055	3,230,994	0	-9,300	25,785,593	CHECK
1990	20,650,521	3,431,408	637,134	0	23,037	23,467,832	CHECK
1989	17,493,438	3,590,006	454,783	0	21,860	20,650,521	CHECK
1988	14,926,396	4,737,128	2,170,086	0	0	17,493,438	CHECK
1987	13,783,912	1,292,461	455,001	0	305,024	14,926,396	CHECK

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Customer Accounts

Year	Customer Accounts Expense	Customer Service and Informational Expense	Sales Expense	Administrative & General	Total Customer Expense
2005	26,584,397	5,493,535	1,358,915	52,949,665	86,386,512
2004	24,734,766	6,203,347	1,333,484	47,445,087	79,716,684
2003	21,425,085	4,550,311	972,528	48,117,855	75,065,779
2002	19,634,917	4,782,671	1,180,292	59,796,627	85,394,507
2001	20,773,526	6,239,971	1,637,266	56,897,362	85,548,125
2000	18,935,136	6,188,320	846,530	48,167,189	74,137,175
1999	16,356,845	5,572,604	1,986,955	43,289,817	67,206,221
1998	14,769,749	4,521,867	1,681,206	39,574,277	60,547,099
1997	16,690,469	2,804,991	842,093	49,845,721	70,183,274
1996	12,305,890	2,426,082	605,506	46,738,598	62,076,076
1995	11,930,630	3,201,276	922,803	46,047,534	62,102,243
1994	10,526,853	981,289	870,590	37,670,560	50,049,292
1993	11,148,180	871,398	772,389	36,122,147	48,914,114
1992	7,248,478	893,791	583,783	28,496,334	37,222,386
1991	7,226,246	324,351	282,082	26,027,111	33,859,790
1990	6,689,858	281,181	322,191	24,318,928	31,612,158
1989	6,540,596	320,236	313,581	24,189,893	31,364,306
1988	6,596,533	118,593	166,543	24,112,141	30,993,810
1987	5,669,098	247,904	154,800	21,566,669	27,638,471

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Transmission Plant

Year	Beginning Balance	Additions	Retirements	Adjustments	Transfers	Ending Balance
2005	335,249,917	220,479	198,234	9,122	0	335,281,284
2004	337,219,399	382,138	2,536,823	185,203	0	335,249,917
2003	354,832,219	768,105	19,442,845	1,061,920	0	337,219,399
2002	366,071,254	825,946	6,620,103	-5,444,878	0	354,832,219
2001	366,202,825	1,626,725	1,764,585	6,289	0	366,071,254
2000	324,680,266	3,400,057	818,804	38,941,305	0	366,202,825
1999	354,178,293	2,136,214	3,180,049	-28,454,192	0	324,680,266
1998	354,829,032	3,083,951	1,450,041	-2,284,648	0	354,178,293
1997	363,187,504	2,604,467	11,016,108	0	53,168	354,829,032
1996	363,058,675	329,470	211,756	0	11,114	363,187,504
1995	361,131,940	2,085,517	158,782	0	0	363,058,675
1994	315,266,940	14,765,804	15,576,337	46,675,533	0	361,131,940
1993	274,602,708	6,528,338	3,739,580	0	37,875,474	315,266,940
1992	260,402,716	4,796,246	606,955	0	10,010,701	274,602,708
1991	255,099,863	5,546,338	337,174	0	93,689	260,402,716
1990	255,174,810	736,324	1,039,822	0	228,551	255,099,863
1989	255,581,071	1,639,024	2,075,126	0	29,841	255,174,810
1988	257,351,725	262,062	1,460,142	0	-572,574	255,581,071
1987	260,825,364	-612,912	2,860,727	0	0	257,351,725

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Distribution Plant

Year	Account	Beginning Balance	Additions	Retirements	Adjustments	Transfers	Ending Balance	Balance Check
2005	Total Distribution Plant	3,199,455,298	41,317,615	28,605,308	-1,402,861	0	3,210,764,744	-
	Services	978,235,154	10,206,974	6,891,810	-2,016,574	0	979,533,744	-
	Meters	243,532,444	2,987,868	7,548,000	-163,882	0	238,808,430	-
	Meter Installations	67,917,440	28,779	61,595	916	0	67,885,539	-
	House Regulators	128,705,820	4,356,142	1,793,448	-1,176,715	0	130,091,799	-
	House Regulator Installations	15,166,577	3,052	0	-19,839	0	15,149,790	-
	Industrial Equipment	103,653,168	1,617,085	2,509,876	-14,261	0	102,746,116	-
	Other Equipment	28,451,118	509,875	6,609,108	1,486,796	0	23,838,681	-
	Services-Regulators-Meters	1,565,661,721	19,709,775	25,413,837	-1,903,560	0	1,558,054,100	-
	Non S-R-M Distribution Plant	1,633,793,576	21,607,840	3,191,471	500,699	0	1,652,710,644	-
2004	Total Distribution Plant	3,175,775,638	39,770,797	24,157,378	8,066,240	0	3,199,455,298	CHECK
	Services	970,887,625	11,367,692	5,719,763	1,699,600	0	978,235,154	CHECK
	Meters	247,352,502	3,407,372	7,651,574	424,144	0	243,532,444	CHECK
	Meter Installations	67,939,903	98	0	-22,561	0	67,917,440	CHECK
	House Regulators	123,359,042	5,805,649	1,231,076	772,205	0	128,705,820	CHECK
	House Regulator Installations	15,166,584	0	0	-7	0	15,166,577	CHECK
	Industrial Equipment	103,477,454	1,643,159	1,747,221	279,776	0	103,653,168	CHECK
	Other Equipment	24,148,144	895,465	449,554	3,857,063	0	28,451,118	CHECK
	Services-Regulators-Meters	1,552,331,255	23,119,435	16,799,188	7,010,220	0	1,565,661,721	CHECK
	Non S-R-M Distribution Plant	1,623,444,384	16,651,363	7,358,190	1,056,020	0	1,633,793,576	CHECK
2003	Total Distribution Plant	3,174,159,668	49,545,194	22,990,462	-24,938,762	0	3,175,775,638	CHECK
	Services	971,037,016	12,603,297	6,223,678	-6,529,010	0	970,887,625	CHECK
	Meters	250,658,161	3,141,896	5,180,034	-1,267,521	0	247,352,502	CHECK
	Meter Installations	68,483,685	145,363	0	-689,145	0	67,939,903	CHECK
	House Regulators	122,102,493	6,093,941	1,507,037	-3,330,355	0	123,359,042	CHECK
	House Regulator Installations	15,166,584	0	0	0	0	15,166,584	CHECK
	Industrial Equipment	106,844,799	2,237,162	4,888,641	-715,866	0	103,477,454	CHECK
	Other Equipment	24,389,911	578,680	95,329	-725,117	0	24,148,144	CHECK
	Services-Regulators-Meters	1,558,682,650	24,800,339	17,894,719	-13,257,015	0	1,552,331,255	CHECK
	Non S-R-M Distribution Plant	1,615,477,019	24,744,855	5,095,743	-11,681,747	0	1,623,444,384	CHECK
2002	Total Distribution Plant	3,153,259,986	45,378,770	15,476,041	-9,003,046	0	3,174,159,668	CHECK
	Services	963,019,616	12,406,356	5,625,209	1,236,253	0	971,037,016	CHECK
	Meters	255,677,424	3,053,461	4,679,347	-3,393,377	0	250,658,161	CHECK
	Meter Installations	68,741,495	37,000	273	-294,537	0	68,483,685	CHECK
	House Regulators	116,612,070	6,021,247	987,729	456,905	0	122,102,493	CHECK
	House Regulator Installations	15,166,690	0	106	0	0	15,166,584	CHECK
	Industrial Equipment	103,406,486	2,543,771	527,673	1,422,216	0	106,844,799	CHECK
	Other Equipment	22,592,193	-26,821	140,428	1,964,966	0	24,389,911	CHECK
	Services-Regulators-Meters	1,545,215,976	24,035,014	11,960,767	1,392,427	0	1,558,682,650	CHECK
	Non S-R-M Distribution Plant	1,608,044,010	21,343,757	3,515,274	-10,395,473	0	1,615,477,019	CHECK
2001	Total Distribution Plant	3,125,541,528	46,711,747	24,143,989	5,150,700	0	3,153,259,986	CHECK
	Services	955,105,255	12,605,465	12,325,313	7,634,209	0	963,019,616	CHECK
	Meters	254,155,968	4,320,764	3,570,508	771,200	0	255,677,424	CHECK
	Meter Installations	67,954,810	550,900	112,807	348,592	0	68,741,495	CHECK
	House Regulators	110,595,932	6,108,728	1,563,530	1,470,939	0	116,612,070	CHECK
	House Regulator Installations	15,166,706	0	16	0	0	15,166,690	CHECK
	Industrial Equipment	104,356,417	875,639	805,875	-1,019,694	0	103,406,486	CHECK
	Other Equipment	20,267,818	723,671	414,429	2,015,134	0	22,592,193	CHECK
	Services-Regulators-Meters	1,527,602,906	25,185,168	18,792,477	11,220,379	0	1,545,215,976	CHECK
	Non S-R-M Distribution Plant	1,597,938,622	21,526,579	5,351,512	-6,069,679	0	1,608,044,010	CHECK
2000	Total Distribution Plant	3,129,935,532	53,641,862	21,538,369	-36,497,497	0	3,125,541,528	CHECK
	Services	949,164,554	13,604,512	5,928,413	-1,735,398	0	955,105,255	CHECK
	Meters	259,483,149	1,565,361	7,344,160	451,619	0	254,155,968	CHECK
	Meter Installations	68,202,517	-4,325	214,110	-29,272	0	67,954,810	CHECK
	House Regulators	106,594,866	5,415,449	447,108	-967,275	0	110,595,932	CHECK
	House Regulator Installations	15,171,256	0	4,463	-87	0	15,166,706	CHECK
	Industrial Equipment	103,161,972	3,526,697	1,332,353	-999,900	0	104,356,417	CHECK
	Other Equipment	29,350,697	43,905	311,891	-8,814,893	0	20,267,818	CHECK
	Services-Regulators-Meters	1,531,129,012	24,151,600	15,582,498	-12,095,208	0	1,527,602,906	CHECK
	Non S-R-M Distribution Plant	1,598,806,520	29,490,262	5,955,871	-24,402,290	0	1,597,938,622	CHECK
1999	Total Distribution Plant	3,103,394,504	39,727,534	27,447,956	14,261,449	0	3,129,935,532	CHECK
	Services	947,535,659	15,773,454	14,108,365	-36,193	0	949,164,554	CHECK
	Meters	263,642,938	3,855,962	2,259,593	-5,756,158	0	259,483,149	CHECK
	Meter Installations	69,012,840	-105,246	705,084	8	0	68,202,517	CHECK
	House Regulators	106,017,344	1,236,768	684,795	25,550	0	106,594,866	CHECK
	House Regulator Installations	15,173,903	0	2,647	0	0	15,171,256	CHECK
	Industrial Equipment	104,809,763	1,858,493	508,349	-2,997,934	0	103,161,972	CHECK
	Other Equipment	32,850,514	-168,596	8,270	-3,322,951	0	29,350,697	CHECK
	Services-Regulators-Meters	1,539,042,959	22,450,835	18,277,104	-12,087,678	0	1,531,129,012	CHECK
	Non S-R-M Distribution Plant	1,564,351,545	17,276,699	9,170,852	26,349,128	0	1,598,806,520	CHECK
1998	Total Distribution Plant	3,157,058,586	42,504,911	11,000,269	-85,168,725	0	3,103,394,504	CHECK
	Services	951,117,025	9,974,227	3,627,180	-9,928,413	0	947,535,659	CHECK
	Meters	260,214,762	3,686,630	0	-258,455	0	263,642,938	CHECK
	Meter Installations	67,676,587	138,719	125,131	1,322,665	0	69,012,840	CHECK
	House Regulators	94,601,839	8,365,204	205,832	3,256,132	0	106,017,344	CHECK
	House Regulator Installations	15,184,442	0	1,012	-9,528	0	15,173,903	CHECK
	Industrial Equipment	102,045,407	469,376	801,485	3,096,464	0	104,809,763	CHECK
	Other Equipment	33,722,834	344,693	4,345	-1,212,667	0	32,850,514	CHECK
	Services-Regulators-Meters	1,524,562,895	22,978,850	4,764,984	-3,733,802	0	1,539,042,959	CHECK
	Non S-R-M Distribution Plant	1,632,495,691	19,526,061	6,235,285	-81,434,923	0	1,564,351,545	CHECK
1997	Total Distribution Plant	3,122,649,852	51,696,283	22,935,393	-228,730	5,876,574	3,157,058,586	CHECK
	Services	940,775,585	18,287,546	7,953,332	7,226	0	951,117,025	CHECK
	Meters	258,164,041	3,376,231	1,333,595	8,085	0	260,214,762	CHECK
	Meter Installations	67,043,822	1,158,324	525,559	0	0	67,676,587	CHECK
	House Regulators	93,757,274	1,595,013	751,577	1,129	0	94,601,839	CHECK
	House Regulator Installations	15,193,015	0	8,573	0	0	15,184,442	CHECK
	Industrial Equipment	101,094,638	2,723,608	1,772,838	0	0	102,045,407	CHECK
	Other Equipment	33,018,152	1,669,163	1,052,869	0	88,388	33,722,834	CHECK
	Services-Regulators-Meters	1,509,046,527	28,809,885	13,398,344	16,440	88,388	1,524,562,895	CHECK
	Non S-R-M Distribution Plant	1,613,603,325	22,886,398	9,537,049	-245,169	5,788,186	1,632,495,691	CHECK

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Distribution Plant

Year	Account	Beginning Balance	Additions	Retirements	Adjustments	Transfers	Ending Balance	Balance Check
1996	Total Distribution Plant	2,916,404,943	37,306,310	15,732,546	220,321,092	-35,649,948	3,122,649,852	CHECK
	Services	836,338,999	14,571,477	6,663,392	96,533,369	-4,868	940,775,585	CHECK
	Meters	237,421,587	2,797,972	0	17,944,482	0	258,164,041	CHECK
	Meter Installations	66,536,485	1,001,130	493,005	0	-787	67,043,822	CHECK
	House Regulators	89,937,892	1,478,094	616,650	2,958,811	-873	93,757,274	CHECK
	House Regulator Installations	15,194,342	0	1,326	0	0	15,193,015	CHECK
	Industrial Equipment	99,525,686	2,026,178	457,226	0	0	101,094,638	CHECK
	Other Equipment	37,883,527	-904,520	517,192	0	-3,443,662	33,018,152	CHECK
	Services-Regulators-Meters	1,382,838,517	20,970,331	8,748,791	117,436,661	-3,450,190	1,509,046,527	CHECK
	Non S-R-M Distribution Plant	1,533,566,426	16,335,979	6,983,755	102,884,431	-32,199,757	1,613,603,325	CHECK
1995	Total Distribution Plant	2,873,389,291	33,440,117	27,932,719	0	37,508,254	2,916,404,943	CHECK
	Services	836,952,477	11,138,408	11,751,887	0	0	836,338,999	CHECK
	Meters	235,909,114	2,169,601	657,128	0	0	237,421,587	CHECK
	Meter Installations	65,985,219	915,177	363,912	0	0	66,536,485	CHECK
	House Regulators	89,222,451	1,289,102	573,661	0	0	89,937,892	CHECK
	House Regulator Installations	15,194,628	0	287	0	0	15,194,342	CHECK
	Industrial Equipment	100,349,183	2,266,147	3,089,644	0	0	99,525,686	CHECK
	Other Equipment	33,925,981	251,156	1,082,764	0	4,789,154	37,883,527	CHECK
	Services-Regulators-Meters	1,377,539,054	18,029,591	17,519,282	0	4,789,154	1,382,838,517	CHECK
	Non S-R-M Distribution Plant	1,495,850,237	15,410,526	10,413,437	0	32,719,100	1,533,566,426	CHECK
1994	Total Distribution Plant	2,551,954,283	63,361,393	52,527,626	310,601,242	0	2,873,389,291	CHECK
	Services	762,815,349	21,895,843	42,736,488	94,977,773	0	836,952,477	CHECK
	Meters	209,047,361	5,064,470	1,354,021	23,151,305	0	235,909,114	CHECK
	Meter Installations	64,421,741	2,046,590	483,112	0	0	65,985,219	CHECK
	House Regulators	71,045,548	2,222,290	856,038	16,810,650	0	89,222,451	CHECK
	House Regulator Installations	15,194,984	-2	353	0	0	15,194,628	CHECK
	Industrial Equipment	95,647,093	2,731,452	1,956,208	3,926,845	0	100,349,183	CHECK
	Other Equipment	33,145,743	839,087	155,453	96,605	0	33,925,981	CHECK
	Services-Regulators-Meters	1,251,317,819	34,799,730	47,541,673	138,963,177	0	1,377,539,054	CHECK
	Non S-R-M Distribution Plant	1,300,636,463	28,561,663	4,985,953	171,638,064	0	1,495,850,237	CHECK
1993	Total Distribution Plant	2,418,892,910	164,085,792	12,834,156	0	-18,190,263	2,551,954,283	CHECK
	Services	715,834,224	50,845,390	3,864,265	0	0	762,815,349	CHECK
	Meters	197,642,878	12,986,850	1,582,367	0	0	209,047,361	CHECK
	Meter Installations	53,928,270	10,878,345	384,873	0	0	64,421,741	CHECK
	House Regulators	68,287,142	3,643,070	884,663	0	0	71,045,548	CHECK
	House Regulator Installations	14,235,240	959,744	0	0	0	15,194,984	CHECK
	Industrial Equipment	88,053,796	8,694,657	1,101,360	0	0	95,647,093	CHECK
	Other Equipment	26,507,020	6,929,161	290,439	0	0	33,145,743	CHECK
	Services-Regulators-Meters	1,164,488,571	94,937,216	8,107,967	0	0	1,251,317,819	CHECK
	Non S-R-M Distribution Plant	1,254,404,339	69,148,577	4,726,190	0	-18,190,263	1,300,636,463	CHECK
1992	Total Distribution Plant	2,402,237,498	35,555,041	14,308,455	0	-4,591,174	2,418,892,910	CHECK
	Services	707,733,195	11,814,048	4,249,835	0	536,816	715,834,224	CHECK
	Meters	197,253,826	2,565,657	2,176,605	0	0	197,642,878	CHECK
	Meter Installations	53,326,099	1,078,856	497,497	0	20,813	53,928,270	CHECK
	House Regulators	67,386,361	1,706,274	874,627	0	69,134	68,287,142	CHECK
	House Regulator Installations	14,182,134	0	0	0	53,106	14,235,240	CHECK
	Industrial Equipment	87,748,534	1,953,288	1,711,542	0	63,517	88,053,796	CHECK
	Other Equipment	26,107,723	778,327	325,925	0	-53,106	26,507,020	CHECK
	Services-Regulators-Meters	1,153,737,873	19,896,450	9,836,031	0	690,279	1,164,488,571	CHECK
	Non S-R-M Distribution Plant	1,248,499,625	15,658,591	4,472,423	0	-5,281,453	1,254,404,339	CHECK
1991	Total Distribution Plant	2,363,093,339	57,616,278	18,450,509	0	-21,610	2,402,237,498	CHECK
	Services	697,764,588	13,895,042	3,969,635	0	43,200	707,733,195	CHECK
	Meters	196,540,721	3,393,413	2,680,307	0	0	197,253,826	CHECK
	Meter Installations	52,963,254	783,634	424,582	0	3,793	53,326,099	CHECK
	House Regulators	64,136,358	3,984,130	702,587	0	-31,541	67,386,361	CHECK
	House Regulator Installations	16,702,840	-2,520,706	0	0	0	14,182,134	CHECK
	Industrial Equipment	87,943,254	1,655,937	1,850,058	0	-599	87,748,534	CHECK
	Other Equipment	25,174,449	1,318,540	385,265	0	0	26,107,723	CHECK
	Services-Regulators-Meters	1,141,225,463	22,509,991	10,012,434	0	14,852	1,153,737,873	CHECK
	Non S-R-M Distribution Plant	1,221,867,876	35,106,287	8,438,075	0	-36,462	1,248,499,625	CHECK
1990	Total Distribution Plant	2,342,903,621	34,684,835	14,143,085	0	-352,033	2,363,093,339	CHECK
	Services	692,893,716	10,561,612	5,645,596	0	-45,144	697,764,588	CHECK
	Meters	196,832,196	1,713,319	2,004,794	0	0	196,540,721	CHECK
	Meter Installations	51,682,363	498,791	256,333	0	1,038,433	52,963,254	CHECK
	House Regulators	63,592,614	1,011,311	418,022	0	-49,544	64,136,358	CHECK
	House Regulator Installations	16,831,001	0	128,161	0	0	16,702,840	CHECK
	Industrial Equipment	88,132,529	1,425,106	1,624,766	0	10,384	87,943,254	CHECK
	Other Equipment	24,297,204	973,714	39,248	0	-57,222	25,174,449	CHECK
	Services-Regulators-Meters	1,134,261,623	16,183,854	10,116,920	0	896,907	1,141,225,463	CHECK
	Non S-R-M Distribution Plant	1,208,641,999	18,500,982	4,026,165	0	-1,248,940	1,221,867,876	CHECK
1989	Total Distribution Plant	2,326,986,938	28,615,879	12,914,291	0	215,095	2,342,903,621	CHECK
	Services	689,016,073	8,348,350	4,527,508	0	56,801	692,893,716	CHECK
	Meters	196,705,585	1,642,084	1,515,473	0	0	196,832,196	CHECK
	Meter Installations	51,537,181	412,078	159,062	0	-107,834	51,682,363	CHECK
	House Regulators	62,991,022	1,030,292	454,411	0	25,711	63,592,614	CHECK
	House Regulator Installations	16,973,639	2	142,640	0	0	16,831,001	CHECK
	Industrial Equipment	88,227,921	1,094,926	1,110,535	0	-79,783	88,132,529	CHECK
	Other Equipment	23,452,127	845,077	0	0	0	24,297,204	CHECK
	Services-Regulators-Meters	1,128,903,548	13,372,809	7,909,630	0	-105,105	1,134,261,623	CHECK
	Non S-R-M Distribution Plant	1,198,083,389	15,243,070	5,004,661	0	320,200	1,208,641,999	CHECK
1988	Total Distribution Plant	2,335,780,799	22,962,737	33,408,322	0	1,651,724	2,326,986,938	CHECK
	Services	688,233,426	5,856,194	5,286,141	0	212,594	689,016,073	CHECK
	Meters	198,175,445	903,261	2,373,121	0	0	196,705,585	CHECK
	Meter Installations	51,350,877	618,893	182,446	0	-250,144	51,537,181	CHECK
	House Regulators	62,106,974	1,362,859	436,482	0	-42,329	62,991,022	CHECK
	House Regulator Installations	17,139,332	56	160,251	0	-5,498	16,973,639	CHECK
	Industrial Equipment	91,772,168	1,772,510	5,369,770	0	53,014	88,227,921	CHECK
	Other Equipment	23,290,839	161,289	0	0	0	23,452,127	CHECK
	Services-Regulators-Meters	1,132,069,061	10,675,062	13,808,210	0	-32,364	1,128,903,548	CHECK
	Non S-R-M Distribution Plant	1,203,711,738	12,287,676	19,600,112	0	1,684,088	1,198,083,389	CHECK
1987	Total Distribution Plant	2,297,818,346	24,163,289	9,805,864	0	23,605,029	2,335,780,799	CHECK
	Services	675,651,705	7,657,969	2,454,568	0	7,378,321	688,233,426	CHECK
	Meters	195,698,139	1,018,846	1,689,702	0	3,148,161	198,175,445	CHECK
	Meter Installations	51,333,395	215,233	130,764	0	-66,986	51,350,877	CHECK
	House Regulators	60,834,285	555,531	274,802	0	991,961	62,106,974	CHECK
	House Regulator Installations	17,283,762	59	91,442	0	-53,048	17,139,332	CHECK
	Industrial Equipment	91,138,520	1,924,791	1,961,797	0	670,654	91,772,168	CHECK
	Other Equipment	23,037,211	96,879	0	0	156,749	23,290,839	CHECK
	Services-Regulators-Meters	1,114,977,017	11,469,308	6,603,076	0	12,225,811	1,132,069,061	CHECK
	Non S-R-M Distribution Plant	1,182,841,329	12,693,980	3,202,788	0	11,379,218	1,203,711,738	CHECK

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General Plant

Year	Beginning Balance	Additions	Retirements	Adjustments	Transfers	Ending Balance
2005	288,544,083	1,880,565	2,699,308	5,819,798	0	293,545,138
2004	278,266,797	1,998,986	544,227	8,822,526	0	288,544,083
2003	287,533,723	994,887	4,533,180	-5,728,632	0	278,266,797
2002	263,970,990	964,543	3,737,072	26,335,262	0	287,533,723
2001	266,640,393	1,504,074	9,966,461	5,792,984	0	263,970,990
2000	265,345,802	2,016,214	8,067,970	7,346,348	0	266,640,393
1999	279,825,895	1,054,664	4,510,893	-11,023,863	0	265,345,802
1998	76,395,619	639,109	867,519	203,658,687	0	279,825,895
1997	90,844,669	1,753,250	14,648,165	0	-1,554,135	76,395,619
1996	79,173,930	1,429,728	6,158,082	7,017,742	9,381,351	90,844,669
1995	97,325,269	1,705,995	9,587,105	0	-10,270,229	79,173,930
1994	82,357,277	5,596,062	7,806,955	17,178,885	0	97,325,269
1993	77,366,314	11,395,518	6,404,555	0	0	82,357,277
1992	72,096,685	6,688,695	1,420,219	1,153	0	77,366,314
1991	71,585,585	10,548,562	10,008,654	0	-28,809	72,096,685
1990	67,025,189	6,629,136	2,146,345	0	77,606	71,585,585
1989	61,524,612	7,087,961	1,667,538	0	80,153	67,025,189
1988	60,255,062	9,745,466	8,475,916	0	0	61,524,612
1987	58,043,192	2,843,414	1,915,981	0	1,284,437	60,255,062

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Customer Accounts

Year	Customer Accounts Expense	Customer Service and Informational Expense	Sales Expense	Administrative & General	Total Customer Expense
2005	26,584,397	5,493,535	1,358,915	52,949,665	86,386,512
2004	25,709,535	6,447,814	1,386,035	49,314,844	82,858,228
2003	23,064,760	4,898,549	1,046,956	51,800,344	80,810,609
2002	21,805,092	5,311,282	1,310,745	66,405,728	94,832,847
2001	24,283,734	7,294,371	1,913,923	66,511,598	100,003,625
2000	23,161,239	7,569,481	1,035,466	58,917,547	90,683,733
1999	20,790,929	7,083,250	2,525,587	55,025,008	85,424,775
1998	19,477,606	5,963,212	2,217,090	52,188,578	79,846,487
1997	22,720,574	3,818,407	1,146,333	67,854,498	95,539,812
1996	17,368,179	3,424,102	854,594	65,965,513	87,612,388
1995	17,542,599	4,707,103	1,356,874	67,707,524	91,314,099
1994	15,865,471	1,478,943	1,312,104	56,774,915	75,431,433
1993	17,296,073	1,351,948	1,198,339	56,042,449	75,888,809
1992	11,630,638	1,434,144	936,716	45,724,156	59,725,654
1991	12,053,264	541,012	470,508	43,412,810	56,477,594
1990	11,476,098	482,351	552,702	41,717,836	54,228,986
1989	11,500,548	563,082	551,380	42,533,895	55,148,905
1988	11,745,725	211,166	296,545	42,933,854	55,187,290
1987	10,356,534	452,881	282,795	39,398,850	50,491,060
1986	13,197,965	718,227	313,902	49,011,941	63,242,035

AQUILA, INC.
MARGINAL GAS COST STUDY
FUNCTIONAL ALLOCATION OF INVESTMENT
O&M EXPENSES - $NOMINAL

Observations

Year	Manufactured Gas Production	Natural Gas Production & Gathering	Transmission	Distribution: Total O&M	Industrial Operation Expenses	Meter & House Regulator Operation	Customer Installations Expenses	Industrial Maintenance Expenses	Maintenance of Services	Maintenance of Meters & House Regulators	SRM Expenses	Non-SRM Expenses	Maintenance of General Plant
2005	1,033,354	29,687	704,904	33,988,853	92,738	4,328,119	2,963,673	325,633	1,389,322	1,070,479	10,167,964	23,820,889	2,174,338
2004	4,472,108	543,249	681,874	32,932,102	81,966	4,415,279	2,607,565	309,095	1,250,107	1,155,696	9,819,708	23,112,394	2,174,360
2003	2,436,215	1,500,804	648,847	29,891,954	71,834	3,886,704	2,382,398	307,000	929,521	1,194,103	8,771,560	21,120,394	1,634,848
2002	123,380	2,128,059	797,881	32,624,644	45,224	3,278,693	2,355,828	310,786	919,703	1,145,966	8,056,200	24,568,444	608,218
2001	186,341	2,187,011	951,037	29,999,804	62,544	3,470,138	2,482,714	532,067	1,094,879	953,708	8,575,849	21,423,955	402,694
2000	904,578	1,418,238	787,559	27,275,773	72,219	3,347,621	2,395,469	440,018	848,352	882,112	7,985,791	19,289,982	1,025,057
1999	323,717	1,434,638	850,771	30,324,754	725,710	3,036,638	2,515,213	386,221	1,059,675	1,027,151	8,750,606	21,574,146	396,653
1998	281,349	2,073,497	789,269	30,591,341	10,609	2,728,860	2,546,077	330,571	870,765	785,659	7,272,541	23,318,800	16,840
1997	511,259	1,238,577	1,773,369	34,139,652	0	269,624	3,720,178	223,579	1,218,094	520,032	5,971,507	28,168,145	507,143
1996	1,595,130	1,739,307	1,501,029	29,125,154	0	287,143	3,583,803	114,129	1,112,704	436,231	5,534,010	23,591,144	394,202
1995	517,826	1,756,074	1,421,843	27,380,597	0	1,834	2,717,867	111,599	1,328,280	429,664	4,589,244	22,791,353	33,388
1994	297,899	1,615,026	906,527	26,031,907	0	2,483	2,584,072	269,943	1,280,300	446,831	4,583,629	21,448,278	27,585
1993	250,915	1,763,132	821,051	26,362,660	0	3,166	3,014,501	292,245	1,293,419	516,552	5,119,883	21,242,777	10,825
1992	303,882	1,836,611	1,189,161	18,801,314	0	2,430	2,055,131	181,528	896,715	523,997	3,659,801	15,141,513	4,278
1991	85,952	1,715,352	1,306,019	18,240,031	0	2,369	2,007,561	162,838	935,559	490,582	3,598,909	14,641,122	3,329
1990	259,742	1,521,265	1,132,196	16,057,730	0	2,729	1,330,451	139,019	783,320	424,787	2,680,306	13,377,424	3,996
1989	88,268	1,674,469	1,125,052	16,310,008	0	3,149	1,649,963	189,133	838,433	648,513	3,329,191	12,980,817	3,698
1988	120,583	1,819,369	1,037,352	15,151,180	0	3,969	1,432,053	167,516	781,080	668,578	3,053,216	12,097,964	8,261
1987	101,858	1,528,758	1,073,430	15,518,587	0	3,595	1,529,308	229,861	731,289	453,909	2,947,960	12,570,627	4,971
1986	179,271	1,622,478	1,089,058	15,789,263	0	4,455	1,409,251	260,993	770,749	428,367	2,873,815	12,895,448	3,834

AQUILA, INC.
MARGINAL GAS COST STUDY
FUNCTIONAL ALLOCATION OF INVESTMENT
INDEPENDENT VARIABLE DATA

Observations

Year	Customers	Gas Received	Gas Delivered	Gas Sales	Peak Day
2005	695,391	174,467,944	175,837,565	82,547,593	963,088
2004	681,695	173,917,044	170,570,418	82,866,334	942,619
2003	670,843	180,490,625	178,033,051	85,633,509	986,731
2002	660,473	190,616,642	184,789,087	84,797,015	869,572
2001	648,017	174,624,261	172,882,031	83,621,449	880,392
2000	639,529	190,673,984	188,591,974	82,392,334	972,532
1999	627,690	195,363,758	197,883,584	82,177,259	1,008,803
1998	613,847	196,764,688	196,678,123	80,366,457	1,011,935
1997	603,097	230,535,243	215,426,528	94,686,628	1,027,308
1996	564,865	221,228,952	222,794,568	94,363,060	1,020,995
1995	554,623	222,415,624	228,141,313	88,579,181	1,009,307
1994	492,049	206,206,816	201,550,038	80,337,413	939,719
1993	482,735	201,658,026	192,619,217	90,212,110	833,724
1992	346,789	160,873,892	156,264,673	63,942,893	N/A
1991	335,030	175,047,559	156,710,490	72,501,332	659,099
1990	330,168	163,212,059	157,466,547	67,666,406	705,014
1989	323,337	157,256,451	154,975,929	77,239,662	701,716
1988	310,324	151,924,555	149,966,782	79,477,530	589,096
1987	302,264	99,860,250	128,370,194	82,556,906	566,685
1986	300,682	N/A	N/A	89,850,365	N/A

AQUILA, INC.
MARGINAL NON GAS COST STUDY
FUNCTIONAL ALLOCATION OF INVESTMENT
NON-GAS MARGINAL COST SUMMARY

Cost Category	Driver	Cost ($/month)
Transmission	Customers	$3.79
Distribution		
Non S-R-M	Customers	$17.59
Services, Regulators & Meters	Customers	$18.20
Customer-Related Costs	Customers	$8.43