Schedule No:	
Issues:	• Updated Schedules • Class Cost of Service • Rate Design
Witness:	Thomas J. Sullivan
Type of Schedule:	Rebuttal Testimony
Sponsoring Party:	Aquila
Case No:	GR-2004-0072
Date Testimony To Be Filed:	February 12, 2004

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. GR-2004-0072

REBUTTAL TESTIMONY

OF

THOMAS J. SULLIVAN

ON BEHALF OF

AQUILA, INC.
d/b/a
AQUILA NETWORKS – MPS
and
AQUILA NETWORKS – L&P

Kansas City, Missouri
February 2004

2/12/2004

State of KANSAS)
) ss
County of JOHNSON)

AFFIDAVIT OF THOMAS J. SULLIVAN

Thomas J. Sullivan, being first duly sworn, deposes and says that he is the witness who sponsors the accompanying testimony and schedules entitled "Rebuttal Testimony of Thomas J. Sullivan"; that said testimony was prepared by him and/or under his direction and supervision; that if inquiries were made as to the facts in said testimony and schedules, he would respond as therein set forth; and that the aforesaid testimony and schedules are true and correct to the best of his knowledge, information, and belief.

Thomas J. Sullivan

Subscribed and sworn to before me this 12th day of February, 2004.

Carole L. Bielefeld
Notary Public

My Commission expires:

1-16-2007

OFFICIAL SEAL
CAROLE L. BIELEFELD
MY COMMISSION EXPIRES
January 16, 2007

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REBUTTAL TESTIMONY OF THOMAS J. SULLIVAN

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. Thomas J. Sullivan, 11401 Lamar, Overland Park, Kansas 66211.

Q. ARE YOU THE SAME THOMAS J. SULLIVAN WHO PREVIOUSLY FILED DIRECT TESTIMONY IN THIS MATTER?

A. Yes, I am.

Q. DO YOU SPONSOR ANY UPDATED SCHEDULES FROM YOUR DIRECT TESTIMONY?

A. Yes, I do. I have updated several schedules from my direct testimony to reflect Company activity through September 30, 2003. These schedules include:

Schedule TJS-14 Updated Class Cost of Service Study – MPS

Schedule TJS-15 Updated Functionally Classified Cost of Service by Class – MPS

Schedule TJS-16 Updated Class Cost of Service Study – L&P

Schedule TJS-17 Updated Functionally Classified Cost of Service by Class – L&P

Schedule TJS-18 Updated Proposed Rates – MPS

Schedule TJS-19 Updated Revenues Under Proposed Rates - MPS

Schedule TJS-20 Updated Proposed Rates – L&P

Schedule TJS-21 Updated Revenues Under Proposed Rates – L&P

The MPS schedules referred to above and in my direct testimony include the Company's MPS North, South and East service areas.

In addition to the updated schedules listed above for the three combined MPS service areas, I am sponsoring four new schedules that include the Company's MPS North and South service areas only. These schedules are:

Schedule TJS-22 Class Cost of Service Study – MPS (North and South Only)

Schedule TJS-23 Functionally Classified Cost of Service by Class – MPS (North and South Only)

Schedule TJS-24 Proposed Rates – MPS (North and South Only)

Schedule TJS-25 Revenues Under Proposed Rates (North and South Only)

All schedules were either prepared by me or under my direct supervision.

Q. HOW DO UPDATED SCHEDULES TJS-14 THROUGH TJS-21 DIFFER FROM WHAT WAS SUBMITTED WITH YOUR DIRECT TESTIMONY?

A. In my direct testimony, Schedules 14 through 21 are based on test year ending December 31, 2002. At the Company's request, I have updated these schedules to reflect a test year updated through September 30, 2003.

Updated Proposed Rates – MPS

Q. HOW DOES THE RATE DESIGN IN YOUR UPDATED MPS' RATES DIFFER FROM WHAT YOU SPONSORED IN YOUR DIRECT TESTIMONY?

A. I rely upon the same general guidelines in the design of updated proposed rates as I discussed in my direct testimony on Pages 30 through 35. However, the levels of the energy charges have been changed to recognize a different rate increase.

Q. WHAT IS THE OVERALL INCREASE THAT THE UPDATED MPS PROPOSED RATES ARE DESIGNED TO PRODUCE?

A. Approximately $6.7 million.

Q. PLEASE DISCUSS HOW YOUR UPDATED MPS RESIDENTIAL RATE DIFFERS FROM WHAT YOU SPONSORED IN YOUR DIRECT TESTIMONY.

A. I am still recommending that the Residential customer charge be increased from $9.00 per month to $15.00 per month. The $19.01 of customer related cost per bill determined in my updated class cost of service study compares to the $17.84 per bill determined in the class cost of service study filed with my direct testimony.

I am recommending that the energy charge be increased from $0.22295 per Ccf to $0.29140 per Ccf. This is the level required with the $15.00 per month customer charge such that the Company earns a rate of return of 9.74 percent on the Residential class, which is the Company's

overall requested rate of return. In my direct testimony, I recommended an energy charge of $0.26825 per Ccf.

Q. PLEASE DISCUSS HOW YOUR UPDATED MPS NON-RESIDENTIAL RATES DIFFER FROM WHAT YOU SPONSORED IN YOUR DIRECT TESTIMONY.

A. I am still recommending that the Small Commercial customer charge be set at $25.00 per month, the Small Volume customer charge be set at $50.00 per month, and the Large Volume customer charge be set at $215.00 per month. These customer charges move in the direction of cost as determined in my updated cost of service study. I am also recommending no change to my proposed demand charge of $0.40000 per Ccf of billing demand per month for Large Volume customers.

I am recommending changes to the energy charges of the non-residential customer classes such that the Company earns its requested rate of return of 9.74 percent on this group. I am recommending that the Small Commercial energy charge be set at $0.28180 per Ccf, the Small Volume energy charge be set at $0.21180 per Ccf, and the Large Volume energy charge be set at $0.03870 per Ccf.

Updated Proposed Rates – L&P

Q. HOW DOES THE RATE DESIGN IN YOUR UPDATED L&P RATES DIFFER FROM WHAT YOU SPONSORED IN YOUR DIRECT TESTIMONY?

A. I rely upon the same general guidelines in the design of updated proposed rates as I discussed in my direct testimony on Pages 30 through 35. However, the levels of the energy charges have been changed to reflect a different rate increase.

Q. WHAT IS THE OVERALL INCREASE THAT THE UPDATED L&P PROPOSED RATES ARE DESIGNED TO PRODUCE?

A. Approximately $1.0 million.

Q. PLEASE DISCUSS HOW YOUR UPDATED L&P RESIDENTIAL RATES DIFFER FROM WHAT YOU SPONSORED IN YOUR DIRECT TESTIMONY.

A. I am still recommending that the Residential customer charge be increased from $6.66 per month ($5.65 per month for Fairfax, Rockport, and Tarkio) to $10.00 per month. The $14.71 of customer related cost per bill determined in my updated class cost of service study compares to the $13.38 per bill determined in the class cost of service study filed with my direct testimony.

I am recommending that the energy charge be increased from $0.16350 per Ccf to $0.25350 per Ccf. This is the level required with the $10.00 per month customer charge such that the Company earns a rate of return of 10.08 percent on the Residential class, which is the Company's overall requested rate of return. In my direct testimony, I recommended an energy charge of $0.22950 per Ccf.

Q. PLEASE DISCUSS HOW YOUR UPDATED L&P NON-RESIDENTIAL RATES DIFFER FROM WHAT YOU SPONSORED IN YOUR DIRECT TESTIMONY.

A. I am still recommending that the Small Commercial customer charge be set at $20.00 per month and the Small Volume customer charge be set at $40.00 per month. I am recommending a slight increase to the Large Volume customer charge from $200.00, which I recommended in my direct testimony, to $215.00 per month. Under existing rates, Large Volume customers are charged a $184.53 per month customer charge. These customer charges move in the direction of actual cost as determined in my updated cost of service study.

I am recommending changes to the energy charges of the non-residential customer classes such that the Company earns its requested rate of return of 10.08 percent on this group. I am recommending that the Small Commercial energy charge be set at $0.22500 per Ccf, the Small Volume energy charge be set at $0.19000 per Ccf, and the Large Volume energy charge be set at $0.03870 per Ccf.

MPS North and South Only

Q. PLEASE DESCRIBE SCHEDULES TJS-22 THROUGH TJS-25.

A. These schedules are based on a test year updated through September 30, 2003 and include the MPS Northern and Southern systems only. Costs, revenues, and billing units related to the Eastern system have been removed.

Schedule TJS-22 develops the cost of service by customer class and Schedule TJS-23 develops functionally classified cost of service by customer class. These schedules are the same as Schedules TJS-14 and 15 (updated) except that the Eastern system has been removed. Schedule 24 summarizes the rates I am proposing for MPS (excluding the Eastern system), and Schedule 25 shows a detailed calculation of revenues under existing and revised proposed rates for MPS (excluding the Eastern system).

Q. WHAT GENERAL GUIDELINES DID YOU FOLLOW IN THE DESIGN OF THE PROPOSED RATES WHEN THE EASTERN SYSTEM IS EXCLUDED?

A. I rely upon the same general guidelines in the design of revised proposed rates as I discussed in my direct testimony on Pages 30 through 35.

Q. WHAT IS THE OVERALL INCREASE THAT THE MPS PROPOSED RATES (LESS EASTERN) ARE DESIGNED TO PRODUCE?

A. Approximately $6.4 million.

Q. HOW DO YOUR RATE DESIGN RECOMMENDATIONS FOR THE MPS RATES (LESS EASTERN) DIFFER FROM YOUR REVISED PROPOSED RATES?

A. I recommend the same customer and demand charges under both scenarios. I recommend that the energy charges be increased under the scenario that does not include the Eastern system such that each customer class (residential and non-residential) results in approximate equal rates of return, or 9.74 percent.

Q. DOES THIS CONCLUDE YOUR UPDATES TO YOUR DIRECT TESTIMONY?

A. Yes, it does.

Rebuttal Testimony

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. In my rebuttal testimony, I will address the following:

1. The allocation of mains related cost and rate design proposed by Ms. Barbara A. Meisenheimer who is testifying on behalf of the Office of Public Counsel ("OPC").
2. The class cost of service study sponsored by Mr. James A. Busch of the OPC and his proposed customer charges.
3. The issues raised regarding my class cost of service study by Mr. Maurice Brubaker who is testifying on behalf of the Sedalia Industrial Energy Users Association ("SIEUA").
4. The class cost of service study and rate design proposed by Mr. Thomas M. Imhoff who is testifying on behalf of the Missouri Public Service Commission Staff ("Staff").

Q. HOW IS YOUR REBUTTAL TESTIMONY ORGANIZED?

A. My rebuttal testimony is organized into the following sections:

1. Class cost of service issues.
2. Rate design issues.

Q. DO YOU SPONSOR ANY SCHEDULES WITH YOUR REBUTTAL TESTIMONY?

A. Yes, I do. Included with my rebuttal testimony, I sponsor Schedule TJS-26 and TJS-27. These two schedules contain copies of my workpapers pertaining to certain allocation bases for the MPS and L&P systems,

respectively. I also sponsor Schedule TJS-28, which is an example of how Mr. Imhoff adjusts his cost of service study for customer charges.

Class Cost of Service

Q. WITH REGARD TO THE CLASS COST OF SERVICE STUDIES PREPARED ON BEHALF OF THE STAFF AND OPC, WHAT AREAS DO YOU ADDRESS IN YOU PREPARED REBUTTAL TESTIMONY?

A. I focus on two issues. Both of these issues concern the allocation of the cost related to mains. One issue relates to the use of an allocator based on 12 monthly coincident peaks (12 CP). Both the Staff and the OPC propose use of a 12 CP based allocation. The other issue relates to the adjustment made by OPC to reflect a "non-linear" relationship between the cost and capacity of mains. While there are other issues with which I might take exception, I limit my discussion to these two issues which appear to have the most significant effect on class cost of service results.

Q. CAN YOU PUT THE DIFFERENCE IN ALLOCATION RESULTS INTO PERSPECTIVE?

A. Yes, I can. First, the costs allocated based on the mains allocator represent the largest component of cost other than purchased gas cost. For example, in my cost of service study, of the total non-gas supply cost, approximately 43 percent and 45 percent are allocated on the basis of the mains allocator for MPS and L&P, respectively.

In the following table, I show the portion of mains allocated to the various customer classes, comparing the allocation basis used by Mr. Imhoff on behalf of the Staff, Mr. Busch on behalf of the OPC, and me.

Allocation of Transmission and Distribution Mains

	MPS North/South			L&P		
	TJS-23	Imhoff	Busch	TJS-17	Imhoff	Busch
Residential	65.23%	43.10%	38.64%	56.09%	57.99%	44.54%
General Service (1)	24.64%	21.29%	19.46%	31.42%	33.19%	31.98%
SV Transportation	0.05%	0.08%	0.09%	0.00%	0.00%	0.00%
LV Transportation	10.09%	35.53%	41.81%	12.49%	8.82%	23.48%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

(1) Includes General Service, Large Volume and Interruptible

Q. IN THE ABOVE TABLE, YOU SHOW THAT WITH THE EXCEPTION OF MR. IMHOFF'S L&P ALLOCATION, MR. IMHOFF AND MR. BUSCH ALLOCATE SUBSTANTIALLY MORE COSTS TO THE LARGE VOLUME TRANSPORTATION CLASS. IS THIS EXPECTED?

A. Yes, it is. Mr. Imhoff's L&P allocation amounts are less than mine due to a difference in the units of service he uses for the Large Volume Transportation class as compared with Mr. Busch and me.

Q. HOW DOES YOUR ALLOCATION BASIS DIFFER FROM THAT PROPOSED BY THE STAFF AND OPC?

A. I allocate mains based on consideration of the nature of the functional use of facilities, the nature of how facility costs are incurred, and how customers are reasonably responsible for the Company incurring such costs as discussed on Page 27 of my direct testimony. Both the Staff and OPC allocate mains cost using a 12 CP type allocator. I see no evidence that the Staff or OPC witnesses examined or considered the functional nature of the facilities being allocated or the nature of the costs incurred.

OPC adds a further dimension by attempting to recognize the non-linear relationship between the cost of mains and capacity. In my allocation approach, I recognize this non-linear relationship. However, as I will subsequently discuss, OPC witnesses have over simplified the nature of gas distribution systems and as a result have failed to reasonably recognize economies of scale that actually exist in delivery (distribution) systems.

Q. DO YOU HAVE ANY GENERAL OBSERVATIONS REGARDING THE ISSUE OF ALLOCATING THE COST OF MAINS IN THE CLASS COST OF SERVICE STUDY?

A. Yes, I do. More often than not, the fundamental issue with regard to the allocation of capacity-related cost is not with the allocation of the cost of capacity used by customers, but with the allocation of the cost associated with capacity that is unused for most of the year as a result of variations in customer loads during the year. This fundamental rule holds true in this case. The issue with regard to the 12 CP allocation basis used by the Staff and OPC witnesses relates to the allocation of costs associated with capacity that is unused for most of the year by virtue of the seasonal space heating load imposed on the system during a few winter months.

Q. DO YOU AGREE WITH THE 12 CP ALLOCATION BASIS RELIED ON BY BOTH THE STAFF AND OPC?

A. No, I do not. Conceptually, the 12 CP allocation approach makes no sense. It fails to recognize the nature of the costs being allocated. It allocates the cost of capacity which is unused during most of the year to customers who

use capacity during low load periods, not to the customers who create the need for capacity to meet winter peak requirements and then fail to utilize it throughout the balance of the year.

Q. DO THE STAFF AND OPC WITNESSES OFFER ANY JUSTIFICATION FOR THE USE OF THE 12 CP APPROACH?

A. Not specifically. Mr. Imhoff states on Page 3, Line 11 of his direct testimony, that "class cost responsibility can be either directly assigned or allocated to customer classes using reasonable methods for determining the class responsibility for that item of cost." He continues on Page 5, Line 18 stating "the value to the customer from the system occurs throughout the year, not just on the peak day. The allocation of the cost of mains should reflect the total value that customers derive from the service throughout the year."

The OPC witnesses do not specifically address the reasonableness of using 12 coincident peaks as an element of their proposed mains allocator, though Mr. Busch does state on Page 8, Line 10 that "all users benefit from the system and should share in the cost." He continues, "the basic idea (of his recommended allocation basis) is to identify the portion of the capacity that corresponds to each month's demand, and then allocate the costs that correspond to that capacity to the customers who use gas in that month that is their portion of the system is used." Ms. Meisenheimer at Page 3, Line 15 of her prepared direct testimony likewise notes that since all customers benefit from the system all should share in its cost.

From this testimony and the use of 12 CP based allocations, I must presume that the Staff and OPC witnesses conclude that class contributions to monthly peak demands represent a proxy for use throughout the year and use of the entire system.

Q. DO CLASS CONTRIBUTIONS TO MONTHLY PEAK PERIOD DEMANDS REPRESENT USE THROUGHOUT THE YEAR?

A. No, contributions to monthly peaks are only estimates of use on 12 days out of 365, or stated differently, one day per month for each of the 12 months of the year.

Q. DO THE STAFF AND OPC WITNESSES IDENTIFY WHY THESE 12 DAYS SHOULD BE SINGLED OUT FOR USE IN THE ALLOCATION?

A. No, they do not.

Q. WHY DO YOU REFER TO THESE MONTHLY PEAKS AS ESTIMATES?

A. The Company does not have metering equipment in place to meter most customers' usage on a daily basis. At best, the Company has metering equipment which allows the Company to determine the usage by customers between meter reading dates. Because the Company reads meters throughout the month, reported monthly usage represents usage for different periods for different customers and customer classes. This timing difference can be significant as a result of the timing of changes in weather conditions.

Q. IS THE COINCIDENTAL SYSTEM ANNUAL PEAK DEMAND THAT YOU USE TO ALLOCATE A PORTION OF MAINS COST ALSO ESTIMATED?

A. Yes, it is. However, the error in developing an estimate for system annual peak day use for gas distribution systems is relatively modest because of the very high correlation between space heating requirements and temperature. For most gas distributors, peak day use is driven by space heating requirements. By recognizing the requirements of various classes for space heating and other temperature sensitive load and by using reasonable and reliable approaches (primarily statistical), reasonable estimates of peak day use can be developed. Developing estimates of daily use for months when heating requirements are not extreme becomes increasingly speculative as a result of changes in load pattern from day to day especially during periods when heating may be utilized during certain portions of the day and not during others.

Q. DO YOU AGREE WITH MR. IMHOFF'S STATEMENT THAT CLASS COST RESPONSIBILITY CAN BE ALLOCATED TO CLASS USING REASONABLE METHODS?

A. Yes, I do. The issue is whether the selected method is reasonable. In my opinion, a 12 CP approach is not a reasonable method. In fact, application of the 12 CP approach as proposed by Staff clearly constitutes an assignment of costs to certain customers associated with facilities which are neither used nor useful to serve those customers.

Q. DO YOU AGREE WITH MR. IMHOFF'S STATEMENT THAT THE VALUE OCCURS THROUGHOUT THE YEAR?

A. Yes, I do. While I agree with Mr. Imhoff that "the value to the customer from the system occurs throughout the year", I would assume that Mr. Imhoff would agree with me that value is not the same on each day, or for that matter on each of the 12 monthly coincident peak days. As an example, the value to a residential customer during the system annual peak day, when the outside temperature falls below zero, is certainly greater than during the peak day in July when the temperature exceeds 100. Not only does value vary throughout the year, value differs from customer class to class.

Q. SHOULD VALUE PLAY A CONSIDERATION IN THE ALLOCATION OF COST?

A. No, it should not. The purpose of a properly structured cost of service study is to identify the costs associated with serving captive customers.

Q. CAN YOU DEMONSTRATE WHAT YOU CONSIDER TO BE THE UNREASONABLENESS OF MR. IMHOFF'S 12 CP ALLOCATION BASIS?

A. Yes, I can. Mr. Imhoff presents an interesting example on Page 4 of his prepared direct testimony. The annual rate of use of the two classes is identical. Thus on an annual basis, classes would share equally in the cost of a system capable of moving 100 MCF. However, due to the inefficient use of capacity by Class 2, the required system capacity amounts to 20 percent more than the capacity required to meet average annual requirements. During peak periods, Class 1 uses 50 MCF and Class 2 uses 70 MCF. The additional 20 MCF of capacity required has nothing to do with Class 1; this additional capacity is required solely to satisfy the requirements in excess of

average for Class 2. Assuming a linear relationship between cost and capacity, Mr. Imhoff would assign nearly 50 percent of the 20 percent increment in cost of capacity required solely to serve the Class 2 customers to Class 1 customers. Clearly, this is inequitable.

Q. ARE THERE ANY OTHER CONSIDERATIONS WITH REGARD TO THE 12 CP APPROACH?

A. Yes, there is. Whether a 12 CP or a single CP approach is followed, the implications of interruptible service need to be considered. Interruptible customers should expect to be interrupted from time to time in consideration of the lower quality of service received. Using a coincidental peak allocation, one normally expects that at the time of system peak, when the requirements of firm customers approach the design capacity of the system, interruptible service will be curtailed. In the event interruptible service is not curtailed, coincidental demands may need to be adjusted to consider the non-firm nature of the interruptible service.

On the other hand, one does not expect that during most months interruptible service will be curtailed. Thus, implicit in the 12 CP approach is the assumption that interruptible service will be allocated a significant portion of the capacity increment required to serve seasonal loads.

Q. IN YOUR DISCUSSION REGARDING INTERRUPTIBLE SERVICE, DOESN'T ELIMINATING INTERRUPTIBLE CUSTOMERS' CONTRIBUTION TO PEAK DEMAND RESULT IN ASSIGNING NO COST RESPONSIBILITY TO INTERRUPTIBLE CUSTOMERS?

A. No, that is not the intent. A variety of approaches can be relied on in order to allocate a reasonable level of capacity cost to interruptible customers so as to recognize their "partial" use of the system. In my class cost of service study, I have done so by allocating a portion of the cost of higher capacity mains on the basis of annual deliveries.

Q. DOES THIS CONCLUDE YOUR PREPARED REBUTTAL TESTIMONY CONCERNING THE 12 CP ALLOCATION METHOD?

A. Yes, it does.

Q. WITH REGARD TO THE SECOND ISSUE, RECOGNITION OF THE NON-LINEAR RELATIONSHIP BETWEEN COST AND CAPACITY, DO YOU CHALLENGE THE CONCEPT THAT A NON-LINEAR RELATIONSHIP EXISTS?

A. No, I do not. In fact, my allocation of <u>all</u> distribution system costs recognizes a non-linear relationship. The issue is not the presence or absence of a non-linear relationship, the problem is with the way that OPC has attempted to recognize it. The OPC witnesses have over simplified the relationship of capacity and cost for natural gas distribution systems.

Q. HOW DO YOU REFLECT A NON-LINEAR RELATIONSHIP BETWEEN COST AND CAPACITY IN YOUR ALLOCATION OF DISTRIBUTION COSTS?

A. Attached as Schedules TJS-26 and TJS-27 are pages from my workpapers which outline my development of various factors relating to my allocation of mains, services, meters, and regulators. Based on my understanding of the

testimony of the Staff and OPC witnesses, both the staff and OPC accepted the development set forth in Schedules TJS-26 and TJS-27 for the allocation of services, meters, and regulators.

With regard to services, meters, and regulators I develop weighting factors which recognize the relative cost level by class. I recognize the non-linear relationship by developing cost relationships based on the size of facility required to serve the various classes and then rely on the reported cost for each of the various sizes. This matching results in recognition of the non-linear relationship as it specifically exists on the Company's system.

With regard to mains, I go through a two step process. I first identify the cost associated with mains which serve a transmission function and allocate costs associated with those mains on the basis of an equal weighting of peak day deliveries and annual deliveries. By so doing, I have allocated a portion of cost to all customers, regardless of their contribution to peak. Again, I identify higher capacity mains based on the costs of capacity that specifically exist in the Company's system.

For the remaining mains which serve a distribution function, I then determine the investment cost relating to capacity. I do this, recognizing economies of scale, by assigning to the capacity component the lowest average unit cost of capacity associated with those distribution mains. I have therefore determined the capacity component recognizing the economies of scale referred to by Ms. Meisenheimer. The remainder of the distribution

investment is split between customer related and annual delivery components.

Q. HOW HAVE THE OPC WITNESSES OVER SIMPLIFIED GAS DISTRIBUTION SYSTEMS?

While the approach used by OPC may be reasonable when applied to a single element of a system used by all customers, it fails to recognize that gas distribution systems consist of a number of elements. One of the characteristics of these elements is that the pipeline system tends to reduce in size (and capacity) as one moves downstream. This is due to the use of capacity (the delivery of gas to customers) as gas flows through the pipeline. Thus the unit cost of capacity tends to increase as one moves downstream.

For gas distribution systems this increase in unit cost relates to two elements. First, gas moves away from sections operating at a higher pressure to sections operating at a lower pressure. Pipe diameter and pressure tend to reduce as capacity requirements are reduced due to the delivery of gas to customers upstream. Both of these features can contribute to higher unit cost as one moves downstream.

Q. HOW DOES THE FLOW OF GAS FROM HIGHER TO LOWER PRESSURE BEAR ON THE ISSUE OF THE ALLOCATION OF MAINS?

A. As Ms. Meisenheimer states, “with other factors held constant, a 4 inch pipe has a flow capacity of about 6 times that of a 2 inch.” All factors are not necessarily equal. Based on pipeline flow formulae, capacity of a pipeline segment generally changes in proportion to the inside diameter of the pipe

raised to the 2.5 power, the square-root of the difference in the inlet and outlet pressures squared, and inversely proportional to the square root of the length. A complicating factor is that safety margins for pipe operating in certain areas (one criteria being housing density) are more stringent (See Title 49, Code of Federal Regulations).

While these various factors might be considered in connection with the development of a proper allocation basis, it is OPC's failure to recognize the increasing unit cost as one moves downstream which bears on the reasonableness of OPC's approach. The fact of the matter is that larger use customers can not be served through smaller capacity facilities (smaller diameter and lower pressure). Large customers directly use, or share in the use of higher capacity facilities with smaller use customers. The unit cost of capacity of these higher capacity facilities is less than the unit cost of low capacity lines. OPC's approach fails to make this distinction. While the OPC witnesses attempt to capture the economies of scale, they have done so on a system-wide basis. They have included in the cost of capacity, small diameter pipe which does not have the physical capability to serve large customers. In short, this small diameter pipe is not used and useful in providing service to large volume customers.

Q. DOES THE 12 CP APPROACH USED BY STAFF RECOGNIZE THAT SMALL DIAMETER PIPE IS INCAPABLE OF SERVING LARGE VOLUME CUSTOMERS?

A. No, it does not.

Q. WHAT IS THE IMPACT ON THE VARIOUS CUSTOMER CLASSES IN THE CLASS COST OF SERVICE STUDIES ATTRIBUTABLE TO USE OF A 12 CP ALLOCATION BASIS AND THE APROACH USED BY OPC?

A. As I demonstrated earlier in my rebuttal testimony, the allocation bases relied on by Staff and OPC result in a major shift in cost to higher volume, higher load factor customers. The magnitude of this shift would result in the need to further discount rates for service to certain customers due to competitive factors. I find the approaches proposed by Staff not only unfair and unreasonable and not based on consideration of the costs and facilities being allocated, but unworkable as well.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY REGARDING CLASS COST OF SERVICE ISSUES?

A. Yes, it does.

Rate Design Issues

Q. PLEASE OUTLINE YOUR TESTIMONY WITH REGARDS TO RATE DESIGN ISSUES:

A. I will address the following:

1. Rate design issues raised by Mr. Brubaker with regards to the non-residential customers.
2. Rate design recommendations of Ms. Meisenheimer.
3. Customer charge rates recommended by Mr. Imhoff.
4. Margin rate design recommendations of Mr. Imhoff.

Q. ON PAGE 5, LINES 8 THROUGH 13 OF HIS DIRECT TESTIMONY, MR. BRUBAKER CLAIMS THAT YOUR COST OF SERVICE STUDY SHOWS THAT "THE PROPOSED INCREASE FOR THE LARGE TRANSPORTATION CUSTOMERS IS NEARLY FOUR TIMES WHAT IS JUSTIFIED BY AQUILA'S OWN COST OF SERVICE STUDY". HE FURTHER STATES THAT "THIS SPECIFIC RESULT IS NOT EVEN DISCUSSED IN MPS TESTIMONY." DO YOU AGREE WITH THIS CHARACTERIZATION?

A. No, I do not. I specifically address this issue beginning on Page 37, Line 17 of my direct testimony when I state that "energy charges recognize the relative difference in cost of service of the three groups of customers (Small Commercial, Small Volume, and Large Volume) relative to each other and the Residential class and the overall cost of service of the non-residential customer classes such that the Company earns its requested rate of return of

9.74 percent from this group. Another consideration in the design of the Small Volume and Large Volume rates was to mitigate the magnitude (either up or down) of the impact of the proposed rates."

Further, on Page 1 of Schedule TJS-14, I show that the rate of return under proposed rates for the non-residential group equals the overall requested rate of return of 9.74 percent. Mr. Brubaker confirms this result on Page 4,Lines 9 and 10 of his testimony where he states: "I would note that as between the Residential class and all other sales MPS has, appropriately, followed the results of Mr. Sullivan's cost of service study."

Q. WHAT DID YOU MEAN BY SAYING THAT THE ENERGY CHARGES RECOGNIZE THE RELATIVE DIFFERENCES IN COST OF SERVICE BETWEEN THE SMALL COMMERCIAL, SMALL VOLUME, AND LARGE VOLUME CUSTOMERS?

A. First, the energy charges for comparable sales and transportation services should be the same. In other words, the energy charges for Large Volume Firm (sales service) and Large Volume Transportation should be the same and the energy charges for the Small Volume Firm (sales service) and Small Volume should be the same. There is no difference in the cost of distribution facilities between a comparable customer who takes sales service and one who takes transportation service. A customer who takes small volume firm service can take small volume transportation service, or visa versa. The same holds true for the large volume service. In fact, customers frequently migrate between sales and transportation service. This potential for migration

between sales and transportation service is sufficient justification for charging the same rate.

Second, rates should generally recognize that the unit cost to serve larger customers is generally lower than the cost to serve smaller customers. This is primarily attributable to the fact the larger customers generally only use the larger diameter mains which are used much more efficiently and have a much lower unit cost per volume of throughput than the small diameter mains used to serve residential and small commercial customers. In addition, my cost of service study demonstrates that the distribution charge for general service should be less than the distribution charge for residential service.

In order to explicitly recognize these relative cost considerations, I evaluate cost levels in my cost of service study for non-residential customers as a group rather than by individual rate classes.

Q. WHAT WERE YOUR PRIMARY CONCERNS WITH REGARD TO MITIGATING THE MAGNITUDE OF THE PROPOSED INCREASES OR DECREASES?

A. My primary concern was to develop rates that are relatively stable and don't go up and down as customers' service or usage characteristics change over time. In order to achieve this, rates cannot be designed in a vacuum as Mr. Brubaker proposes. In developing the rates I am proposing, I created a new small volume sales service to parallel the small volume transportation service.

Under the existing rates, the rates charged to small volume sales and transportation customers significantly exceed cost of service as accurately

noted on Page 3, Line 16 of Mr. Brubaker's testimony. I do not believe it is reasonable to reduce the rate to these small volume customers by the magnitude suggested by my cost of service study while customers served under other rates see significant increases. Further, I do not believe it reasonable for the small general service customers to be paying a distribution charge higher than the residential distribution charge.

Q. IS THERE ANOTHER REASON WHY YOU EVALUATED THE COST OF SERVICE OF THE NON-RESIDENTIAL CUSTOMERS AS A GROUP RATHER THAN AS INDIVIDUAL CLASSES?

A. Yes, there is only one customer currently taking service under the large volume sales service and only one customer currently taking service under the small volume transportation service. There are only a relatively small number of customers who take large volume transportation service (approximately 25). Further the larger large volume transportation customer takes service under a special contract rate. These factors further support my rationale for looking at the non-residential customers as a group. To do otherwise would result in "cost based" rates that would be unstable, increasing or decreasing as customers migrate from one service to another or as large customers are added or removed from the group.

Q. DOES MR. BRUBAKER DISCUSS RATES FOR THE SMALL GENERAL SERVICE CUSTOMER?

A. Yes, on Page 5, Lines 5 through 7, he states: "the increase to the General Service class was not held down due to rate impact considerations."

Q. IS THIS STATEMENT ACCURATE?

A. No, it is not. As I stated above, the increase to the general service class was designed so that the distribution charge would be less than the distribution charge for residential service. Whether one calls this a cost of service consideration or a rate impact consideration is simply "wordsmithing". The rates for the small general service customers were a significant consideration in meeting my stated objectives of recognizing the relative cost of service and mitigating rate impact.

Q. WHAT RATE DESIGN RECOMMENDATIONS DOES MS. MEISENHEIMER MAKE ON BEHALF OF THE OPC?

A. Ms. Meisenheimer makes no specific rate recommendations. However, she presents results of her class revenue requirements based on OPC's "usual" rate design methodology. At Page 6, Line 20, she offers the following:

> "If the Commission determines that an increase in district revenue requirement is necessary, then no customer class within the district should receive a net decrease as the combined result of: 1) the revenue neutral shift that is applied to that class, and 2) the share of the total revenue increase that is applied to that class."

Ms. Meisenheimer's application of this methodology to the OPC's recommended revenue requirement is summarized in Table 1 (Page 11 of her prepared direct testimony), which recommends certain percentage increases by customer class but not rates by rate schedule.

Q. ARE MS. MEISENHEIMER'S RECOMMENDATIONS REASONABLE?

A. No, they are not. Her recommendations are based on a flawed class cost of service study. This study cannot be relied upon as a reasonable basis to develop rates as discussed earlier in my rebuttal testimony.

Further, the rate changes she is recommending are disruptive. The magnitude of the increases she is recommending for the MPS transportation class and L&P interruptible class are so large that, on the surface, one must seriously question the analyses upon which these figures are based.

Q. BEGINNING ON PAGE 16 OF HIS PREPARED DIRECT TESTIMONY, MR. IMHOFF LISTS A NUMBER OF RECOMMENDATIONS REGARDING CUSTOMER CHARGES. DO YOU AGREE WITH HIS RECOMMENDATIONS?

A. Some yes and some no. His recommendations with regard to the L&P General Service, L&P Large Service, MPS Small Volume Transportation, and L&P Small Volume Transportation rate classes are the same as mine.

His recommendation with regards to the L&P Large Service class (which I assume is the same as the Large Volume Firm rate) makes little sense in light of his recommendation for the L&P Small Volume Transportation rate. I am proposing the same $200 per month customer charge for all large volume customers on the L&P system. Mr. Imhoff provides no explanation as to why the customer charge for Large Volume Firm service should be different than the customer charge for Large Volume Transportation service.

His recommendations for the Residential and General Service classes appear to be based on the results of his cost of service study. However, it appears that he has adjusted the results of his cost of service study to justify either no change or small changes to the existing customer charge levels.

Q. PLEASE EXPLAIN HOW MR. IMHOFF ADJUSTS HIS COST OF SERVICE STUDY FOR CUSTOMER CHARGES.

A. Mr. Imhoff develops a separate analysis to calculate his recommended customer charges that excludes certain costs that he included in his cost of service study. As an example, Schedule TJS-28 compares the portion of service line costs that Mr. Imhoff includes in his calculation of recommended customer charges with the functionalized service line costs from his MPS-North/South cost of service study. Mr. Imhoff assigns $2.9 million of costs to the service line function; however he only includes $1.9 million in his calculation of customer charge.

Q. PLEASE EXPLAIN HOW THE EXCLUSION OF CERTAIN COSTS AFFECT MR. IMHOFF'S RECOMMENDED CUSTOMER CHARGE FOR THE RESIDENTIAL AND GENERAL SERVICE CLASSES.

A. If Mr. Imhoff were to rely upon the all of the costs that are included in his cost of service study, residential customer related costs are $11.68 per bill, rather than $7.03 per bill as calculated from his supplemental analysis. The general service customer related costs are $27.69 per bill, rather than $15.56 per bill. These charges per bill are more in line with my recommendations. By excluding certain costs, it almost appears as though Mr. Imhoff was trying to

develop an analysis to support his customer charge recommendations rather than basing the customer charges on cost.

Q. DOES MR. IMHOFF MAKE ANY OTHER RECOMMENDATIONS WITH REGARDS TO RATES?

A. Yes. On Page 12, Lines 14 through 16 of his Direct Testimony, Mr. Imhoff states: "Staff recommends an equal percentage increase in class revenues for the remaining classes for revenue collected from margin rates."

Q. DOES MR. IMHOFF PROVIDE ANY RATES THAT ARE BASED ON THIS RECOMMENDATION?

A. No, he does not.

Q. DO YOU AGREE WITH MR. IMHOFF'S RECOMMENDATION WITH REGARDS TO MARGIN RATES?

A. In general, I do not. However, since Mr. Imhoff has not actually provided any rates, it is difficult to know what his recommendation actually is.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY REGARDING RATE DESIGN ISSUES?

A. Yes, it does.