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Cost of Service
Meisenheimer/Rebuttal
Public Counsel
EO-2002-384

REBUTTAL TESTIMONY

OF

BARBARA A. MEISENHEIMER

Submitted on Behalf of the Office of the Public Counsel

AQUILA, INC.

CASE NO. EO-2002-384

October 14, 2005

**BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI**

In the Matter of an Examination of Class Cost of)
Service and Rate Design in the Missouri)
Jurisdictional Electric Service Operations of)
Aquila, Inc., Formerly Known as UtiliCorp United)
Inc.)

Case No. EO-2002-384

AFFIDAVIT OF BARBARA A. MEISENHEIMER

STATE OF MISSOURI

) ss

COUNTY OF COLE

Barbara A. Meisenheimer, of lawful age and being first duly sworn, deposes and states:

1. My name is Barbara A. Meisenheimer. I am Chief Utility Economist for the Office of the Public Counsel.
2. Attached hereto and made a part hereof for all purposes is my rebuttal testimony consisting of pages 1 through 10 and schedules.
3. I hereby swear and affirm that my statements contained in the attached testimony are true and correct to the best of my knowledge and belief.




Barbara A. Meisenheimer

Subscribed and sworn to me this 14th day of October 2005.



JERENE A. BUCKMAN
My Commission Expires
August 10, 2009
Cole County
Commission #05754036



Jerene A. Buckman
Notary Public

My Commission expires August 10, 2009.

**REBUTTAL TESTIMONY
OF
BARBARAMEISENHEIMER**

AQUILA INC.

CASE NO. EO-2002-0384

1 **Q. PLEASE STATE YOUR NAME, TITLE, AND BUSINESS ADDRESS.**

2 A. Barbara A. Meisenheimer, Chief Utility Economist, Office of the Public Counsel,
3 P. O. 2230, Jefferson City, Missouri 65102.

4 **Q. HAVE YOU TESTIFIED PREVIOUSLY IN THIS CASE?**

5 A. Yes, I submitted direct testimony on cost of service and rate design issues on
6 September 19, 2005.

7 **Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?**

8 A. The purpose of my rebuttal testimony is to present Public Counsel's updated class
9 cost of service (CCOS) study result and Public Counsel's response to the cost of
10 services studies provided by Aquila Inc. (Aquila or the Company), the Public
11 Service Commission Staff (Staff) and the testimony of Brubaker & Associates
12 filed on behalf of Ag. Processing Inc., the Federal Executive Agencies and the
13 Sedalia Industrial Energy Users' Association (Industrials).

1 **Q. IN PREPARATION OF YOUR TESTIMONY, WHAT MATERIALS DID YOU REVIEW?**

2 A. I have reviewed the direct testimony of David Stowe filed on behalf of Aquila, the
3 direct testimony of James Busch, Janice Pyatte, and James Watkins filed on behalf
4 of the Staff, and the direct testimony of Maurice Brubaker filed on behalf of the
5 Industrials.

6 **I. CLASS COST OF SERVICE STUDY AND RATE DESIGN EXAMPLES**

7
8 **Q. HAVE YOU UPDATED YOUR CLASS COST STUDY?**

9 A. Yes. I made four changes to the CCOS studies. The first change adjusts the tax
10 dollars used in my studies to match those previously agreed to by the Staff and the
11 Company. The second corrects an error in the allocator used to assign non-rate
12 revenues. The third change allocates intangible plant based on gross plant to
13 match the allocator used by the other parties. This change has an insignificant
14 impact on the CCOS study results and I agreed to make the change to narrow the
15 issues before the Commission. The final change allocates installations on
16 customer premise according to weighted customers. I made this change based on
17 discussions with the Company regarding class installations.

18 The updated CCOS study results are in Schedule BAM REB MPS, on
19 Page 1 and in Schedule BAM REB LP on Page 1. The changes affected the
20 CCOS study results. The summaries of the revised study results and rate design
21 examples are in Schedule BAM REB MPS and Schedule BAM REB LP.
22 Schedule BAM REB MPS, Page 1, and Schedule BAM REB LP, Page 1, are
23 based on the assumption that Company's total revenues remain constant. Line 13

of each schedule shows the current revenue percentage by class. Line 15 of each schedule shows the class revenue percentage assuming equalized rates of return. For MPS, the result shows that the Residential class is just above cost. The SGS and LGS classes are above cost by a greater amount ranging from approximately 1/2% to over 3%. The SC and LP classes, on the other hand, are well below cost of service at approximately 9% (SC) and 23% (LP). For the L&P system, the Residential class is about 1% below cost while the SGS and LGS classes are significantly above cost at approximately 17% for SGS and 5% for LGS. The LP class is below cost of service by over 8%.

The tables below summarize each class's current percent of revenue as well as the amount and percentage change from current revenues required to equalize the rates of return.

Table 1. CCOS Results Aquila Systems -MPS

	Residential	SGS	LGS	LPS	SC
Class Revenue %	53.18%	16.83%	13.81%	16.00%	0.18%
Revenue Neutral Shift	(\$352,310)	(\$2,978,263)	(\$1,517,050)	\$4,714,387	\$133,235
% Change	-0.20%	-5.45%	-3.38%	9.07%	23.15%

Table 2. CCOS Results Aquila Systems -LP

	Residential	SGS	LGS	LPS
Class Revenue %	46.02%	8.45%	19.83%	25.70%
Revenue Neutral Shift	\$294,102	(\$1,333,277)	(\$948,679)	\$1,987,854
% Change	0.70%	-17.26%	-5.23%	8.45%

Q. DID YOU PROVIDE UPDATED EXAMPLES OF THE RATE DESIGN METHOD YOU DESCRIBED IN YOUR DIRECT TESTIMONY?

A. Yes. Schedule BAM Direct MPS Page 2 and Schedule BAM Direct LP Page 2 illustrate the general rate design method I recommended in direct testimony. Generally, I recommended that the Commission adopt a rate design that balances movement toward cost of service with rate impact and affordability considerations. Here we have a case where the existing revenue structure departs greatly from the class cost of service. To reach the balance I recommended that the Commission, at a maximum, impose class revenue shifts equal to one half of the “revenue neutral shifts” indicated by Public Counsel’s Class Cost of Service studies. Revenue neutral shifts are shifts that hold overall company revenue at the existing level but allow for the share attributed to each class to be adjusted to reflect the cost responsibility of the class. In addition to moving half way to the revenue neutral shifts, I recommended that if the Commission determines that an overall increase in revenue requirement is necessary in ER-2005-0436, then no customer class should receive a net decrease

1 as the combined result of: (1) the revenue neutral shift that is applied to that class,
2 and (2) the share of the total revenue increase that is applied to that class.
3 Likewise, if the Commission determines that an overall decrease in revenue
4 requirement is necessary, then no customer class should receive a net increase as
5 the combined result of: (1) the revenue neutral shift that is applied to that class,
6 and (2) the share of the total revenue decrease that is applied to that class.

7 Line 9 on Page 2 of Schedule BAM Direct MPS and Schedule BAM
8 Direct LP show half the revenue neutral shifts indicated by my updated CCOS
9 study. On each schedule lines 13 to 32 show examples of the combined impact of
10 spreading among the classes either an increase or a decrease in revenue
11 requirement and half the revenue neutral shift indicated by my CCOS studies.
12 Line 26 shows the adjustment that insures that no class either receives an increase
13 when others are receiving a decrease or receives a decrease when others receive an
14 increase. This method promotes movement toward cost of service while avoiding
15 unnecessary adverse impacts on any particular customer class.

16 17 **II. COMPARISON OF CLASS COST OF SERVICE STUDIES**

18 **Q. PLEASE COMPARE THE RESULTS OF THE PARTIES' CLASS COST STUDIES.**

19 A. Table 1 and Table 2 provide a comparison by district of each party's revenue
20 neutral increase or decrease as a percentage of Staff's current revenue.
21
22

Table 1. L&P Comparison of Revenue Neutral
Rate Revenue Increase/Decrease Percentages

	RES	SGS	LGS	LPS	Lights
OPC	0.72%	-17.60%	-5.35%	8.68%	
Staff	7.71%	-15.93%	-9.89%	2.76%	-37.51%
Aquila	6.90%	-12.36%	-7.67%	-1.49%	-8.81%
Industrials	12.14%	-12.04%	-12.69%	-7.98%	

Table 2. MPS Comparison of Revenue Neutral
Rate Revenue Increase/Decrease Percentages

	RES	SGS	LGS	LPS	Lights	Modine Therm
OPC	-0.21%	-5.53%	-3.43%	9.23%		23.62%
Staff	3.16%	-3.49%	-7.84%	2.78%	-29.64%	13.21%
Aquila	8.22%	-9.66%	-14.91%	-6.86%	24.45%	7.82%
Industrials	8.95%	-9.78%	-13.97%	-7.46%		*15.45%

*The Industrials percentage is for Modine only.

Staff's results are from page 17 of the direct testimony of James Busch. The Industrials' results appear in Schedule 5 of the direct testimony of Maurice Brubaker. Aquila's results were derived by grouping the revenue neutral adjustments shown on Schedule DLS-3 and Schedule DLS-7 of David Stowe's direct testimony into the classes used by Staff and then dividing those totals by Staff's reported class rate revenues. The OPC results appear slightly different than those presented earlier in my testimony because the percentages shown earlier in my testimony were based on rate revenues provided by the Company instead of the Staff's reported class rate revenues I used for this comparison.

1 **Q. WHAT ARE THE PRIMARY FACTORS THAT CAUSED DIFFERENCES IN THE**
2 **PARTIES' RESULTS?**

3 A. I believe that there are two primary factors that contribute to the differences in the
4 parties' study results: (1) the classification and allocation of distribution plant
5 costs (other than services and meters) and (2) the allocation of production and
6 transmission plant costs.

7 **Q. PLEASE PROVIDE THE DIFFERENCES IN THE CLASSIFICATION AND ALLOCATION**
8 **OF DISTRIBUTION PLANT COSTS.**

9 A. All the parties that prepared a CCOS study, including OPC, functionalized
10 distribution costs in Accounts 364 (Poles Towers and Fixtures), 365 (Overhead
11 Conductors & Devices), 366 (Underground Conduit) and 367 (Underground
12 Conductors & Devices) in a manner that recognizes a distinction between primary
13 and secondary voltage. All parties, except OPC, then classified both primary and
14 secondary distribution as having a customer related component as well as a
15 demand related component. I also allocated secondary distribution based on both
16 a customer and demand component, but I allocated primary distribution based
17 only on demand.

18 **Q. WHY CAN THE SECONDARY DISTRIBUTION PORTIONS OF ACCOUNTS 364-367 BE**
19 **CONSIDERED AS CUSTOMER RELATED AND DEMAND RELATED WHILE PRIMARY**
20 **DISTRIBUTION SHOULD BE CONSIDERED AS DEMAND RELATED?**

21 A. The distribution plant associated with Accounts 364-367 include facilities such as
22 conductors, poles and conduits. Generally, these facilities are jointly used so that
23 the more removed from the customer and the more flexible these facilities are, the

1 less appropriate it is characterize the associated cost as customer related. To be
2 “customer related,” the cost should vary directly with the number of customers. I
3 believe that there are a number of reasons that a portion of the cost of facilities
4 serving at secondary voltage could reasonably be classified as customer related
5 while facilities serving at primary voltage are not. First, from a network
6 perspective, most residential and business customers receive electricity from
7 secondary distribution lines. Therefore, these facilities are most closely linked to
8 customers and are less likely to have flexibility in alternative service
9 arrangements. Next, secondary, defined as service provided at lower voltage is,
10 therefore, less able to accommodate a large number of users. I have seen a number
11 of regression models that suggest a correlation between customer density and cost.
12 Sometimes the link between distribution facilities cost and customer numbers is
13 overstated. A common practice in performing class COS studies is to utilize
14 customer numbers weighted by customer densities to allocate certain categories of
15 costs. However, the existence of the customer itself is not evidence of cost
16 causation for most of the distribution facilities and there may be very little
17 correlation between distribution cost and customer numbers:

18 “Many electric utility cost analysts allocate substantial portions of
19 distribution investment and costs to the consumer function. The
20 allocations are based on a theory of a minimum system to serve
21 nominal load. The theory assumes that these costs vary directly
22 with the number of consumers served. This “phantom” system
23 concept ignores density factors and rests on the supposition of a
24 system that would not be built and that, in fact, would serve little
25 purpose were it built. We have never seen a study that showed a
26 direct correlation of unit costs with consumer growth on an electric
27 distribution system. Our regression analyses prove that the
28 “phantom” system concept is not correct and that distribution cost
29 changes are caused by many factors.”

30 Davis J. Lessels, *Public Utilities Fortnightly*, Vol. 106 (#12), 37 at
31 39 (1980)

1 When a new customer is connected to the system, both the number of
2 customers and the customer density changes. However, the system may or may
3 not need any new poles, conduits, conductors or transformers. In other words,
4 within the service area of the Company, the addition of a new customer will not
5 necessarily cause new investment in poles, conduits, conductors or transformers.
6 However, there are numerous combinations of different numbers of customers
7 that may produce the same resultant demand. I believe that the projected level of
8 demand is the primary driver of costs.

9 **Q. IS THERE EVIDENCE THAT DISTRIBUTION COSTS IN ACCOUNT NOS. 364-367 MAY**
10 **NOT BE DIRECTLY CORRELATED WITH CUSTOMER NUMBERS?**

11 A. Yes. As supported by David Lessels, a former chief of the Electric Rates Branch
12 of the Rural Electrification Administration, in an investigation into the
13 relationship between distribution investment costs for electric cooperatives and
14 the number of customers:

15 “Year-round farm and residential consumers on the rural distribution
16 systems comprise more than 85 percent of the total consumer population.
17 Regression analyses were done, using as independent variables: change in
18 year-round farm and residential consumers, change in irrigation customers,
19 and change in all other consumers. Distribution plant per consumer was
20 consistently found to be inversely correlated with change in year-round
21 farm and residential consumers. There were positive correlations with
22 changes in irrigation consumers and unit size of distribution plant. For all
23 other consumers the correlation were not consistent and significance level
24 were often low.”

25 Lessels, supra, 38

1 **Q. WHAT WOULD BE THE IMPACT OF ALLOCATING DISTRIBUTION COSTS TOO**
2 **HEAVILY ON THE BASIS OF WEIGHTED OR UNWEIGHTED CUSTOMER NUMBERS?**

3 A. The results of such allocations of distribution costs would be to place an unfair
4 and unjustified burden on the smaller consumers, resulting in subsidies among
5 classes and within classes. All customers who have characteristically low usage
6 would be harmed by this process, especially low-use residential customers. In
7 fact, many cost analysts agree that classification by the minimum-size system
8 method results in a double allocation of costs to low usage customers. This same
9 problem is also inherent in any other technique, including the minimum-intercept
10 method, which seeks to split the distribution investment into portions which
11 depend separately upon demand and numbers of customers.

12 **Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

13 A. Yes.