Aquila Networks
Class Cost of Service and Rate Design
EO-2002-384

Direct Testimony
of
Barbara Meisenheimer

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

A. Barbara A. Meisenheimer, Chief Utility Economist, Office of the Public Counsel, P. O. 2230, Jefferson City, Missouri 65102. I am also an adjunct instructor for William Woods University.

Q. PLEASE SUMMARIZE YOUR EDUCATIONAL AND EMPLOYMENT BACKGROUND.

A. I hold a Bachelor of Science degree in Mathematics from the University of Missouri-Columbia (UMC) and have completed the comprehensive exams for a Ph.D. in Economics from the same institution. My two fields of study are Quantitative Economics and Industrial Organization. My outside field of study is Statistics. I have taught economics courses for the University of Missouri-Columbia, William Woods University, and Lincoln University, mathematics for the University of Missouri-Columbia and statistics for William Woods University.

Q. HAVE YOU TESTIFIED PREVIOUSLY BEFORE THIS COMMISSION?

A. Yes, I have testified on numerous issues before the Missouri Public Service Commission. (PSC or Commission).

Q. WHAT IS THE PURPOSE OF THIS CASE?

A. This case was established as a result of the Stipulation and Agreement in ER-2002-672 that addressed UtiliCorp United, Inc.'s Missouri Public Service (MPS) service area. The purpose was to examine class cost of service and rate design. Aquila is the name under which UtiliCorp United now operates. St. Joseph Light and Power Company (L&P) was purchased subsequent to the Stipulation and Agreement in ER-2002-672, however, the cost of service and rate design are being examined in this case.

Q. WHAT IS YOUR PREVIOUS EXPERIENCE IN THE PREPARATION OF CLASS COST OF SERVICE STUDIES?

A. I have prepared and supervised the preparation of cost of service studies on behalf of Public Counsel for over eight years. These include class cost of service studies related to natural gas, water and electric utilities, and services cost studies related to telecommunications carriers.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my direct testimony is to present Public Counsel's Class Cost of Service (CCOS) study results and preliminary inter-class class rate design recommendations. My CCOS study results are provided in Schedule BAM Direct MPS Page 1 and Schedule BAM Direct LP Page 1. Illustrative rate design examples are provided in Schedule BAM Direct MPS Page 2 and Schedule BAM Direct LP Page 2. I would like to point out that the illustrative rate design examples are based solely on the cost developed in this case. Other considerations related to setting just and reasonable rates are discussed later in this testimony.

I. CLASS COST OF SERVICE STUDY

Q. WHAT IS THE MAIN PURPOSE OF PERFORMING A CCOS STUDY?

A. The primary purpose of a CCOS study is to determine the relative class cost responsibility for each customer class by allocating costs among the classes based on principles of cost causation. CCOS study results also provide guidance for determining how rates (e.g., customer charges) should be designed to collect revenues from customers within a class, depending on customer usage levels and patterns of use.

Q. WHAT IS THE RELATIVE IMPORTANCE OF CCOS STUDY RESULTS IN DEVELOPING RATE DESIGN?

A. CCOS study results provide the Commission with a general guide in setting the just and reasonable rate for the provision of service based on costs. In addition, other factors are also relevant considerations when setting rates including the value of a service, affordability, rate impact, rate continuity, etc. A determination as to the particular manner in which the results of a cost of service study and all the other factors are balanced in setting rates can only be determined on a case-by-case basis.

Q. PLEASE OUTLINE THE BASIC ELEMENTS OF PREPARING A CCOS STUDY.

A. A CCOS Study is designed to functionalize, classify, and allocate costs.

Functionalizing costs involves categorizing accounts by the type of electric utility function(s) with which each account is associated. The categories of accounts include Production, Transmission, Distribution, Customer Accounts, Administrative and General, etc.

The next step is to classify costs as customer related, demand related, commodity related, or "other" costs. Customer related costs vary in relation to the number of customers. Demand related costs vary with usage during different periods such as peak and average load periods. Commodity related costs vary with annual energy consumption. For example, the cost associated with customer records and collection expense, meter plant, and meter reading expense are considered to be customer-related because they vary primarily based on the number of customers served and might occur whether or not the customer uses any electricity.

The final step in the CCOS is to develop and apply allocation factors that apportion a reasonable share of jurisdictional costs to each customer class. Allocation factors should be developed in a manner that is consistent with the functionalization and classification of costs described above. For example, unweighted customer related cost allocation factors are expressed as ratios that reflect the proportion of customers in a particular class to the total number of customers that contribute to the causation of the relevant cost. Likewise, demand related allocators should reflect each class's use during specific time periods and commodity related allocators should reflect each class's annual consumption. In simpler terms, if the cost for a particular activity were thought of as a pie, then allocators would represent the size of the slices of "cost" pie that each class would be assigned.

Q. WHICH CUSTOMER CLASSES ARE USED IN YOUR CCOS STUDY?

A. For Aquila's MPS system, I used a Residential Class (RG), a Small General Service Class (SGS), a Large General Service Class (LGS), a Large Power Service Class (LPS), and a Special Contract Class (SC). For Aquila's L&P

system, I used a Residential Class (RG), a Small General Service Class (SGS), a Large General Service Class (LGS), and a Large Power Service Class (LPS). Both studies exclude Lighting as a class. I have allocated both direct cost and revenues associated with Lighting to the other classes in proportion to overall cost of service.

Q. ON WHAT DATA ARE YOUR CCOS STUDIES BASED?

A. My CCOS study is based on common data agreed upon by the Company and Staff including data related to investments, expenses and revenues, peak demand, customer counts and energy use.

Q. HOW IS INTANGIBLE PLANT ALLOCATED?

A. Intangible Plant (FERC Account No. 301) pertains to organization cost. It includes all fees paid to federal or state governments for the privilege of incorporation along with related expenditures. It should be allocated to each customer class according to the benefits each receives from the existence of this business, or according to the extent to which each class contributes to the overall cost of conducting the business. Therefore, my method applies a composite total cost of service allocator to Intangible Plant.

Q. HOW IS PRODUCTION PLANT ALLOCATED?

A. Production Plant includes the cost of land, structures and equipment used in connection with power generation. Both demand and energy characteristics of a system's loads are important determinants of production plant costs. I allocate the Production Plant according to (1) 12-month non-coincident peak (NCP) average and peak allocators and (2) an energy (kWh) allocator. The first allocation

method is a reasonably close approximation to a TOU method which the Commission has previously determined reasonable. The latter allocation method is applied to costs that vary primarily based on fuel consumption or the amount of time generation units are utilized. The details of my calculations are provided in Schedule BAM Direct MPS Page 3 and Schedule BAM Direct LP Page 3.

Q. HOW DID YOU ALLOCATE TRANSMISSION PLANT?

A. Transmission Plant includes the cost of land, structures and equipment used in connection with transmission operations. Transmission facilities are installed to provide reliable service throughout the year including periods of scheduled maintenance. It can also, at times, substitute for generation and can minimize the cost of generation facilities through the sales or purchases of power. Therefore, Transmission Plant costs can be equitably allocated on the same basis as the Production Plant. Accordingly, I chose to use the same 12-month NCP average and peak allocators that I used for Production Plant to allocate Transmission Plant.

Q. HOW DID YOU ALLOCATE DISTRIBUTION PLANT?

A. Distribution Plant includes the cost of land, structures and equipment used in connection with distribution operations. Distribution plant equipment reduces high-voltage energy from the transmission system to lower voltages, delivers it to the customer and monitors the amounts of energy used by the customer. Many of the distribution costs associated with providing service to electric utility customers are not directly associated with or reasonable assignable to a particular class with precision. For example, with the exception of service drops and

meters, most of the facilities between the utility customer's point-of-service and the distribution substation are shared facilities. Since no portion of such facilities are directly related to the number of customers, the associated costs are best classified as demand related, rather than customer related. Furthermore, since distribution systems are designed to meet more localized peak demand instead of system-wide peak demand, such costs are best allocated based upon non-coincident peak demand.

In the functionalization and allocation of Distribution Plant, my study also reflects that distribution facilities provide service at two voltage levels: primary and secondary, and that some large industrial customers may choose to take service at primary voltages because of their large electrical requirements. Different allocation factors were used for allocating costs at different levels of the distribution system.

Meter facilities costs are generally related to each individual customer. New investment occurs when a new customer is added to the system. Therefore, meter costs are usually classified as customer related. Since large customers require large meters and some large customers use multiple meters, I allocated the meters account based upon meter numbers weighted to reflect the proportional meter cost associated with the customers represented in the various classes based on data available from a Company meter cost study.

Service facilities are also classified as customer related. The NARUC Electric Utility Cost Allocation Manual recognizes that service cost vary with customer size. However, I did not have specific data available to develop the weighted cost

as I did for meters. It seems likely that services vary to a lesser extent with customer size than do meters, therefore I applied a fourth root formula to the meter weights to reflect that the cost increases with size but at a declining rate. Since primary customers take service directly at primary voltages, no cost of service lines were allocated to the Primary class.

The functional categories and classifications for Distribution Plant are as follows:

360-362	Distribution Substations	Demand at Primary Station
364	Poles Towers and Fixtures	Demand at Primary Customer and Demand at Secondary
365	Overhead Conductors & Devices	Demand at Primary Customer and Demand at Secondary
366	Underground Conduit	Demand at Primary Customer and Demand at Secondary
367	Underground Conductors & Devices	Demand at Primary Customer and Demand at Secondary
368	Line Transformers	Transformer Demand
369	Services	Adjusted Weighted Meter
370	Meters	Weighted Meter Count
371	Installation on Customer Premises	Direct Assign to Industrial

Q. HOW DID YOU ALLOCATE GENERAL PLANT?

A. General Plant includes land, structures and equipment used in support of Production, Transmission and Distribution Plant. Therefore, it was allocated using a composite allocator based on previously allocated gross non-general plant.

Q. PLEASE DISCUSS THE METHODS THAT YOU USED TO ALLOCATE EXPENSES.

A. Expenses were directly assigned if possible. For the expenses that could not be directly assigned, consistent with the principle that "expenses follow plant", the allocators that were applied to the expenses accounts were the same as those applied to the Production, Transmission, and Distribution Plant accounts to which the expenses are related.

Q. HOW DID YOU ALLOCATE POWER PRODUCTION EXPENSES?

A. Power Production Expenses were broken down into demand-related and energy-related production and purchased power costs. The demand-related expenses were allocated based on the 12-month NCP average and peak allocators. The energy-related expenses were allocated based on kWhs at generation.

Q. HOW WERE TRANSMISSION EXPENSES ALLOCATED?

A. Transmission Expenses were allocated according to the "expenses follow plant" principle. The allocators applied to transmission expenses were the same as those I applied to transmission plant.

Q. HOW WERE DISTRIBUTION EXPENSES ALLOCATED?

A. Distribution Expenses were allocated according to the "expenses follow plant" principle. The allocators applied to distribution expenses were the same as those I applied to the plant associated with those expenses. For expenses that are not associated with any particular category of distribution plant, such as supervision and engineering, I used an aggregate distribution expense allocator based on the sum of Accounts 582, 583, 584, 586 and 587.

Q. HOW DID YOU ALLOCATE CUSTOMER ACCOUNTS EXPENSES?

A. I allocated Customer Records & Collections (Account 903) to all customer classes based on unweighted customer numbers. I used Staff data to determine the allocators for Meter Reading (Account 902). I used rate revenues to allocate Uncollectible Accounts (Account 904).

Q. HOW DID YOU ALLOCATE CUSTOMER SERVICE EXPENSES AND SALES EXPENSES?

A. Customer Service Expenses including Accounts 907, 909 and 910 were allocated to all customers based on weighted customer numbers. Customer Sales Expenses including Accounts 911, 912, 913 and 916 were allocated to all customer classes based on overall cost of service.

Q. HOW ARE ADMINISTRATIVE AND GENERAL (A & G) EXPENSES ALLOCATED?

A. Property Insurance expense (Account 924) was allocated on the basis of gross plant. Injuries and Damages and Employee Pensions and Benefits (Accounts 925 and 926) are both payroll related expenses so I allocated them based on a payroll expense allocator that I developed based on Company information. The remaining A & G accounts are allocated based on each class' share of total cost of service.

Q. HOW DID YOU ALLOCATE PROPERTY TAXES?

A. I allocated property taxes on the basis of allocated total gross plant.

Q. HOW DID YOU ALLOCATE STATE AND FEDERAL INCOME TAXES?

A. These taxes were allocated on the basis of rate base since a utility company's income taxes will be a function of the size of its rate base, and thus each class

should contribute revenues for income taxes in proportion with the amount of rate base that is necessary to serve it.

Q. PLEASE DESCRIBE THE RESULTS OF PUBLIC COUNSEL'S CLASS COS STUDY.

A. Schedule BAM Direct MPS Page 1 and Schedule BAM Direct LP Page 1 show the results of Public Counsel's Class COS Study. Since a CCOS study is designed to determine the relative cost responsibility of customer classes, Schedule BAM Direct MPS Page 1 and Schedule BAM Direct LP Page 1 are based on the assumption that total company 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 about 1% above cost. The SGS and LGS classes are above cost by a greater amount ranging from approximately 3% to 6%. The SC and LP classes, on the other hand, are well below cost of service at approximately 12% and 23%. For the L&P system, the Residential class is slightly above cost while the SGS and LGS classes are more significantly above cost at approximately 18% and 5%. The LP class is below cost of service by about 10%.

The tables below provide summaries of 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 %	53.17%	16.83%	13.81%	16.01%	0.18%
Revenue Neutral Shift	($1,788,394)	($3,166,113)	($1,547,506)	$6,370,484	$131,529
%	-1.04%	-5.79%	-3.45%	12.24%	22.86%

Table 2. CCOS Results Aquila Systems -LP

	Residential	SGS	LGS	LPS
Class Revenue %	46.01%	8.44%	19.82%	25.72%
Revenue Neutral Shift	($90,678)	($1,376,078)	($962,366)	$2,429,121
%	-0.22%	-17.82%	-5.31%	10.33%

Q. DID YOU PERFORM ANY ANALYSIS OF THE CUSTOMER-RELATED COSTS THAT ARE ATTRIBUTABLE TO THE TYPICAL RESIDENTIAL CUSTOMER?

A. Yes, I did. I included costs that are related to services, meters, meter installations, and customer accounts expenses. The costs associated with services, meters, and meter installations include the return on rate base for the relevant plant accounts, distribution operation and maintenance expenses associated with services, meters, and meter installations, plus the depreciation expense, payroll benefits, and

property taxes associated with services, meters, and regulators. Generally, these costs are used to recommend customer charge changes. I am not recommending changes to the customer charge in this testimony.

II. RATE DESIGN

Q. SHOULD THE COMMISSION ADOPT A RATE DESIGN IN THIS CASE PRIOR TO DETERMINING ANY REVENUE REQUIREMENT CHANGE IN CASE NO. ER-2005-0436?

A. No. The Commission should consider the impact of any overall rate increase resulting from ER-2005-0436 prior to adopting a particular rate design in this case. Deciding this case in isolation may have unanticipated and unacceptable rate impacts when coupled with an overall increase in revenue requirement. The Commission has long recognized that it is necessary to consider all relevant factors in establishing rates. This is especially important in this case since the cost data we are utilizing is from the period 2001 through 2003.

Q. WHEN THE TIME COMES, HOW DO YOU RECOMMEND THAT THE COMMISSION ACCOMMODATE FACTORS SUCH AS AFFORDABILITY, RATE IMPACT, AND RATE CONTINUITY IN DETERMINING RATE DESIGN?

A. Generally, I recommend that the Commission adopt a rate design that balances movement toward cost of service with rate impact and affordability considerations. To reach this balance, I believe that in cases where the existing revenue structure departures greatly from the class cost of service, the Commission should impose, at a maximum, 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 recommend 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 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. Likewise, if the Commission determines that an overall decrease in revenue requirement is necessary, then no customer class should receive a net increase as the combined result of: (1) the revenue neutral shift that is applied to that class, and (2) the share of the total revenue decrease that is applied to that class.

Q. HAVE YOU PROVIDED EXAMPLES OF THIS RATE DESIGN METHOD?

A. Yes. In Schedule BAM Direct MPS Page 2 and Schedule BAM Direct LP Page 3 I have illustrated the steps described above. Line 9 shows half the revenue neutral shifts indicated by my CCOS study. On each schedule, lines 13 to 32 show examples of the combined impact of spreading among the classes either an increase or a decrease in revenue requirement and half the revenue neutral shift indicated by my CCOS studies. Line 26 shows the adjustment that insures that no class either receives an increase when others are receiving a decrease or receives a decrease when others receive an increase. This method promotes movement toward cost of service while avoiding undue adverse impacts on any particular customer class.

Q. YOU STATED PREVIOUSLY THAT THE COMMISSION SHOULD NOT "ADOPT A RATE DESIGN IN THIS CASE PRIOR TO DETERMINING THE REVENUE REQUIREMENT CHANGE IN CASE NO. ER-2005-0436." IF THE COMMISSION PROCEEDS TO ADOPT A RATE DESIGN IN THIS CASE DESPITE PUBLIC COUNSEL'S RECOMMENDATION TO THE CONTRARY, WHAT DOES PUBLIC COUNSEL RECOMMEND?

A. If the Commission proceeds to adopt a rate design in this case despite Public Counsel's recommendation to the contrary, Public Counsel recommends that the Commission's rate design determination should consist of an approved method for adjusting class revenue requirements (where the magnitude of such adjustment vary depending on the level of revenue requirement determined by the Commission in Case No. ER-2005-0436) rather than approving the specific levels of class revenue requirements or the class revenue requirement proportions of the total revenue requirements. Specifically, I would recommend that the Commission adopt the method described in this testimony to be implemented once the revenue requirement is determined in the rate case.

Q. IF THE COMMISSION PROCEEDS TO ADOPT SPECIFIC LEVELS OF CLASS REVENUE REQUIREMENTS IN THIS CASE DESPITE PUBLIC COUNSEL'S RECOMMENDATION TO THE CONTRARY, WHAT DO YOU RECOMMEND?

A. If the Commission proceeds to adopt specific levels of class revenue requirements in this case despite Public Counsel's recommendation to the contrary, Public Counsel recommends that the Commission adjust class revenues by the amounts shown on Line 9 of Schedule BAM Direct MPS Page 2 and Line 9 of Schedule BAM Direct LP Page 2.

Q. DO YOU ANTICIPATE A NEED TO UPDATE YOUR COST STUDY?

A. Yes. While I anticipate no change in the general methods used, I intend to request additional information to determine if Account 371 Installation on Customer Premises would be more reasonably apportioned based on an alternative allocator.

Q. DO YOU ANTICIPATE MAKING ADDITIONAL RATE DESIGN RECOMMENDATIONS IN THIS PROCEEDING?

A. Yes. Depending on the developments in ER-2005-0436, I may make additional recommendations in this case.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes.