Exhibit No.: _____

Issue(s): Class Cost of Service
Witness/Type of Exhibit: Hong Hu/Surrebuttal
Sponsoring Party: Public Counsel
Case Nos.: WR-2000-281 and SR-2000-282

SURREBUTTAL TESTIMONY

OF

HONG HU

Submitted on Behalf of the Office of the Public Counsel

MISSOURI-AMERICAN WATER COMPANY

Case Nos.: WR-2000-281 and SR-2000-282

May 25, 2000

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Missouri-American Water Company's Tariff Sheets Designed to Implement General Rate Increases for Water And Sewer Service Provided to Customers in the Missouri Service Area of the Company.	)))))	Case Nos. WR-2000-281 and SR-2000-282

AFFIDAVIT OF HONG HU

STATE OF MISSOURI)
) ss
COUNTY OF COLE)

Hong Hu, of lawful age and being first duly sworn, deposes and states:

1. My name is Hong Hu. I am a Public Utility Economist for the Office of the Public Counsel.

2. Attached hereto and made a part hereof for all purposes is my surrebuttal testimony consisting of pages 1 through 18.

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.

Hu Hong
Hong Hu

Subscribed and sworn to me this 25th day of May, 2000.

Bonnie S. Howard, Notary Public

My Commission expires May 3, 2001.

SURREBUTTAL TESTIMONY
OF
HONG HU

MISSOURI-AMERICAN WATER COMPANY

CASE NO. WR-2000-281

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

A. Hong Hu, Public Utility Economist, Office of the Public Counsel, P. O. Box 7800, Jefferson City, Missouri 65102.

Q. HAVE YOU FILED ANY PREVIOUS TESTIMONY IN THIS CASE?

A. Yes, I filed direct testimony and rebuttal testimony on the issue of class cost of service.

Q. WHAT IS THE PURPOSE OF YOUR SURREBUTTAL TESTIMONY?

A. The purpose of my surrebuttal testimony is to respond to the Staff's and the Company's criticism to my CCOS study.

Q. WHAT IS THE MAIN CRITICISM OF YOUR CCOS STUDY?

A. The Staff and the Company oppose my modification of the Base-Extra Capacity method to reflect economies of scale in the class allocation of capacity-related costs.

Q. HAS THE COMPANY, THE STAFF, OR ANYBODY ELSE DENIED THE EXISTENCE OF THE ECONOMIES OF SCALE THAT ARE INHERENT TO THE COSTS OF THE COMPANY'S SYSTEM?

A. No. Nobody has attempted to deny the fact that there are economies of scale inherent to the cost of Company's capacity-related facilities. Staff witness Mr. Hubbs agreed that "scale economies exist" in his rebuttal testimony (page 14, line 19), and MAWC witness Mr. Stout implicitly acknowledged this fact when he said "Ms. Hu's concept refers to the incremental cost of additional capacity, i. e., that the additional cost of installing an 8-inch main as compared to a 6-inch main is not in proportion to the additional capacity obtained with the 8-inch pipe, but rather reflects an economy of scale." (rebuttal testimony, page Stout-4, lines 12-15.)

Q. GIVEN THEIR APPARENT RECOGNIZATION OF ECONOMIES OF SCALE, WHY WOULD THE STAFF AND COMPANY OPPOSE YOUR EFFORT TO REFLECT THIS FACT IN THE ALLOCATION OF THE COMPANY'S CAPACITY-RELATED COSTS?

A. Both Mr. Hubbs and Mr. Stout believe that it is not reasonable to incorporate the economies of scale concept in an allocation of costs to customer classes. The reasons offered by Mr. Hubbs and Mr. Stout are:

1. It is not what the AWWA manual suggested and is not traditionally done. (Stout)

2. It is a marginal or incremental cost concept. (Stout)

3. It is not extended to classify the cost of a "zero-inch" main as a customer-related cost. (Stout)

4. It is based on the cost of a base capacity facility that was not built or designed to be built. (Hubbs)

I will respond to each of these criticisms below.

Q. FIRST, MR. STOUT CRITICIZED YOUR METHOD BECAUSE YOU HAVE NOT USED THE "TRADITIONAL BASE-EXTRA CAPACITY METHOD" THAT IS DESCRIBED IN THE AWWA MANUAL. WAS MR. STOUT CORRECT THAT YOUR METHOD IS NOT IDENTICAL TO THE METHOD SUGGESTED IN THE AWWA MANUAL AS A TRADITIONAL OR TYPICAL MATHOD?

A. Yes. Mr. Stout was correct in pointing out that I have not used the traditional base-extra capacity method in developing factors for my allocation to customer classes. Rather, my method reflects a major modification to the AWWA B&EC method.

Q. SHOULD A METHOD BE CONSIDERED TO BE WRONG OR INFERIOR TO OTHERS SIMPLY BECAUSE IT IS NOT TRADITIONAL OR SUGGESTED IN A MANUAL?

A. Absolutely not. Our world progresses as people make new discoveries and invent new methods. We would still be staying on top of trees and eating raw animals if human being had not discovered new methods to hunt, plant, cook meals or build shelters, or such new methods had been rejected because they were "not traditional".

With respect to utility class cost allocation, the single coincident peak demand method had prevailed in 1980's in the electric area largely because many utility analysts thought that production plant costs were driven only by system maximum peak demands. However, since then more and more regulators and researchers

have realized that hours other than the peak hour were critical from the system planner's perspective, and recognized that energy load patterns are also an important determinant of production plant costs. Over time electric utilities have moved toward multiple peak allocation methods or energy weighting methods that takes both energy and peak demand into account. Those methods that once were non-traditional and non-typical, become traditional, and typical, and got included in the NARUC electric manual.

Q. SHOULD A METHOD BE CONSIDERED TO BE WRONG OR INFERIOR TO OTHERS SIMPLY BECAUSE IT IS NOT IN THE AWWA MANUAL?

A. Absolutely not. In addition to the above discussion, I am not aware of any efforts made by the authors of the AWWA manual to include consumer advocates, regulatory commissions, or any other stakeholders in a discussion of which allocation methods most accurately allocate capacity-related costs.

Q. PLEASE EXPLAIN AGAIN WHY YOU DIDN'T USE "THE TRADITIONAL BASE-EXTRA CAPACITY METHOD AS DESCRIBED IN THE AWWA MANUAL" IN DEVELOPING FACTORS FOR YOUR ALLOCATION TO CUSTOMER CLASSES.

A. I have not used that method because I believe that method is wrong. In my rebuttal testimony I have proven that the traditional B&EC method is equivalent to a single peak responsibility method and I believe that a single peak responsibility method is not an appropriate method for allocating capacity-related costs to customer classes. This method does not recognize that utility systems are constructed for the purposes of satisfying both people's year round need for water consumption as well as their maximum demand. Furthermore, this method does not reflect the cost causer relationship due to its inability to capture the economies

of scale characteristics that are inherent to the utility system and thus under-allocates costs to base usage and over-allocates costs to usage in excess of base usage.

Simply because the AWWA B&EC method has traditionally been used in many previous water rate cases does not mean that it is the best possible cost allocation method, and by no means should this prior usage warrant the endorsement of this method in any future water rate cases. The largely unchallenged status of AWWA B&EC method may be due to the fact that fewer researchers and experts have been working on the water utility area. Many regulatory commissions have already been moving away from the single peak demand method in electricity and gas rate cases. I believe that it is time for the Commission to consider the same move in the water area.

Q. NOW LET'S TURN TO MR. STOUT'S COMMENT ABOUT YOUR INTRODUCING "MARGINAL OR INCREMENTAL COST CONCEPTS INTO THE ALLOCATION OF EMBEDDED COSTS TO CUSTOMER CLASSES." DO YOU CONSIDER THIS TO BE A VALID CRITICISM OF YOUR METHOD?

A. No. Before I address Mr. Stout's comment, I would like to briefly review the theory and methodologies for cost allocations. Generally speaking, there are two types of cost study methodologies: the embedded cost study methodology and the marginal cost study methodology. Embedded cost studies are based on monies actually spent (embedded) for plant and operating expenses. These studies allocate those costs among the classes of customers according to principles of cost causation. Marginal cost studies define cost as the change in cost due to the production of one unit more or less of the product. Setting prices based on the results of marginal cost studies is believed to promote economic efficiency. A

deficiency of the marginal cost approach for ratemaking purposes is that marginal cost-based prices will yield revenues close to the utility's allowed revenue requirement based on embedded costs only by rare coincidence. On the other hand, for rate-of-return regulated utilities, regulatory agencies are required to set rates at a level that gives the utility a reasonable opportunity to recover their revenue requirement based on embedded costs. It is important to note that the difference between an embedded cost of service study and a marginal cost of service study lies in their different concepts of cost. The embedded cost study uses the accounting costs on the company's books during the test year as the basis for the study. In contrast, the marginal cost study estimates the resource costs of the utility in providing the last unit of production. Once "cost" is determined, the procedures for allocating cost among services, jurisdictions and customers are largely the same.

Both embedded and marginal cost studies have their merits and deficiencies. For rate-of-return regulated public utilities, embedded cost studies are generally adopted. It is not uncommon, however, for some marginal cost concepts to be incorporated in the embedded cost studies when deciding how to allocate embedded costs to the customer classes. For example, many analysts use replacement cost in the allocation of meters and services costs. (In fact, I believe Mr. Stout has also adopted this approach in his allocation of meter costs and service costs in this case.) Replacement costs can be considered marginal costs since they are estimates of costs that would be incurred by adding a customer to the system now, and these costs are likely to be different than the average embedded costs or historical costs that are associated with serving customers that are already in the system. Despite its use of marginal cost concepts, the

replacement cost method is generally accepted to be consistent with the entire embedded cost allocation methodology.

Q. DO YOU AGREE THAT YOU HAVE INTRODUCED "MARGINAL OR INCREMENTAL COST CONCEPTS" WHICH ARE NOT CONSISTENT WITH THE EMBEDDED COST STUDY METHODOLOGY?

A. No. The AWWA manual defines extra capacity costs as "**costs** associated with meeting rate-of-use requirements in excess of average." My modification to the AWWA B&EC method to reflect economies of scale aims to capture the true costs that are associated with meeting such rate-of-use requirements in excess of average. It is not a marginal concept because I have not tried to determine "today's marginal cost" of adding or subtracting one additional unit of production as Mr. Stout implies. The allocation factors in my study are used to allocate the actual embedded costs associated with the utility's plant. Mr. Stout stated in his rebuttal testimony that "since we are using embedded costs, it is more appropriated to consider the extent to which the facilities are used in meeting base and extra capacity requirements." This is exactly what I have done by using my method. My method is not inconsistent with the embedded cost study approach and it will not result in a departure of revenue recovery from revenue requirement.

The extra capacity cost that I developed while taking the scale economies into account is incremental in the sense that it estimates the cost in addition to the base cost for the purpose of satisfying the additional demand by customers, just as the extra capacity concept in the traditional B&EC method is incremental in the sense that it estimates the capacity in addition to the base capacity for the purpose of satisfying the additional demand by customers. The only difference between my method and the AWWA B&EC method is that the AWWA method used the ratio

of **excess capacity to base capacity** for allocating **costs** between the base and extra capacity functions; while I use the ratio of **excess costs to base costs** for allocating **costs** between the base and extra capacity functions. As I have explained earlier in this testimony, and in my previously filed direct and rebuttal testimonies in this case, I used the ratio of excess costs to base cost in order to better reflect the cost causation relationship, which is the primary objective of customer class cost allocation in an embedded cost study.

Q. WOULD YOU PLEASE DESCRIBE THE THIRD CRITICISM OF MR. STOUT TO YOUR METHOD?

A. Yes. In his rebuttal testimony, Mr. Stout stated that I should have extended my logic to allocate the cost of installing a "zero-inch" main as a customer cost. He then forgot about his previous criticism about my method being "inappropriate" or "unreasonable" and that my "introduction of incremental cost concept into the allocation of embedded costs" was "inconsistent", and proceeded to say that this "extension" of my method would be "appropriate" for the Company's system and that the use of "incremental cost", if extended one step further (according to his definition) would be "consistent" with an embedded cost study. This really causes one to have doubts about Mr. Stout's definition of "consistency", and his own consistency.

Q. DO YOU BELIEVE THAT THE SO-CALLED ZERO-INTERCEPT METHODS ARE A VALID EXTENSION OF YOUR METHOD?

A. No. My introduction of the economies of scale concept focuses on the fact that for capacity-related cost, unit costs decline when capacity increases. The largely fixed cost of mobilization, trenching, backfilling and paving when installing a

main is one of the sources of such economies of scale. These types of costs are actual costs that are embedded in facilities that are actually built. Proper cost proportions can actually be allocated to different segments of capacity if the actual system load pattern is known. One meaningful extension of my method could be to divide cost not only between the base and extra capacity function, but also to the demand in each specific month, or day. In fact, OPC has suggested such an allocation method in a recent electric rate case.

However, the so-called minimum-intercept or zero-intercept methods are not valid extensions of my method at all. This kind of methods assume a "zero-inch" main which would be required simply to reach the customer without carrying any load. The "zero-inch" main that serves no demand does not exist in the real world. It is not meaningful to attribute a certain cost to something that does not exist and call it a customer-related cost. A customer either needs water from the Company or does not need water from the Company. If a customer does not need water from the Company, there is no need for the Company to build a "zero-inch" main to reach the customer's property. If a customer does need water, the main that needs to be built must have some load carrying capacity and its cost should be classified as a capacity-related cost. The "zero-inch" main that exists only in someone's fantasy has nothing to do with any extension of my method of cost allocation with the consideration of real-world economies of scale.

Q. IN HIS TESTIMONY, MR. STOUT MENTIONED THAT THE CONCEPT OF A "ZERO-INCH" MAIN HAS BEEN USED IN COST ALLOCATION STUDIES TO ALLOCATE COSTS OF GAS AND ELECTRIC UTILITIES IN AN EFFORT TO SUPPORT HIS CONCLUSION THAT THE USE OF THIS METHOD TO CLASSIFY THE COST OF THE "ZERO-INCH" MAIN AS A CUSTOMER-COST MAY BE APPROPRIATE FOR THE COMPANY'S SYSTEM. DO YOU HAVE ANY COMMENT ON THAT?

A. Yes. This is yet another instance which shows that simply because something appears in certain manuals or is used on certain occasions does not mean it is correct or superior to other methods. While Mr. Stout had noticed the presence of this so-called "zero-intercept" method on the subject of allocating costs of gas and electric utilities, he apparently had not noticed that this kind of method has long been criticized by many researchers and experts and has been rejected by regulatory commissions in various gas and electric rate cases. In fact, in Case No. EO-88-158, the Commission had rejected the "zero-intercept" method that was advocated by the Staff in allocating distribution poles and conductors because the utilization of this method in that case resulted in a negative component for the customer-related portion. [1]

Q. COULD YOU SUMMARIZE YOUR RESPONSE TO MR. STOUT'S CRITICISM OF YOUR METHOD?

A. Certainly. Mr. Stout criticized my use of economies of scale to determine the level of costs associated with extra capacity because:

1) It is not traditional or typical in the water industry, and not in the AWWA manual;

[1] Report and Order, Case No. EO-88-158, In the matter of the investigation of the electric class cost of service for St. Joseph Light & Power Company.

2) It is inconsistent with an allocation of embedded costs; and

3) It was not extended to identify the cost of a "zero-inch" main as customer related.

In my response I have shown that his criticisms are unfounded because:

1) Being traditional or included in a certain manual does not guarantee the appropriateness of a method and not being traditional or included in a certain manual does not preclude the appropriateness of a method;

2) My method actually addresses embedded cost and is consistent with an embedded cost study; and

3) My method should not be extended to the so-called "zero intercept" approach and to classify the cost of a non-existing "zero-inch" main as customer-related is not an appropriate method of cost allocation.

Q. NOW PLEASE DISCUSS STAFF WITNESS MR. HUBBS' CRITICISM OF YOUR MODIFICATION TO THE B&EC METHOD. FIRST, DOES MR. HUBBS APPEAR TO CORRECTLY UNDERSTAND YOUR METHOD?

A. No. Unlike Mr. Stout who has correctly presented my method in an example on page 4 of his testimony, Mr. Hubbs does not appear to understand my method. In lines 19 through 20, on page 15 of his testimony, Mr. Hubbs stated that my economies-of-scale allocation "reduces the extra capacity allocator by one-half." This is an oversimplified and incorrect description of my method. My method reflects a non-linear relationship between capacity and cost. For example, a 2" pipe and a 4" pipe have a capacity ratio of 4:16 while these same pipes have a cost ratio of less than 2 ($=4^{0.5}$) to 4 ($=16^{0.5}$). It appears that Mr. Hubbs has not grasped

the non-linear concept and is still thinking linearly when he stated that my allocation "reduces the extra capacity allocator by one-half".

Q. DO MOST COMMENTS MADE BY MR. HUBBS APPEAR TO BE RELEVENT TO YOUR METHOD?

A. No. Most of Mr. Hubbs' comments on my method appear to be irrelevant. For example, from line 19 on page 14 through line 2 on page 15 of his rebuttal testimony, Mr. Hubbs stated

> Although scale economies exist, what is termed extra capacity in the Base-Extra Capacity Method of class cost-of-service allocation is essential to providing service to all customers. This extra capacity is not extra in that it is not needed; it is extra in that it is the amount of capacity over average flows. The entire system is needed to supply water service, both base and extra capacity.

I have never claimed that the extra capacity is not essential to providing service to all customers nor does my method preclude this. In fact, I do believe that both the base capacity function and the extra capacity function are functions of the Company's system, and my method strives to achieve the best cost allocation between these two functions consistent with the cost causation principle. On the other hand, since Mr. Hubbs has chosen to use a capacity allocator which is equivalent algebraically to a single peak allocator, it appears that Mr. Hubbs does not see any distinction between base and extra capacity. The question is then why he bothered to separate the capacity costs into base costs and extra-capacity cost in his own CCOS study.

Mr. Hubbs then repeated my explanation of the concept of economies of scale that "for most major facilities, the construction cost per unit of capacity associated with adding extra peak capacity is substantially less than the unit cost associated

with base capacity cost." He did not express any disagreement to this statement. Rather, in the next paragraph, he said "allocation of cost under a hypothetical scenario that shows that a base system would have cost more if it had been built by itself, ..." implying that this is what he believes my method does. I fail to see where Mr. Hubbs could find in my testimony or my method such a "hypothetical scenario that shows that a base system would have cost more if it had been built by itself." In fact a base system would have cost less if it had been built by itself because it handles less capacity. However, this is not the point of my testimony. My point is that the unit cost associated with adding extra peak capacity is less than the unit cost associated with base capacity cost. In other words, when capacity increases, the cost still goes up, only at a decreasing rate. My understanding is that Mr. Hubbs does not have any disagreement with me on this point.

Q. WOULD YOU PLEASE EXPLAIN AND RESPOND TO MR. HUBBS' MAIN CRITICISM OF YOUR METHOD?

A. Yes. Disregarding all of his misunderstanding and confusions, Mr. Hubbs' main criticism of my method is that because "no one would design and build a base capacity facility", one cannot "logically" use the costs of a base system to estimate costs that are associated with the base capacity function.

I believe that Mr. Hubbs would not disagree with my view that if a facility that serves a single function was separately built, its cost would have been directly assigned instead of being allocated. However, sometimes it is more economically efficient to built one system that serves multiple functions and multiple users. In fact, a large amount of costs of the Company's system are joint or common costs that are incurred to satisfy multiple functions or to serve multiple groups of

customers. For example, production and distribution capacity is installed to serve peak demands as well as to serve demands at other times of the day or year. These joint or common costs need to be estimated and allocated to different functions or different customer classes. In other words, even if the production or distribution facility that serves only the base function has not been separately built, the costs that are associated with the base function still needs to be estimated and allocated to it.

No matter if a base system was built separately, cost causation principles require that customers be responsible for the proportion of the base costs that are associated with their use of the base capacity and be responsible for the proportion of the extra-capacity costs that are associated with their use of the extra capacity. A single peak responsibility method is unreasonable because it allocates all costs to the peak demand. The gain of economic efficiency from the economies of scale and/or economies of scope would be given to off peak user groups solely. In other words, whether a base system was built or not is not the key to the question. The real question is which method produces a better estimate of the costs that are associated with the base and the extra-capacity function.

Both the traditional B&EC method and my method are attempts to allocate an appropriate portion of costs to the base function and the extra-capacity function. The traditional B&EC method uses the capacity ratio to estimate the cost ratio, only this estimate turns out to be incorrect because it produces allocations that are identical with a single peak responsibility method and results in the entire cost being allocated to the peak demand function. On the other hand, my method acknowledges the economies of scale that are inherent in the production and distribution system and produces a more reasonable estimate of the costs that should be allocated between the base function and the extra-capacity function.

Q. DOES MR. HUBBS APPEAR TO FAVOR A PEAK RESPONSIBILITY ALLOCATION METHOD OVER YOUR METHOD?

A. No. In fact, Mr. Hubbs doesn't appear to support any allocation method. Although he has used the traditional B&EC method in his CCOS studies, Mr. Hubbs has not, in his direct, supplemental direct, or rebuttal testimonies, expressed any belief or support for the traditional B&EC method or any other allocation method. In lines 14 though 15, on page 15 of his rebuttal testimony, Mr. Hubbs stated that it is "more logical" to allocate the cost of facilities "based on class usage and capacities." However, he did not specify how to allocate the cost of facilities based on class usage and capacities he believes to be more logical. A peak responsibility method, the traditional B&EC method, my modification to the traditional B&EC method, and a few other allocation methods, are all based on class usage and capacities. Mr. Hubbs fails to make his choice and provide support for it.

In his own CCOS studies, Mr. Hubbs adopted the traditional B&EC method and used allocation methods that are consistent with the Company's without perhaps realizing that the Company's B&EC method produces an end result that is similar to a single peak responsibility method. The worst part is that Mr. Hubbs has chosen to use a 4-year average load factor when determining his weight between the base function and the extra-capacity function for his district specific CCOS studies, and it has produced an allocation that is even worse for the residential class than a peak responsibility method on some occasions. Table 1 below shows a comparison of allocation factors based on class base demand, peak demand, and Mr. Hubbs' allocator for the costs related to facilities serving both base and maximum day extra capacity functions in the St Charles District. The data used in

the table come from Mr. Hubbs' updated CCOS study filed with his rebuttal testimony.

Table 1. A comparison of base allocator, peak allocator and Mr. Hubbs' B&EC allocator

Customer Class	Residential	Commercial	Industrial	Other Public Authority	Other Water Utilities	Private Fire Protection	Public Fire Protection	Total
Usage & Capacity								
Class Consumption (Annual Mgal)	2,558,133	398,910	2,745	73,326	-	3,680	30,055	3,066,849
Average Daily Consumption (GPD)	7,008,584	1,092,904	7,521	200,893	-	10,083	82,343	8,402,327
Maximum Day Extra Capacity	7,008,583	874,324	3,760	160,715	-	-	-	8,047,382
Maximum Day Capacity	14,017,167	1,967,228	11,281	361,608	-	10,083	82,343	16,449,709
Allocation Factor								
Base Demand	0.8341	0.1301	0.0009	0.0239	-	0.0012	0.0098	1.0000
Peak Demand	0.8521	0.1196	0.0007	0.0220	-	0.0006	0.0050	1.0000
Staff's B&EC Factor	0.8551	0.1179	0.0007	0.0217	-	0.0005	0.0042	1.0000

Obviously, a reasonable allocation factor that takes both base function and maximum day function into account should be within the range defined by the base demand allocation factor and the peak demand allocation factor. However, Mr. Hubbs' allocation factor actually falls outside this range and allocates even more costs to the residential class than a single peak demand allocation factor. Mr. Hubbs' testimony contains no support for using an allocator outside of this range and he offers no arguments about why his method, which allocates more costs to the residential class than a single peak responsibility method, is more logical than my method.

Q. MR. HUBBS ALSO CRITICIZES YOUR APPLICATION OF THE ECONOMIES OF SCALE FACTOR TO FACILITIES OTHER THAN TRANSMISSION AND DISTRIBUTION LINES BECAUSE YOU DID NOT ASSESS THE ECONOMIES OF SCALE IN THESE FACILITIES. DO YOU HAVE ANY RESPONSE TO THAT?

A. Yes. Mr. Hubbs has not denied that there are economies of scale in facilities other than transmission and distribution lines. In fact, nobody has offered any evidence to support the position that no economies of scale exist in storage, pumping, or treatment facilities. Also, Mr. Hubbs has not offered an alternative factor that better reflects the scale economies associated with those facilities. My application of the economies of scale factor to these facilities represents the best estimate we can get given the available information.

Q. WOULD YOU PLEASE SUMMARIZE YOUR RESPONSE TO MR. HUBBS' CRITICISM OF YOUR METHOD?

A. Yes. Mr. Hubbs' criticism of my method appears to be based on misunderstanding and confusion about how my method works. Further, he does not seem to understand that for facilities serving multiple functions, costs associated with each function need to be estimated and allocated (even if facilities that serve each of the functions are not separately built). Mr. Hubbs fails to realize that both the traditional B&EC method and my modification to the B&EC method are attempts to estimate costs associated with the base function and the extra-capacity function and that my method better reflects the cost causer relationship between these functions. Mr. Hubbs has not provided support for any capacity cost allocation method that would be used as an alternative to my method. In fact, in his own study he has used a method that produced similar or worse results than a single peak allocation method. Despite this result, his

testimony never acknowledges the similarity of his method to a single peak allocation method or provides support for the use of a single peak allocation method. His criticism of my method should be disregarded in its entirety.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes.