STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

PETITION OF THE BOARD OF DIRECTORS FOR UTILITIES OF THE DEPARTMENT OF PUBLIC UTILITIES OF THE CITY OF INDIANAPOLIS, AS TRUSTEE OF A PUBLIC CHARITABLE TRUST FOR THE WATER SYSTEM, D/B/A CITIZENS WATER FOR (1) AUTHORITY TO INCREASE ITS RATES AND CHARGES FOR WATER UTILITY SERVICE AND APPROVAL OF A NEW SCHEDULE OF RATES AND CHARGES APPLICABLE THERETO, INCLUDING A NEW RATE FOR LOW-INCOME CUSTOMERS, (2) APPROVAL OF A REVISED METHODOLOGY FOR ALLOCATING CORPORATE SUPPORT SERVICES COSTS RESULTING IN A REVISED ALLOCATION OF SUCH COSTS TO CITIZENS WATER, AND (3) APPROVAL OF CERTAIN CHANGES TO ITS GENERAL TERMS AND CONDITIONS FOR WATER SERVICE.	)	CAUSE NO. 44644

VERIFIED DIRECT TESTIMONY

OF

KERRY A. HEID, P.E.

ON

BEHALF OF

INTERVENOR TOWN OF WHITESTOWN

TOWN OF WHITESTOWN
EXHIBIT 1

VERIFIED DIRECT TESTIMONY OF KERRY A. HEID, P.E.

1. INTRODUCTION AND OVERVIEW

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Kerry A. Heid. My business address is 3212 Brookfield Drive, Newburgh, IN 47630.

Q. WHAT IS YOUR OCCUPATION?

A. I am an independent rate consultant. I have been engaged by the Intervenor Town of Whitestown, Indiana ("Whitestown" or "Town of Whitestown") to testify on its behalf in this proceeding.

Q. PLEASE DESCRIBE THE INTERVENOR TOWN OF WHITESTOWN.

A. The Town of Whitestown is a Sale-for-Resale customer of the Petitioner Citizens Water. Whitestown purchases significant amounts of water from Citizens Water, has contracts regarding service with Citizens Water, and the characteristics of its service from Citizens Water are distinct.

Q. PLEASE DESCRIBE YOUR EXPERIENCE AND QUALIFICATIONS.

A. My experience and qualifications are set forth in full in Attachment KAH-1. I would note that I am a member of the American Water Works Association ("AWWA") Rates and Charges Committee, which is responsible for authoring the AWWA M1 Manual "Principles of Water Rates, Fees, and Charges" ("AWWA M1 Water Rates Manual"). I assisted in drafting, reviewing and updating the recently-issued Sixth Edition of the AWWA M1 Water Rates Manual, and am listed as a contributor in the Acknowledgements. As such, I am intimately familiar with the AWWA M1 Water Rates

Manual, and have experience and expertise in the principles and practices of water cost of service and rate design studies. I was formerly employed by Black and Veatch Consulting Engineers, where I performed water and wastewater cost of service studies ("COSS") and rate designs for utilities throughout the United States.

Q. ARE YOU GENERALLY FAMILIAR WITH THIS WATER UTILITY?

A. Yes. I participated on behalf of the Indianapolis Department of Waterworks ("IDOW") in its 2007 rate proceeding, Cause No. 43056. In that proceeding I was asked by IDOW to review its COSS and rate design prepared by another consultant prior to its filing. I also filed rebuttal testimony in that proceeding concerning the COSS and rate design. In IDOW's next proceeding in 2009, Cause No. 43645, I prepared and sponsored its COSS and rate design.

Q. DO YOU HOLD ANY PROFESSIONAL ACCREDITATIONS?

A. Yes. I have been a registered Professional Engineer in the State of Indiana since 1977.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS COMMISSION?

A. Yes. I have testified before this Commission as well as other public utility commissions numerous times on matters involving cost of service, rate design and other regulatory and ratemaking matters.

2. PURPOSE AND SUMMARY OF DIRECT TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?

A. The purpose of my direct testimony is to respond to the prefiled direct testimonies and exhibits of Citizens Water witnesses Ms. LaTona S. Prentice and Mr. Michael C.

Borchers. Ms. Prentice's testimony and exhibits present Citizens Water's proposed revenue requirement and sets forth its revenue stabilization proposal. Mr. Borchers' testimony and exhibits present Citizens Water's proposed COSS and develops the rate design to implement Ms. Prentice's revenue stabilization proposal.

Q. PLEASE PROVIDE A HIGH LEVEL OVERVIEW OF CITIZENS WATER'S COST OF SERVICE AND REVENUE STABILIZATION RATE DESIGN POLICY PROPOSAL.

A. Citizens Water's witness Ms. Prentice discusses in her testimony that Citizens Water's sales and revenue continue to decline. She therefore recommends a significant change to Citizens Water's rate structures by materially increasing the Service Charges in order to recover a greater proportion of fixed costs through fixed charges. Specifically, Ms. Prentice proposes that a new Capacity Cost-based component be included in the proposed Service Charge.[1]

Mr. Borchers presented the cost of service study utilizing the AWWA Base-Extra Capacity methodology presented in numerous past cases of this utility. He then proposed a rate design in which (1) he designed the aforementioned change to Citizens Water's Service Charges, and (2) he proposed increased movement toward uniform rates for each customer class.

Q. DO YOU HAVE ANY OTHER OBSERVATIONS CONCERNING CITIZENS WATER'S PROPOSED RATES AND CHARGES?

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[1] Historically only Customer Costs were included in the Service Charges. The terms Capacity Cost and Customer Cost will be defined later in my testimony.

A. Yes. It should be recalled that the final cost of service and rate design in Citizens' preceding rate case, Cause No. 44306, was a non-precedential Settlement Agreement. Therefore, the present rate structure of uniform rates for the Residential and Irrigation customer classes and semi-uniform[2] rates for Commercial and Multi-Family customer classes are the result of the non-precedential Settlement Agreement and should not be presumed as precedent or the appropriate "starting point" for rate design in the instant proceeding. Citizens Water should be required to support any change in rate design as compared against the rates in effect arising out of litigated Cause No. 43645, which preceded settled[3] Cause No. 44306.

Q. WHAT ARE YOUR GENERAL CONCLUSIONS WITH RESPECT TO MS. PRENTICE'S AND MR. BORCHERS' TESTIMONIES AND EXHIBITS?

A. My general conclusions are:

1. Citizens Water's revenue stabilization proposal with respect to the material increase in Service Charges through the addition of a Capacity Cost-based component is without merit, violates numerous rate design principles, and results in Service Charges that are not fair and equitable. As such, the proposed Service Charge methodology that includes the Capacity Cost-based component should be

[2] This description of "semi-uniform rates" was used by Mr. Borchers in his rebuttal testimony in Cause No. 44306. It represents the partial movement of two customer classes (Commercial and Multi-Family) from the then-existing declining block rates toward more uniform but still declining rates.

[3] Settled solely with respect to cost-of-service and rate design. The revenue requirement phase of the case was litigated.

rejected. The Service Charges should be established based solely on Customer Costs as has historically been done.[4]

2. The COSS Mr. Borchers prepared and utilized to design rates and charges has several defects and should be corrected before it is used for rate design. I describe the problems in Mr. Borchers' COSS and present corrections that I recommend the Commission adopt.

3. Citizens Water's proposed volumetric rate design and its resulting aggressive movement toward uniform volumetric rates, particularly for the Industrial and Sale-for-Resale customer classes, as proposed by Citizens Water's witness Borchers is defective and inconsistent with generally accepted rate design principles. I discuss that Citizens Water has failed to support the material change in volumetric rate design, has failed to distinguish its use between homogeneous and non-homogeneous customers, and has failed to evaluate or consider other conservation-related rate designs as previously ordered by the Commission. I also discuss that most of the Sale-for-Resale customers have SCADA data providing daily consumption data, yet Mr. Borchers did not utilize this resource in his COSS or proposed rate design. Thus I recommend that the Commission reject Mr. Borchers' proposal to move all customer classes toward uniform rates. Instead, I propose that all volumetric rates be adjusted across-the-board on a percentage basis.

[4] A Public Fire Protection Surcharge component is also included as part of the Service Charge pursuant to Indiana Code. However, the inclusion of the Public Fire Protection Surcharge as part of the Service Charge is solely for billing convenience and is not strictly part of the Customer Cost-based Service Charge.

To the extent that my testimony is silent with respect to any issue, my silence should not be construed as an implicit acquiescence or acceptance of said issue. Also, to the extent that my testimony refers to Citizens Water's numerical results in its revenue requirement, COSS or rate design, my reference is for the sole purpose of describing the issue and should not be construed as an implicit acquiescence or acceptance of said revenue requirement.

Q. WHAT ATTACHMENTS ARE INCLUDED WITH YOUR TESTIMONY?

A. My direct testimony includes the following four (4) attachments::

Attachment KAH-1	Experience and Qualifications of Kerry A. Heid
Attachment KAH-2	Derivation of Mr. Borchers' Meter Capacity Ratio
Attachment KAH-3	Columbus Municipal Waterworks Order in Cause No. 37124
Attachment KAH-4	Citizens Water's Response to OUCC Data Request 7.4

3. CITIZENS WATER'S REVENUE STABILIZATION AND SERVICE CHARGE PROPOSAL

Q. DO YOU HAVE CONCERNS WITH CITIZENS WATER'S REVENUE STABILIZATION PROPOSAL TO INCREASE THE PERCENTAGE OF FIXED REVENUE FROM EACH CUSTOMER CLASS THROUGH A MATERIAL INCREASE IN EACH SERVICE CHARGE?

A. Yes. I have numerous concerns with Citizens Water's revenue stabilization and Service Charge proposal, which I will subsequently describe. Therefore, I recommend that the Commission reject Citizens Water's revenue stabilization and Service Charge proposal,

specifically its proposal to include a Capacity Cost-related component in the Service Charges. The Commission should approve only the Customer Cost-related Service Charges as have historically been calculated.

Q. WHAT IS THE "REGULATORY STRUCTURE" THAT MS. PRENTICE PROPOSES IN THE FOLLOWING PASSAGE OF HER TESTIMONY IN CITIZENS WATER'S EXHIBIT 6 AT PAGE 9, LINES 11-14:

> "Because of the situation created by year-over-year declining sales, it is imperative to the financial health of Citizens Water that a regulatory structure be designed and implemented that enables Citizens Water to recover the Commission's approved revenue requirement through rates."

A. On page 10, lines 12-14, of Ms. Prentice's Direct Testimony, she states:

> "Petitioner recommends an increase in the level of Service Charge revenue from each customer class (excluding private fire) that has variable charges to 35%."

Q. WHAT IS YOUR RESPONSE TO MS. PRENTICE'S "REGULATORY STRUCTURE" PROPOSAL?

A. While I do not disagree with Ms. Prentice's assessment of the problem caused by a utility's predominately volumetric rate structure recovering predominately fixed costs, I strongly disagree with the Capacity Cost-related Service Charge solution being proposed by Citizens Water. Moreover, Citizens Water's "Regulatory Structure" is decidedly one-sided, focused almost solely on the benefits to Citizens Water from its revenue stabilization proposal.

Q. PLEASE DESCRIBE CITIZENS WATER'S RATE DESIGN SOLUTION BEING PROPOSED BY MS. PRENTICE AND MR. BORCHERS IN THIS PROCEEDING.

A. As previously described in my testimony, Citizens Water is proposing to increase the level of the Service Charges in each customer class (excluding private fire) such that 35% of each customer classes' allocated revenue requirement[5] would be recovered through the respective Service Charges. This would be accomplished by adding a new Capacity Cost-related component to each Service Charge.

Q. PLEASE ELABORATE.

A. First, it is necessary to define some basic terminology. In a Base-Extra Capacity COSS, a utility's revenue requirement is comprised of the following types of costs:

1. Customer Costs are defined as costs that tend to vary in proportion to the number of customers connected to the system. Historically, the utility's Service Charge recovered only the Customer Costs. All non-Customer Costs were recovered through volumetric rates.
2. Base Costs are those costs that vary directly with the total quantity of water used, as well as those capacity costs associated with serving customers under average load conditions. Thus Base Costs include both variable costs and a portion of capacity costs.
3. Extra Capacity Costs include operating costs incurred due to capacity requirements in excess of average load conditions, and capital costs for additional plant and system capacity beyond that required for the average rate of use. Thus Extra Capacity Costs include the remainder of Capacity Costs not previously included in Base Costs.

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[5] Or target revenues if the allocated revenue requirement has been adjusted for subsidy or rate shock mitigation.

4. Direct Public Fire Protection Costs include the direct costs for maintaining public fire hydrants and the capital costs associated with those public fire hydrants.

Q. GIVEN THE DEFINITION OF CUSTOMER COSTS AND CAPACITY COSTS, PLEASE EXPLAIN THE APPROACH USED BY MR. BORCHERS TO INCREASE THE LEVELS OF ALL SERVICE CHARGES.

A. Mr. Borchers first established the Customer Cost-related Service Charge component for each customer class. In past rate cases, this component would have been the sole basis for the establishment of the Service Charges. Mr. Borchers then added a dollar amount to each customer class through a new Capacity Cost-related Service Charge component such that the total combined Customer Cost-related and Capacity Cost-related Service Charges for each customer class would comprise 35% of total revenues. The selection of the 35% fixed charge target proposed by Citizens Water for the Service Charge was unsupported. Citizens Water presented no evidence to demonstrate the appropriateness of the 35% target. Given Ms. Prentice's description of the proposed "Regulatory Structure," it is reasonable to assume that the 35% target is simply a starting point, and the target percentage for fixed charge revenue will continue to increase from case-to-case until all or most fixed costs are recovered through fixed Service Charges. This end result is commonly known as Straight-Fixed-Variable ("SFV") rate design.

The Capacity Cost-related Service Charge component would be designed using "Equivalent Capacity Factors" based upon the maximum meter capacities for each size

meter as set forth in the AWWA M22 Manual "Sizing Water Service Lines and Meters" ("AWWA M22 Meters Manual").

Q. PLEASE ILLUSTRATE THE MAGNITUDE OF DIFFERENCE BETWEEN THE LEVEL OF CUSTOMER COSTS AND THE LEVEL OF CAPACITY COSTS PROPOSED TO BE RECOVERED IN THE SERVICE CHARGE.

A. A comparison of Customer Costs to Capacity Costs that are included in the Service Charge is shown in the following table. This table clearly shows what a material impact the Capacity Cost-related Service Charge component has on the overall Total Service Charge. It should be noted that the Capacity Cost-related Service Charge component is different for each customer class, so the Sale-for-Resale class was selected to use for an example. For example, a 6-inch meter would have a Service Charge of $176.73 if based solely on Customer Costs. Capacity Costs for a 6-inch meter would add $4,809.42, for a total Service Charge of $4,986.15.

	Customer Costs	Capacity Costs
5/8"	$8.53	$62.46
3/4"	$9.57	$93.69
1"	$11.13	$156.15
1.5"	$17.88	$312.30
2"	$22.03	$499.68
2.5"	$55.78	$749.52
3"	$55.78	$1,186.74
4"	$76.54	$2,123.64
6"	$176.73	$4,809.42
8"	$237.47	$8,275.95
10"	$320.53	$13,741.20

Q. DO YOU HAVE CONCERNS WITH CITIZENS WATER'S PROPOSAL TO INCREASE ITS SERVICE CHARGE BASED UPON THE NEW CAPACITY COST-RELATED COMPONENT?

A. Yes. I have numerous major concerns with Citizens Water's proposal and recommend it be rejected.

Q. PLEASE STATE YOUR CONCERNS.

A. My concerns are as follows.

(1) The customer's potential capacity requirements are not the sole determinant of meter size. The demand that the customer places on the utility's system is determined at the customer's service line connection with the utility's main. However, the customer's meter size is determined based on numerous other factors. For example, the AWWA M22 Meters Manual in the chapter entitled "Chapter 5 – Sizing the Customer's Service and Meter" states that in determining the pressure that will be available to the customer's meter outlet (and thus determining meter size), a number of engineering and hydraulic factors must be considered:

(a) Flow capability of the water main that serves the area

(b) Static pressure in the utility main during peak-demand periods

(c) Elevation differential of city main and customer's house piping

(d) Length of service pipe necessary to extend from the main to the meter

(e) The size of pipe (service line) to be used by the customer from the meter to the building.

(f) Service line roughness. The service line interior may be rough due to type of material that it is constructed of, or it may be rough due to age. The greater the

roughness, the greater the pressure losses.

In other words, two customers could place identical demands on the system at their points of connection to the utility's main, yet have significantly different meter sizes and pay significantly different Service Charges under Citizens Water's Service Charge proposal because of the aforementioned factors. This violates one of the principles of fair and equitable rates in that customers receiving the same utility service should pay the same utility rate.

(2) Meter size provides an approximate means to estimate the potential demands that a customer could place on the utility system,[6] but it does not in any way measure or determine actual demands that a customer places on the system. Thus each customer would be paying a Capacity Cost-related Service Charge component based on the potential (not actual) capacity requirements that they might, in fact, never place on the system.

(3) Citizens Water has not demonstrated that the optimal size meter is installed at each customer premise. Citizens Water has not described its meter sizing process, whether meters were sized based on rules of thumb, other guidelines, through detailed engineering and hydraulic analysis as presented in the AWWA M22 Meters Manual, or a combination of all. Moreover, given that Citizens Water is not the original owner of the utility, it may not even know or be able to determine the meter sizing process. As such, it appears that Citizens Water has assumed, without

[6] As a result, System Development Charges, which are concerned only with future potential capacity requirements, sometimes use similar capacity cost factors. Capacity cost factors are also sometimes used for System Development Charges because it relates to future customers and actual customer demands are obviously non-existent.

providing any supporting evidence, that each meter was optimally sized. Yet Citizens Water expects to recover a material amount of revenue based on the size of the meter installed by the utility whether it is optimally sized or not. This is a fundamentally flawed and unreasonable approach.

(4) Citizens Water has not described what process it would follow if a customer believed its meter to be oversized. It is expected that due to the significant magnitude of the Service Charges, more customers will be aware of and questioning their meter sizes. Such a situation could occur either because the meter was improperly over-sized at the time of installation, or, it could occur because customers' capacity requirements periodically change, perhaps decreasing for the same reasons Citizens Water's usage is decreasing. However, Citizens Water's proposal would provide for the continued recovery of the Capacity Cost-related Service Charge component despite the customer's reduced peak day demands.

(5) Mr. Borcher's derivation of the Meter Capacity Ratios is faulty. His derivation of the Meter Capacity Ratios is shown in Attachment KAH-2and is summarized in the table below:

Capacity Ratios	Max gpm
5/8"	*20*
3/4"	*30*
1"	*50*
1.5"	*100*
2"	*160*
2.5"	*240*
3"	*380*
4"	*680*
6"	*1,540*
8"	*2,650*
10"	*4,400*

First, as the AWWA M1 Water Rates Manual (Sixth Edition) states on page 325: "As discussed in chapter VI.2, while capacity ratios for larger meters can be computed, the use of such ratios for larger meters may or may not provide a true indication of the potential demand requirements of the larger meters." This is reflected in part for meters 3-inches and larger on Attachment KAH-2. In each case for meters 3-inches and larger, meters can be positive displacement meters, turbine meters, compound meters, or fire service meters. Each type of meter can have significantly different rated capacities. Mr. Borchers simply calculated a weighted average for each of the larger sized meters and used that to determine his proposed Meter Capacity Ratios. For example, the 6-inch meter (of which the Town of Whitestown has three) can have meter rated capacities of 1,000 gpm (gallons per minute), 1,350 gpm or 1,600 gpm. The average used by Mr. Borchers was 1,540 gpm. However, customers with positive displacement meters have rated capacities of only 1,000 gpm. As such, they would be paying an excess Capacity Cost-related Service Charge component based on Mr. Borchers' averaging approach. This same issue exists with 4-inch and 8-inch meters as well.

(6) Citizens Meter Capacity Ratio provides different results among the various rate classes for the same meter size, which is inconsistent. If the meter size such as a 6–inch meter has a particular maximum capacity, it would seem appropriate that each meter of that size (6-inch in the above example) should have the same Capacity Cost-related Service Charge component. However, as seen in the table below, that is far from the case.

Description	RESIDENTIAL	MULTI FAMILY	COMMERCIAL	INDUSTRIAL	SALE FOR RESALE	IRRIGATION
Capacity Cost Per Meter						
5/8"	$ 3.05	$ 19.69	$ 13.71	$ 62.46	$ 74.80	$ 20.43
3/4"	$ 4.58	$ 29.54	$ 20.57	$ 93.69	$ 112.20	$ 30.65
1"	$ 7.63	$ 49.23	$ 34.28	$ 156.15	$ 187.00	$ 51.08
1.5"	$ 15.25	$ 98.45	$ 68.55	$ 312.30	$ 374.00	$ 102.15
2"	$ 24.40	$ 157.52	$ 109.68	$ 499.68	$ 598.40	$ 163.44
2.5"	$ 36.60	$ 236.28	$ 164.52	$ 749.52	$ 897.60	$ 245.16
3"	$ 57.95	$ 374.11	$ 260.49	$ 1,186.74	$ 1,421.20	$ 388.17
4"	$ 103.70	$ 669.46	$ 466.14	$ 2,123.64	$ 2,543.20	$ 694.62
6"	$ 234.85	$ 1,516.13	$ 1,055.67	$ 4,809.42	$ 5,759.60	$ 1,573.11
8"	$ 404.13	$ 2,608.93	$ 1,816.58	$ 8,275.95	$ 9,911.00	$ 2,706.98
10"	$ 671.00	$ 4,331.80	$ 3,016.20	$ 13,741.20	$ 16,456.00	$ 4,494.60

I have highlighted the 6-inch meter for illustrative purposes. As can be seen from the table, a Residential customer with a 6-inch meter pays a Capacity Cost-related Service Charge component of $234.85, while a Sale-for-Resale customer with exactly the same meter size would pay a Capacity Cost-related Service Charge of $5,759.60. This difference is inexplicable since both meters have the same capacity and place the same demands on the utility's system.

(7) Citizens Water's approach does not contemplate the situation of a utility "manifolding" meters to a customer's premise. As discussed on page 32 of the AWWA M22 Meters Manual, for larger lines instead of using one meter to measure the entire flow, multiple, smaller-sized meters may be installed in a manifold. Citizens Water has not established whether manifolding meters would produce the same total of Service Charges as a single meter with similar capacity.

(8) Citizens Water's proposed Service Charge proposal does not fairly and equitably treat compound meters. A compound meter is a type of meter that is often used for large volume customers when a wide flow range exists. A large meter will

generally fail to accurately measure low flows. On the other hand, a small meter may be inadequate to handle the large flows when they occur. Therefore, a compound meter is a single meter although it sometimes has two registers-one for low flows and one for high flows. However, Citizens Water's practice inappropriately counts each register as a separate meter and applies the present Service Charge to each. Citizens Water also plans to apply the proposed Service Charge to each, which will obviously have a much more significant effect. Until December 2, 2014, the Town of Whitestown had an 8-inch compound meter with a 2-inch low flow bypass meter[7]. The Intervenor Town of Whitestown was billed for both an 8-inch meter and a 2-inch meter despite the fact that the compound meter was a single meter.

(9) Citizens Water has not demonstrated that it has the internal controls to accurately administer recovery of such a large amount of revenue through the Service Charges. In fact, in the aforementioned case of Whitestown, despite the fact that the 8-inch compound meter was removed on December 2, 2014 and replaced with two 6-inch meters, Citizens Water has continued erroneously billing Whitestown incorrectly for the meters that were changed out ten months ago.[8]

(10) Citizens Water has complete control over the sizing of the meter and there are no checks and balances. Given that a significant percentage of revenue is proposed to be recovered through the Service Charge based on the size of the meter, Citizens Water could affect both its own revenue and the customer's bill by changing out the

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[7] This was replaced with two 6-inch meters.

[8] Citizens Water has indicated it will refund the over-billings

meter. As discussed above, on December 2, 2014, Citizens Water changed Whitestown's meter from an 8-inch compound meter (with a 2-inch bypass register) to two 6-inch meters. I have been unable to ascertain whether the Town of Whitestown was informed of this change or the reason for it. However, under Citizen's proposed Customer Charge rate structure, the Town of Whitestown's bill would increase by $10,500 per year simply based on Citizens Water's unilateral and perhaps self-serving decision to change meters.

(11) Citizens Water has presented no precedent that such a Capacity Cost-based Service Charge rate design has ever been approved by this Commission. In fact, in a 1983 order in Columbus Municipal Waterworks, Cause No. 37124, the Commission rejected a very similar proposal.[9] In that Order, included as Attachment KAH-3, the Commission stated:

> "... if availability is defined in demand-related terms, there is no evidence presented in this study to determine that a relationship based on the size of the meter properly reflects different demand relationships placed on the water utility by various classes of customers."

Q. ON PAGE 15 OF 32 OF MS. PRENTICE'S TESTIMONY, LINES 13-21, SHE STATES THAT CITIZENS WATER'S PROPOSAL IS NOT A DECOUPLING MECHANISM. DO YOU AGREE?

A. No. In my opinion, Citizens Water's proposal to recover additional fixed costs through increased fixed charges is a decoupling approach. While it is not a decoupling "rider" or "tracker" as has been implemented by numerous natural gas utilities, it begins to "decouple" revenues from sales volumes which is the essence of decoupling. It is the

[9] *In re: City of Columbus,* 1983 WL 913526 (Ind. P.S.C.) at 6-7; 53 PUR 4th 671 (May 25, 1983).

first step toward the decoupling approach commonly known in the utility and regulatory arenas as Straight-Fixed-Variable ("SFV") rate design.

Q. PLEASE COMMENT ON THE FACT THAT A CUSTOMER'S CURRENT SERVICE CHARGE IS BASED ON THE SIZE OF ITS METER.

A. While it is true that a customer's current Service Charge is based on the size of the customer's meter, it is necessary to note that the present Service Charge is designed so that the customer pays for the Customer Costs, not Capacity Costs. Therefore, as illustrated previously, the current magnitude of the Service Charge pales in comparison to the magnitude that will result under Citizens Water's proposal. The present Service Charge simply may not draw the customer's attention the way the proposed Service Charge undoubtedly will. A customer may require a different size meter for the reasons previously discussed, and it is only appropriate that the customer pay for the increased costs of particular meter. Second, as previously described, the proposed Capacity Cost-based Service Charge is exponentially more expensive to customers than the Customer Cost-based Service Charge presently in place.

4. CITIZENS WATER'S COST OF SERVICE STUDY ("COSS")

A. MR. BORCHERS' COSS INAPPROPRIATELY ALLOCATES INDIANA UTILITY RECEIPTS TAXES ("IURT") TO SALE-FOR-RESALE CUSTOMERS

Q. DOES MR. BORCHERS' COSS PROPERLY ALLOCATE IURT TO SALE-FOR-RESALE CUSTOMERS?

A. No. The calculation of the IURT is required to be based on retail revenues, not total revenues. Thus revenues from Sale-for-Resale customers should not be subject to application of the IURT. This exclusion of Sale-for-Resale revenue

from the calculation of IURT implies that the Sale-for-Resale customer class should not be allocated any IURT. However, Mr. Borchers' COSS erroneously allocates IURT to Sale-for-Resale customers. I recommend that the Commission order Mr. Borchers to revise his COSS to exclude the allocation of IURT from the Sale-for-Resale customer class.

B. MR. BORCHERS' COSS FAILS TO FUNCTIONALIZE CERTAIN MAINS AS CUSTOMER-RELATED

Q. DOES MR. BORCHERS' COSS MISCLASSIFY CERTAIN MAINS-RELATED COSTS?

A. Yes. Mr. Borchers' COSS fails to functionalize certain mains as customer-related and instead classifies all mains as either Base- or Extra Capacity-related.

Q. WHAT IS THE BASIS FOR FUNCTIONALIZING CERTAIN MAINS AS CUSTOMER-RELATED?

A. Distribution mains 2-inches and smaller in diameter are classified as customer-related and assigned directly to the customer cost function. The theory supporting this classification is that in order for a utility to serve even the smallest customer, it would have to install a minimum size system. Therefore, the costs associated with the minimum system are related to the number of customers that are served, instead of the demand imposed by the customers on the system. The rationale is that mains investment is a function of (1) length, which is a function of number of customers, and (2) size or diameter, which is a function of capacity demands.

Q. WHAT EFFECT WOULD THE FUNCTIONALIZATION OF CERTAIN SMALL MAINS AS CUSTOMER-RELATED HAVE ON THE SERVICE CHARGE?

A. Because the subject mains would be customer-related, they would appropriately be included in the Service Charge and thus would increase the Service Charge.

Q. IS IT COMMON FOR UTILITIES TO FUNCTIONALIZE CERTAIN MAINS OR DISTRIBUTION LINES AS CUSTOMER-RELATED?

A. Yes. The use of a minimum distribution system or zero-intercept approach is common in Indiana.

C. MR. BORCHERS' COSS DID NOT REFLECT THE WATER USAGE OF PUBLIC FIRE HYDRANTS

Q. DID MR. BORCHERS' COSS REFLECT THE WATER USAGE OF PUBLIC FIRE HYDRANTS?

A. No. He erroneously excludes the water usage of public fire hydrants from his COSS. The average day public hydrant use has been estimated at 1.25% of total average day water system demand, based on the response from Citizens Water in OUCC Data Request 7-4. This data request is included in Attachment KAH-4.

Q. WHERE SHOULD THIS BE REFLECTED IN MR. BORCHERS' COSS?

A. It should be reflected in the Units of Service schedule in the Base Cost function for the Public Fire Protection customer class.

Q. HAS THIS UTILITY OR ITS PREDESCESSOR PREVIOUSLY REFLECTED THE WATER USAGE OF PUBLIC FIRE HYDRANTS IN ITS COSS?

A. Yes. IDOW reflected water usage of public fire hydrants in its final rate proceeding, Cause No. 43645.

D. MR. BORCHERS' DIRECT PUBLIC FIRE PROTECTION ALLOCATION IS ERRONEOUS

Q. DO YOU HAVE OTHER CONCERNS WITH RESPECT TO MR. BORCHERS' COSS?

A. Yes. Mr. Borchers has incorrectly allocated Direct Public Fire Protection costs to Sale-for-Resale customers. As stated previously in my testimony, Direct Public Fire Protection costs relate solely to public fire hydrants, which are used only by retail customers. Therefore, Sale-for-Resale customers should not be allocated any Direct Public Fire Protection costs. However, Mr. Borchers' study does allocate these costs to Sale-for-Resale customers. I recommend that the Commission reject Mr. Borchers' proposed allocation of Direct Public Fire Protection costs to Sale-for-Resale customers.

5. VOLUMETRIC RATE DESIGN

Q. PLEASE DISCUSS HOW A WATER UTILITY'S VOLUMETRIC RATES ARE ESTABLISHED.

A. After the Service Charges for each rate schedule are established and the Service Charge revenues can be estimated based on the number of bills, volumetric rates are then established for each customer class to generate the appropriate level of revenues remaining to be recovered in each customer class. The specific volumetric rate design is based on the water utility's specific goals and objectives.

Q. WHAT WAS MR. BORCHERS' PRIMARY OBJECTIVE IN HIS VOLUMETRIC RATE DESIGN?

A. Mr. Borchers' primary objective was the movement of each rate class toward uniform rates. In the previous rate proceeding, Cause No. 44306, Mr. Borchers proposed to move the Residential and Irrigation customer classes all the way to uniform rates. Mr. Borchers proposed to make a partial movement of the Commercial and Multi-Family customer class declining block rates toward uniform rates in what he referred to as "semi-uniform rates." Mr. Borchers proposed no movement in the Industrial or Sale-for-Resale customer classes toward uniform rates. That rate design became the basis for the Settlement Agreement concerning the COSS and rate design. Therefore, in the instant proceeding Mr. Borchers proposed the continuation of the settlement rate design from Cause No. 44306 by proposing to move the Industrial and Sales-for-Resale customers toward uniform rates.

Q. DID MR. BORCHERS PROVIDE ANY RATIONALE FOR THE MOVEMENT OF THE INDUSTRIAL AND SALES-FOR-RESALE CLASSES TOWARD UNIFORM RATES IN THE CURRENT PROCEEDING?

A. No, not in the instant proceeding. However, Mr. Borchers' Rebuttal Testimony in Citizens Water's previous rate proceeding, Cause No. 44306, provided some useful insight:

> *Q. DO YOU RECOMMEND MOVING THESE [LARGE INDUSTRIAL AND SALE-FOR-RESALE] CUSTOMERS TO A UNIFORM RATE FOR THEIR VOLUMETRIC CHARGE?*
>
> *A. No. As mentioned in my direct testimony, moving to a uniform rate for these customers would result in significant rate shock. The Commercial, Industrial, and Sale for Resale classes include customers with different usage profiles and, at this time, Citizens Water is proposing to retain the declining block rate structure for these customers. As Citizens Water continues with its conservation initiatives moving forward, it can evaluate whether a future change to the volumetric structure for these customers will provide any conservation benefits. If that determination is made, the*

option of moving to an alternative volumetric rate structure can be explored at that time."

(Rebuttal Testimony of Michael C. Borchers, Petitioner's Exhibit MCB-R, Page 19, Line 19, through Page 20, Line 10.)

Q. UNDER CITIZENS WATER'S PROPOSED RATE DESIGN AND ITS MOVEMENT TOWARD UNIFORM RATES IN THE INSTANT PROCEEDING, DID MR. BORCHERS' PREDICTION CONCERNING RATE SHOCK PROVE TRUE?

A. Yes. With an average increase to Sale-for-Resale customers of 45% (compared to the system average of approximately 22%), certain Sale-for-Resale customers will necessarily experience increases significantly in excess of 45%. For example, based on an analysis prepared by Citizens Water and provided in response to TOW DR3-3, at least one Sale-for-Resale customer will experience actual increases of 372%. Another will experience an increase of over 98%. By anyone's definition, these results constitute rate shock and should result in rejection of the proposed rate design.[10]

Q. BASED ON MR. BORCHERS' REBUTTAL TESTIMONY IN CAUSE NO. 44306, WHAT CONCLUSIONS CAN YOU REACH CONCERNING CITIZENS WATER'S PRESENT APPROACH TO COST OF SERVICE AND RATE DESIGN?

A. Several important points are reflected in Mr. Borchers' Rebuttal Testimony from Cause No. 44306. First, he apparently forgets that the rate design approved in the Cause No. 44306 Settlement Agreement was non-precedential and the rate design was not approved

[10] It should be noted that any bill impact analysis will be the result of both the proposed Service Charge and the proposed volumetric (uniform) rate designs.

per se by the Commission. Second, Mr. Borchers specifically segregates "Large Industrial" from the overall Industrial class. He also notes that Commercial, Industrial, and Sale-for-Resale classes include customers with different usage profiles, concluding that is reason to retain the declining block rate structure for these customers. It indicates that these customer classes are non-homogeneous for whom the use of a single uniform rate is inappropriate.

In fact, it would appear to be prudent to conduct a thorough review of the Commercial, Industrial, and Sale-for-Resale classes with the idea of splitting these classes into more homogeneous classes.

Q. DO YOU HAVE CONCERNS ABOUT THE CONSISTENCY BETWEEN MR. BORCHERS' COSS AND CITIZENS WATER'S RATE DESIGN PROPOSALS?

A. Yes. First, as Mr. Borchers stated in his Rebuttal Testimony in Citizens Water's previous rate proceeding, the Commercial, Industrial and Sale-for-Resale customers are non-homogeneous. However, for cost of service and rate design purposes, Citizens Water has now grouped all Commercial customers together in a single class, all Industrial customers are grouped together in a single class, and all Sale-for-Resale customers are grouped together in a single class. Given the existing rate design, where rate consistency from case to case is an important rate design principle, this was not objectionable. However, given the extreme changes that Citizens Water is proposing in its rate design, including the move toward uniform rates within each customer class, this issue becomes paramount. Mr. Borchers' COSS simply does not support Citizens Water's proposed rates, nor can the proposed rates be considered fair and equitable without COSS support.

Q. WHAT IS YOUR RECOMMENDATION WITH RESPECT TO THE PROPOSED MOVEMENT TOWARD UNIFORM VOLUMETRIC RATES FOR EACH CUSTOMER CLASS?

A. It is first important to note that the schedule of rates and charges presently in effect was the result of a non-precedential Settlement Agreement in Citizens Water's preceding general rate proceeding, Cause No. 44306. The COSS and rate design including the movement of certain rate classes to uniform rates was agreed to in the Settlement Agreement. Thus one has to go to the rate proceeding prior to Cause No. 44306 to find a rate design that was subject to full litigation and Commission analysis and approval . With that in mind, I propose uniform rates for the Residential customers. Large usage Residential customers are likely using water for discretionary purposes such as watering lawns or other outdoor use. This class of customers has a poor capacity factor and uses water at times of high peak demands when supplies may be near capacity. Such usage should not be priced at a lower block rate than small users that use water for basic needs. With a single uniform block structure, all residential usage is priced at the same rate. With respect to the other non-residential customer classes, I believe any proposed movement toward uniform rates to be premature at this time.

Q. PLEASE EXPLAIN WHY YOU BELIEVE THE PROPOSED MOVEMENT OF NON-RESIDENTIAL RATE SCHEDULES TOWARD UNIFORM RATES TO BE PREMATURE.

A. There are two basic reasons. First, as Mr. Borchers stated in his Rebuttal Testimony in Cause No. 44306, each of those non-residential customer classes has diverse usage within each class. Thus, uniform rates may not be appropriate. Uniform rates would be

appropriate only in a customer class with homogeneous usage, such as the Residential customer class. Further analysis of usage characteristics within each non-residential customer class would be necessary prior to the implementation of uniform rates. Moreover, it is possible and indeed probable that the customer classes utilized within the COSS would need to be expanded to reflect the more refined customer class usage analysis. For example, it is probable that the Industrial customer class would need to be divided into Small (or poor capacity factor) and Large (or good capacity factor) classes.

Q. ONCE CUSTOMER CLASSES ARE CREATED THAT REFLECT MORE COMMONALITY OF USAGE CHARACTERISTICS WITHIN EACH CUSTOMER CLASS, WOULD UNIFORM RATES BE APPROPRIATE AT THAT POINT?

A. No, not necessarily. It is probable that the results of such analysis would result in customer classes, some of which would be homogeneous and some of which would be non-homogeneous. It may be appropriate for the customer classes with homogeneous customers to begin movement toward uniform rates. However, it would not be appropriate for the customer classes with non-homogeneous customers to move toward uniform rates. For example, the Large Industrial customer class (a potentially new customer class resulting from the customer usage analysis) and the Sale-for-Resale customer class will undoubtedly have non-homogeneous customers (as Mr. Borchers recognizes in his Rebuttal Testimony in Cause No. 44306). More complex and sophisticated rate structures would be required, such as demand rates or even individual rates for each Sale-for-Resale customer would be possible. Enhanced metering or use of

SCADA data also creates the opportunity for more sophisticated and effective conservation rate schedules such as demand rates.

Q. YOU MENTIONED EARLIER IN YOUR TESTIMONY THAT THERE WERE TWO REASONS WHY MOVEMENT OF ALL RATE CLASSES TO UNIFORM RATES WAS PREMATURE. WHAT IS THE SECOND REASON?

A. The second reason is that Citizens Water has not made a satisfactory effort to evaluate other conservation and/or drought rate designs. For example, in the Citizens Water Wise Plan approved in Cause No. 44240 on May 22, 2013, on Page 27 of 31 of said Plan, it lists nine rate structures and subsequently notes that: "These rate structures will be evaluated as part of the cost of service/rate design study to be conducted in Citizens Water's next rate case." Citizens Water's case-in-chief is silent with respect to any evaluation of rate structures, and without any basis jumps to the assumption that uniform rates are appropriate for every customer class whether homogeneous or not. It is true that Citizens Water did propose uniform rates, which was one of the conservation rate schedules on the list, but no apparent evaluation took place to select this approach over other alternatives. But as described previously, even the partial or full movement toward customer class uniform rates as implemented by Citizens Water was problematic.

6. TOWN OF WHITESTOWN RATE DESIGN

Q. DO YOU HAVE CONCERNS WITH THE TOWN OF WHITESTOWN'S PROPOSED RATE DESIGN?

A. Yes. I have a number of concerns in addition to those I have previously expressed with respect to the COSS and resulting Service Charge and volumetric rate design, particularly as it relates to the Sale-for-Resale customer class.

Q. WHAT IS THE PRIMARY BASIS FOR YOUR CONCERNS?

A. Whitestown is currently operating under a Memorandum of Understanding ("MOU") with Citizens Water dated March 22, 2013, which provided for the construction of a second connection point with Citizens Water. This second connection point was required because Citizens Water was unable to physically deliver the contract quantity of 4 MGD (million gallons per day) of water to Whitestown through the single connection. Therefore, Citizens Water needed to construct a second connection in order to comply with the contract quantity requirement of 4 MGD. Between the two connection points, Citizens was able to deliver the required 4 MGD. However, during the review of Citizens Water's rate filing, Whitestown discovered several billing problems. First, Whitestown presumed that because the second connection was constructed in order to meet Citizens Water's contractual obligation to it, the water consumption from the second connection would be added to the first connection before running through the rate blocks. Utilities' tariffs often include a provision that states that when a second meter is required for the convenience of the utility, the billed consumption is treated as "add-consumption." However, when a second meter is required for the convenience of the customer, the second meter is treated as a second account. In the instant case the second connection and meters were clearly for the convenience of Citizens Water so they could fulfill their contractual capacity requirements. Therefore, the consumption should be added before being run through the rate blocks.

Second, Citizens Water originally had one 6-inch meter and one 8-inch compound meter (with a low flow 2-inch register). However, Citizens Water billed the Service Charge for an 8-inch compound meter as one 8-inch meter and one 2-inch meter, thus over-billing Whitestown. Whitestown should have been billed a Service Charge only for one 8-inch compound meter, and the 2-inch low flow register should not have been added as a second meter. It is my understanding that all compound meters in Citizens Water's system are billed similarly. This would have the effect of overstating the number of meters, the number of bills and actual billed revenue in this rate proceeding.

Third, on December 2, 2014, Citizens Water changed out the 8-inch compound meter and replaced it with two 6-inch meters. Thus Whitestown now had three 6-inch meters for its Citizens Water connections. Whitestown has requested the reason for the meter change-out, but Citizens Water has not yet replied. In any event, it is noteworthy that this meter changeout would increase Whitestown's bill by $10,500 per year under Citizens Water's proposed rates should they be approved as filed.

Q. PLEASE EXPLAIN THE RELEVANCE OF WHITESTOWN'S DAILY SCADA DATA ON CITIZENS WATER'S PROPOSED RATE STRUCTURE.

A. If Citizens Water is interested in revenue stabilization, and given that Whitestown has daily SCADA data available, demand rates would be an appropriate approach that would satisfy a number of concerns. First, demand rates would provide the revenue stabilization that Citizens Water is seeking instead of the fatally-flawed Service Charge revenue stabilization proposal. Also, given the diversity that the Sale-for-Resale customers have

from each other due to different levels of storage, different mixes of customer classes, etc., demand rates would be a rate design tool to address this diversity and send accurate price signals to these customers to reduce demand. This would be an ideal conservation rate.

Q. IF NOT ALL SALE-FOR-RESALE CUSTOMERS HAD SCADA DATA, WHAT WOULD YOU RECOMMEND?

A. If not all Sale-for-Resale customers had SCADA data, I would recommend bifurcating the Sale-for-Resale customers into those with SCADA for which demand rates would be created, and those without SCADA which would remain on a volumetric rate similar to the rates of the other customer classes.

Q. ARE THERE OTHER REASONS WHY YOU BELIEVE CITIZENS WATER'S RATE DESIGN FOR WHITESTOWN IS IMPROPER?

A. Yes. Whitestown and Citizens Water have a Memorandum of Understanding which states: "The Parties agree to enter into good faith negotiations and finalize a Metering and Operating Agreement before May 1, 2013 concerning and clarifying the water supply service from Citizens to Whitestown." Very little, if any, activity has occurred between the Parties concerning the Metering and Operating Agreement. One of the specific and important provisions of the Memorandum of Understanding is that the Metering and Operating Agreement will include the following: "The Parties will consider alternative rate structures for Whitestown." To date no action has occurred on the discussion of the alternative rate structure.

Q. WHAT ARE YOUR ULTIMATE RECOMMENDATIONS IN LIGHT OF THE CONCERNS YOU HAVE IDENTIFIED?

A. Because Citizens Water's revenue stabilization proposal with respect to the material increase in Service Charges through the addition of a Capacity Cost-based component is without merit, violates numerous rate design principles, and results in Service Charges that are not fair and equitable, the proposed Service Charge methodology that includes the Capacity Cost-based component should be rejected. Instead, the Commission should establish Service Charges based solely on Customer Costs.

I recommend the Commission adopt the corrections to the COSS as described herein before the COSS is used for rate design. Specifically, corrections are necessary to the IURT calculations; to the functionalization of customer-related mains; and to the appropriate water usage of public fire hydrants.

I recommend that the Commission reject Citizens Water's proposal to move all customer classes toward uniform rates. Instead, I propose that all volumetric rates be adjusted across-the-board on a percentage basis. Once the Commission has corrected and adjusted the COSS, I recommend approval of uniform rates for the Residential and Irrigation classes. I propose that the non-Service Charge revenue be distributed across-the-board to the Commercial, Industrial and Sale-for-Resale customer classes based on the present block rates; i.e., those approved in Cause No. 43645.

In lieu of Citizens Water's proposal for Sale-for-Resale customers, I propose the Commission order Citizens Water to develop demand rates using SCADA data of each Sale-for-Resale Customer where it exists. I recommend that Sale-for-Resale customers

without SCADA data remain on a volumetric rate similar to the other customer classes. Finally, I recommend that the Commission order Citizens Water to initiate action on the Metering and Connection Agreement with Whitestown to arrive at an alternative rate structure as well as the use of add-on consumption.

Q. DOES THIS CONCLUDE YOUR PREPARED DIRECT TESTIMONY?

A. Yes, at the present time.

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Attachment KAH-1

CITIZENS WATER
IURC CAUSE NO. 44644
EXHIBITS OF KERRY A. HEID
ON BEHALF OF INTERVENOR TOWN OF WHITESTOWN

Experience and Qualifications of Kerry A. Heid

KERRY A. HEID, P.E. **Heid Rate and Regulatory Services**

Mr. Heid is an independent rate consultant with more than 33 years of water, wastewater, gas, electric, and steam utility experience in the rate and regulatory areas. Mr. Heid was previously Director of Rates for Vectren Corporation, a combination gas and electric utility with one million customers, where he directed the rate activities for the Vectren utilities of Indiana Gas Company, Southern Indiana Gas and Electric Company and Vectren Energy Delivery of Ohio. While at Vectren Mr. Heid was responsible for preparation of cost of service studies and rate design. Mr. Heid has testified on numerous occasions regarding cost of service studies, rate design and other regulatory and ratemaking matters.

Prior to Mr. Heid's employment with Vectren, he was employed by Black & Veatch Consulting Engineers, where he prepared cost of service and rate design studies for water and wastewater utilities throughout the United States. Mr. Heid also headed the water and wastewater engineering section of the Indiana Utility Regulatory Commission prior to assuming a more senior advisory role with the Commission.

Since leaving Vectren in 2002 to start his own rate and regulatory consulting firm, Mr. Heid has continued on retainer with Vectren, consulting on gas and electric cost of service and rate design matters. Mr. Heid has also assisted other utility clients with respect to cost of service and rate design studies and other ratemaking matters.

Mr. Heid has been actively involved as a member of the following professional industry associations: *(i) American Water Works Association ("AWWA") Rates and Charges Committee; (ii) Water Subcommittee of the National Association of Regulatory Utility Commissioners ("NARUC"); (iii) Water Environment Federation; (iv) American Gas Association Rate and Strategic Planning Committee, including former Chair of its Revenue Requirements Subcommittee; (v) Indiana Gas Association, Former Chair; (vi) Edison Electric Institute ("EEI") Economic Regulation and Competition Committee; and (vii) Indiana Electric Association Rates and Tariffs Committee.*

As a member of the AWWA Rates and Charges Committee, which is responsible for the AWWA M1 Water Rates Manual "Principles of Water Rates, Fees, and Charges," Mr. Heid assisted in drafting, reviewing and updating the newly-issued Sixth Edition of the AWWA M1 Water Rates Manual, and is listed as a contributor in the Acknowledgements.

At the Indiana Utility Regulatory Commission's invitation, Mr. Heid conducted two-day training for its staff on preparation of water cost of service studies and rate design. Mr. Heid has served on the faculty of numerous utility rate training seminars and has given presentations to various utility organizations including the AWWA ACE Water Conference, the Annual Eastern Utility Water Rate Seminar, and the AGA Gas Rate Fundamentals Course.

Mr. Heid has a B.S. degree in Civil Engineering from Purdue University and an MBA degree with a concentration in finance from Indiana University. Mr. Heid is a registered Professional Engineer in the State of Indiana.

Representative Engagements of Kerry A. Heid, P.E.

Client	*Year*	*Project Emphasis*
Vectren North (Indiana Gas Co.)	1990	Gas Cost of Service Study and Rate Design Normal Temperature Adjustment
Vectren North (Indiana Gas Co.)	1992-1995	Gas Cost of Service Study and Rate Design Normal Temperature Adjustment Environmental Cost Recovery Tracker
Vectren North (Indiana Gas Co.)	1989-2002	Quarterly Gas Cost Adjustments
Vectren South (SIGECO)-Gas	2000-2002	Quarterly Gas Cost Adjustments
Vectren South (SIGECO)-Electric	2000-2002	Quarterly Electric Fuel Cost Adjustments Demand Side Management Cost Riders
Vectren Energy Delivery of Ohio	2000-2002	Quarterly Gas Cost Adjustments
Vectren Energy Delivery of Ohio	2001	Gas Cost Recovery Audit
Vectren Energy Delivery of Ohio	2001	Senate Bill 287 Implementation Gross Receipts Tax Rider
Vectren South (SIGECO)-Electric	2001	NOx Environmental Cost Recovery Mechanism
Vectren South (SIGECO)-Electric	2002	NOx Environmental Cost Recovery Mechanism
Vectren South (SIGECO)-Electric	2002	Review of Electric Cost of Service Study
Evansville Business Alliance	2002	Wastewater Cost of Service Study and Rate Design
Evansville Business Alliance	2002	Water Cost of Service Study and Rate Design
Mead Johnson (Bristol Myers)	2003	Wastewater Rate Projections
Vectren South (SIGECO)-Electric	2003	NOx Environmental Cost Recovery Mechanism
South Bend Industrial Intervenors	2003	Wastewater Cost of Service and Rate Design
Indiana Utilities Corporation	2003	Gas Cost of Service and Rate Design
Community Natural Gas Co.	2003	Gas Cost of Service Study and Rate Design
Indiana Natural Gas Corporation	2003	Gas Cost of Service Study and Rate Design
Indiana-American Water Company	2003	Water Cost of Service Study and Rate Design Single Tariff Pricing

Representative Engagements of Kerry A. Heid, P.E.

Client	*Year*	*Project Emphasis*
Purdue University	2004	Wastewater Cost of Service Study and Rate Design
City of Frankfort, IN	2004	Water Cost of Service Study and Rate Design Large Customer Bypass Negotiations
Evansville Business Alliance	2004	Wastewater Cost of Service Study and Rate Design
Switzerland County Natural Gas	2004	Gas Cost of Service Study and Rate Design
Vectren Energy Delivery of Ohio	2004	Gas Cost of Service Study and Rate Design
Vectren North (Indiana Gas Co.)	2004	Gas Cost of Service Study and Rate Design Normal Temperature Adjustment
Clay Utilities Customers	2005-2007	Outside City Surcharge
City of East Chicago, IN	2005	Water Cost of Service Study and Rate Design
Indianapolis Department of Waterworks (formerly Indianapolis Water Company, Inc.)	2006	Water Cost of Service Study and Rate Design
Culver Academies	2005	Wastewater Cost of Service Study and Rate Design
City of Anderson, IN	2005-2006	Water Cost of Service Study and Rate Design
Vectren South (SIGECO)-Electric	2006-2007	Electric Cost of Service Study
Vectren South (SIGECO)-Gas	2006-2007	Gas Cost of Service Study and Rate Design
MasterGuard Corporation	2006	Electric Rate Billing Dispute Litigation
Lawrenceburg Gas Corporation	2006-2007	Gas Cost of Service Study and Rate Design Single Tariff Pricing School Transportation Tariff
Fountaintown Gas Company	2006	Transportation Balancing Provisions
Lawrenceburg Gas Company Midwest Natural Gas Corporation Indiana Utilities Corporation South Eastern Indiana Natural Gas Co. Fountaintown Gas Company, Inc. Community Natural Gas Co. Boonville Natural Gas Corporation Chandler Natural Gas Corporation Indiana Natural Gas Corporation	2006	Normal Temperature Adjustment

Representative Engagements of Kerry A. Heid, P.E.

Client	*Year*	*Project Emphasis*
Missouri-American Water Company	2006-2007	CWIP Surcharge
Grandview Municipal Waterworks	2007	Sale for Resale Rate Litigation
Citizens Gas & Coke Utility	2007	Normal Temperature Adjustment
Southeastern Indiana REMC	2007	Electric Cost of Service Study and Rate Design
Ohio Valley Gas Company	2007	Gas Cost of Service Study and Rate Design Normal Temperature Adjustment Pipeline Safety Integrity Rider
Midwest Gas Corporation	2007	Gas Cost of Service Study and Rate Design Single Tariff Pricing School Transportation Tariff
Citizens Thermal Energy	2007	Steam Cost of Service Study and Rate Design
Rensselaer Municipal Electric Utility	2007	Rensselaer Municipal Electric Contract with IMPA
Vectren North (Indiana Gas Company)	2007	Gas Cost of Service Study and Rate Design
Vectren Energy Delivery of Ohio	2007-2008	Gas Cost of Service Study and Rate Design
Lawrenceburg Gas Corporation	2007-2008	Gas Cost Adjustment Review and Corrections
Indiana Natural Gas Corporation	2007-2008	School Transportation Tariff
Boonville Natural Gas Corp. & Chandler Natural Gas Corp.	2007-2008	Gas Cost of Service Study and Rate Design Single Tariff Pricing
Community Natural Gas Co., Inc.	2007-2008	Rate Design
Indiana Natural Gas Corporation	2008	Gas Cost of Service Study and Rate Design
Santa Claus Municipal Waterworks	2008	Water Cost of Service Study and Rate Design
Indiana Housing and Community Development Authority	2008	2008 Review of Utility Allowances for Low Income Housing
Evansville Business Alliance	2008	Wastewater Cost of Service Study and Rate Design
Citizens Thermal Energy	2008	Large Volume Customer Steam Contract Negotiations and Approval
Southeastern Indiana REMC	2008	Update to Electric Cost of Service Study and Rate Design

Representative Engagements of Kerry A. Heid, P.E.

Client	*Year*	*Project Emphasis*
Indiana Utilities Corporation	2008	Gas Rate Design
City of Ft. Wayne, Indiana	2008	Indiana Michigan Power Electric Cost of Service Study and Rate Design Intervention
Indiana Municipal Utilities Group	2008-2009	Northern Indiana Public Service Company ("NIPSCO") Cost of Service Study and Rate Design Intervention
Vectren South (SIGECO)-Gas	2008-2009	Analysis of and Assistance with Consolidation of Indiana Gas Company and Southern Indiana Gas & Electric Company Rates (Single Tariff Pricing)
City of East Chicago, Indiana	2009	Public Fire Protection Rates
Indianapolis Department of Waterworks (formerly Indianapolis Water Company, Inc.)	2009-2010	Water Cost of Service Study and Rate Design Weather Normalization Adjustment
Indiana-American Water Company	2009-2010	Water Cost of Service Study and Rate Design Single Tariff Pricing Weather Normalization Adjustment
Town of Montezuma, Indiana	2009-2010	Wholesale Power Analysis and Negotiations
Hendricks Power Cooperative	2009-2010	Electric Cost of Service Study and Rate Design
Vectren South (SIGECO)-Electric	2009-2010	Electric Cost of Service Study
Northern Indiana Public Service Company ("NIPSCO")	2009-2010	Audit of Gas Rate Case Filing Documents
Purdue University	2010-2011	Internal Gas, Electric, Water and Wastewater Cost of Service Studies
Fort Wayne Municipal Waterworks	2010-2011	Water Cost of Service Study, Rate Design and Outside City Rate Differential
Wabash County REMC	2010-2011	Electric Cost of Service Study and Rate Design
Indianapolis Power & Light Company	2010	Demand-Side Management Lost Revenue Recovery Tracker
Jasper Municipal Gas Utility	2010-2011	Gas Cost of Service Study and Rate Design

Representative Engagements of Kerry A. Heid, P.E.

Client	*Year*	*Project Emphasis*
Indiana Municipal Utilities Group	2011	Northern Indiana Public Service Company ("NIPSCO") Cost of Service Study and Rate Design Intervention
Nucor Steel	2011	Intervention in Duke DSM Case Concerning Cost Allocation of Energy Efficiency Costs
Indiana American Water Company	2011	Water Cost of Service Study and Rate Design Single Tariff Pricing
Midwest Natural Gas Corporation Indiana Utilities Corporation South Eastern Indiana Natural Gas Co. Fountaintown Gas Company, Inc. Community Natural Gas Co. Boonville Natural Gas Corporation Indiana Natural Gas Corporation Switzerland County Natural Gas	2011	Gas Energy Efficiency, Funding and Decoupling
Sycamore Gas Company	2011-2012	Assistance with Negotiating and Preparing a Large Volume Customer Special Contract
Indiana Utilities Corporation	2011-2012	Gas Rate Design Gas Energy Efficiency, Funding and Decoupling
Ohio Valley Gas Corporation	2011-2012	Gas Cost of Service Study and Rate Design Single Tariff Pricing
Northern Indiana Public Service Company (Kokomo Gas & Fuel Co.)	2011-2012	Court Litigation with Kokomo Opalescent Glass, Inc. Concerning Gas Rates
City of Fort Wayne, Indiana	2011-2012	Indiana Michigan Power Electric Cost of Service Study and Rate Design Intervention
Morgan Foods	2012	Stucker Fork Conservancy District Water Cost of Service Study and Rate Design Intervention
South Eastern Indiana Natural Gas Co.	2012	Gas Rate Design Gas Energy Efficiency, Funding and Decoupling
Boonville Natural Gas Corporation	2012	Gas Rate Design Gas Energy Efficiency, Funding and Decoupling
Midwest Gas Corporation	2012	Gas Cost of Service and Rate Design Gas Energy Efficiency, Funding and Decoupling

Representative Engagements of Kerry A. Heid, P.E.

Client	*Year*	*Project Emphasis*
Indianapolis Power & Light Company	2012	Assistance with Regulatory Matters
Illinois American Water Company	2012	Support Water Decoupling Mechanism Before the Illinois Commerce Commission
White River Citizens United	2012	Petition Objecting to Outside Rates for Bargersville Water
Town of Montezuma, Indiana	2012	Review of Wholesale Power Amendment and Negotiations with Duke Energy
Vectren Energy Delivery of Ohio	2012	Assistance with Implementation of HB95, Establishing Gas Cost of Service Study and Rates and Charges Excluding Equity Component
Fountaintown Natural Gas Company	2012	Gas Rate Design Gas Energy Efficiency, Funding and Decoupling
Switzerland County Natural Gas Company	2012	Gas Rate Design Gas Energy Efficiency, Funding and Decoupling
Community Natural Gas Co.	2012-2013	Gas Cost of Service Study and Rate Design. Gas Energy Efficiency, Funding and Decoupling.
Nucor Steel	2013	Expert Testimony on Electric Energy Efficiency Self-Direct Program in IURC Cause No. 44310
Citizens Thermal Energy	2013	Steam Cost of Service Study and Rate Design
Indiana Natural Gas Company	2013	Gas Rate Design Gas Energy Efficiency, Funding and Decoupling
City of Fort Wayne, Indiana	2012-2013	Water Cost of Service Study and Rate Design
Citizens Thermal Energy	2013	Research and Development Into Revenue Stabilization Rate Design
Delta Natural Gas	2014	Review of Unaccounted for Gas Calculations and Underlying Procedures
Community Natural Gas Co.	2014-2015	Assistance with Calculation of Cost of Service-Based Rate for Large Volume Customer and Assistance with Preparation of 30-Day Filing.
Vectren South Electric	2015	Assistance with LED Lighting Analysis

Representative Engagements of Kerry A. Heid, P.E.

Midwest Natural Gas Corporation Indiana Utilities Corporation South Eastern Indiana Natural Gas Co. Fountaintown Gas Company, Inc. Community Natural Gas Co. Boonville Natural Gas Corporation Indiana Natural Gas Corporation Switzerland County Natural Gas	2015	Review and Analysis of First Year's Decoupling Rates
Morgan Foods	2015	Stucker Fork Conservancy District Water Cost of Service Study and Rate Design Intervention

Attachment KAH-2

CITIZENS WATER
IURC CAUSE NO. 44644
EXHIBITS OF KERRY A. HEID
ON BEHALF OF INTERVENOR TOWN OF WHITESTOWN

Derivation of Mr. Borchers' Meter Capacity Ratio

ASVC_CODE	CNSZ_CODE	MODEL_CODE	COUNT	Meter Style	gpm	
WT	1.5N	1	3448	Positive Displacement	100	
WT	10IN	5	2	Fire Service	4,400	
WT	1IN	1	7012	Positive Displacement	50	
WT	2IN	1	3760	Positive Displacement	160	
WT	3/4N	1	13754	Positive Displacement	30	
WT	3IN	1	33	Positive Displacement	320	
WT	3IN	3	68	Turbine	435	380
WT	3IN	4	74	Compound	350	
WT	4IN	3	96	Turbine	750	680
WT	4IN	4	89	Compound	600	
WT	5/8N	1	300714	Positive Displacement	20	
WT	6IN	1	21	Positive Displacement	1,000	
WT	6IN	3	54	Turbine	1,600	1,540
WT	6IN	4	54	Compound	1,350	
WT	6IN	5	315	Fire Service	1,600	
WT	8IN	2	3	Fire Service	2,800	
WT	8IN	4	1	Compound	1,600	2,650
WT	8IN	3	4	Turbine	2,800	

	gpm	
5/8"	20	1.00
3/4"	30	1.50
1"	50	2.50
1.5"	100	5.00
2"	160	8.00
2.5"	240	12.00
3"	380	19.00
4"	680	34.00
6"	1,540	77.00
8"	2,650	132.50
10"	4,400	220.00

Attachment KAH-3

CITIZENS WATER
IURC CAUSE NO. 44644
EXHIBITS OF KERRY A. HEID
ON BEHALF OF INTERVENOR TOWN OF WHITESTOWN

Columbus Municipal Waterworks Order in Cause No. 37124

1983 WL 913526 (Ind.P.S.C.), 53 P.U.R.4th 671

Re City of Columbus
Intervenor: Southwestern Bartholomew Water Corporation

Cause No. 37124

Indiana Public Service Commission

May 25, 1983

Before Wallace, Montgomery, and Harris, commissioners.

By the COMMISSION:
On February 21, 1983, the city of **Columbus**, Indiana (petitioner), filed its petition for approval of a new schedule of **water** rates and charges and for the issuance of bonds. Pursuant to notice given and published as required by law a public hearing in this matter was held on April 18, 1983, at 10:00 A.M., in Room 908, state office building, Indianapolis, Indiana. At said hearing petitioner presented evidence in support of the subject matter of its petition. The utility consumer counselor (public) and the Southwestern Bartholomew **Water** Corporation (intervenor) also participated in the hearing and submitted evidence relevant to this cause. No members of the general public appeared or sought to testify in these proceedings and by the close of the public hearing there were no pending motions or objections which had not been previously ruled upon.

The commission, based upon the applicable law and evidence herein, now finds:

1. *Statutory notice and commission jurisdiction.* Proper notice of the hearing held in this cause was given and published by the commission as required by law. The commission has jurisdiction over the parties and the subject matter of this cause.

2. *Petitioner's characteristics.* Petitioner is a municipality located in Bartholomew county, Indiana, with a population of approximately 31,000 residents. Petitioner owns and operates a municipal **water** utility serving approximately 9,570 customers in and around the city of **Columbus**. Petitioner also sells **water** for resale to intervenor and to the Eastern Bartholomew **Water** Corporation. Petitioner presented evidence that its service territory is enjoying population growth and accelerated industrial development. Witnesses characterized the service territory as a regional employment and commercial center which provides employment opportunities for many people in nearby counties.

Petitioner operates its water and sewer utilities through a five-member utility service board. The authorization for bond issues and adjustments in the utility's rates and charges are subject to the approval by ordinance of the elected common council and the mayor of the city. The existing water utility system consists of two treatment plants and a distribution system. The secondary plant is supplied raw water by nine wells which are located adjacent to the plant. Water treatment facilities consist of a retention tank, four rapid sand filters, a 500,000-gallon clear well and 1 million-gallon clear well, four high service pumps, backwash holding tank, a circular clarifier, and facilities to add chlorine and other chemicals. Petitioner's primary treatment plant is supplied raw water from six wells located adjacent to the plant. Treatment facilities consist of a retention tank, eight rapid sand filters, a 2 million-gallon clear well, three high service pumps, two back-wash holding lagoons, and facilities to add chlorine and other chemicals. The existing system also contains three 500,000-gallon elevated storage tanks and approximately 150 miles of transmission and distribution mains with numerous meters and other normal appurtenances.

Petitioner's present schedule of rates and charges was approved by the commission on August 6, 1980, in Cause No. 36076.

3. *Relief requested.* Petitioner has proposed a new schedule of rates and charges which are estimated to produce annual revenue of approximately $2,314,650 which represents an approximate 20 per cent increase in revenue. Petitioner proposes not to increase its rates and charges in an across-the-board fashion but instead petitioner is proposing a complete restructuring of its schedule of rates. Petitioner's present schedule of rates consists of declining block rates subject to a minimum charge, which includes an allowance for a minimum number of gallons. Petitioner's proposed schedule consists of a flat service charge that provides no water use allowance and a single rate block. The questions surrounding petitioner's proposed restructuring of rates represented the major area of controversy in these proceedings. Additionally, petitioner seeks commission approval for the issuance of $600,000 of waterworks revenue bonds.

4. *Petitioner's proposed bond issue and improvement program.* Petitioner presented expert testimony that its utility system has i adequate elevated storage for a system of its size and type. Inadequate elevated storage has resulted in low pressure in the southwest portion of the city which is particularly acute because of main failure in the same area. The northeastern section of petitioner's system also has inadequate pressure due to growth in the service territory, undersized mains, and dead ends which require looping. Petitioner proposes to remedy these conditions by the installation of a 1.7-million gallon standpipe storage tank in the southwestern area with a booster pump and transmission mains to connect the proposed tank to the existing distribution system. Petitioner also proposes to install eight-inch, ten-inch, and 18-inch mains in the northeast area to reinforce and loop the distribution system. There was no controversy in these proceedings concerning the desirability of petitioner's proposed improvement program and all substantial evidence of record indicates that petitioner's existing utility system should be so improved.

Petitioner presented evidence that its proposed improvement program will cost approximately $1,090,672. Petitioner proposes to obtain the necessary funds for these improvements by the issuance of $600,000 of bonds with the balance to be paid from funds on hand. Petitioner has adopted Ordinance No. 3067 providing for the issuance of waterworks revenue bonds of 1983 in the amount of $600,000. The bonds are to bear interest at a rate not to exceed 12 per cent per annum with the exact interest rate to be determined by public sale. The bonds are to mature serially on January 1st over a period ending on January I, 1994. Based upon the evidence presented the commission finds that petitioner's proposed bond issue is a reasonable method for financing part of the cost of petitioner's capital improvements and that the commission should authorize the issuance of waterworks revenue bonds for such purposes.

Although the public in no way opposed the issuance of bonds by petitioner, public's Exh 1 urged the commission to require petitioner of file with the engineering department of this commission, within thirty days after the acceptance of the construction by the utility, an itemized statement covering the expenditures of all money used for the project including all nonconstruction costs. Petitioner indicated its willingness to comply with this recommendation of the public and accordingly we find that petitioner should be required to file such a statement.

5. *Test period.* The period selected for determining petitioner's annual revenue requirement was the twelve months ending May 31, 1982. With adjustments for changes known, fixed, and measurable as noted hereinafter the test period selected is found to be sufficiently representative of the anticipated normal operation of the utility.

6. *Operating receipts.* Petitioner's actual operating receipts for the test period were $1,929,870. On the basis of the evidence presented we find that petitioner's adjusted test-year operating revenue is also $1,929,870 at current rates and it is comprised of the following elements:

Commercial and Residential Sales	$959,216
Industrial Sales	673,209
Sprinkler System	68,013
Hydrant Rental	213,955
Penalties	7,072
Turn-ons	2,110

Miscellaneous	6,295
Total	$1,929,870

As previously mentioned petitioner's proposed new schedule of rates represents a complete restructuring and a new rate design. Petitioner's Exh No. 12 indicates that petitioner's proposed rates will generate annual revenue of $2,314,651 derived from the following sources:

Flat Service Charge	$462,236
Commodity Charges	1,602,788
Hydrant Rental	203,400
Sprinkler System	29,335
Penalties	8,486
Turn-ons	2,110
Miscellaneous	6,296
Total	$2,314,651

As will be discussed more fully hereinafter at Finding No. 8 both the public and the intervenor opposed petitioner's new rate design. Public's Exh No. 1 recommended that the commission reject petitioner's proposed rate design and instead distribute any approved rate increase in an across-the-board fashion. Public's Exh No. 2 indicated that an approximate 20 per cent across-the-board increase in rates for petitioner would result in pro forma operating revenue of $2,314,163 comprised of the following elements:

Commercial and Residential Sales	$1,151,059
Industrial Sales	807,851

Sprinkler System	81,616
Hydrant Rental	256,746
Penalties	8,486
Turn-ons	2,110
Miscellaneous	6,295
Total	$2,314,163

By giving effect to petitioner's proposed rate increase based upon petitioner's proposed new rate structure we find that petitioner's pro forma operating revenue would be approximately $2,314,650. We also find that petitioner would have pro forma operating revenue of approximately the same amount if petitioner's existing rates and charges were increased by 20 per cent in an across-the-board fashion.

7. *Petitioner's revenue requirement.* The Indiana Code establishes revenue requirement elements which this commission is directed to apply in determining reasonable and just charges for services rendered by a municipally owned utility. The redundant inclusion of funds for indistinct revenue requirement elements should be avoided in determining petitioner's aggregate annual revenue requirement. A reasonable interpretation of IC 8-1.5-3-8 permits determination of petitioner's revenue requirement as follows:

(a) *Operation and maintenance expenses.* Actual test period disbursements incident to the operation of the utility, including taxes, were $1,198,045. Numerous adjustments to test-year operation and maintenance expenses were proposed by the petitioner and generally public's Exh No. 2 reflected similar adjustments. Public's Exh No. 2 supports pro forma cash operation and maintenance expenses in the amount of $1,335,170. Petitioner's Exh No. 12 supported pro forma operation and maintenance expenses in the amount of $1,318,853 with adjustments which differed in some respects from those of the public but which obviously produced similar results. Perhaps the most significant factor accounting for the larger pro forma expense figure supported by the public was the public's use of more recent data concerning increased health and disability insurance expenses. On the basis of the evidence presented we find that pro forma operation and maintenance expenses in the amount of $1,335,170 should be utilized in determining petitioner's aggregate annual revenue requirement.

(b) *Debt service.* Petitioner presented evidence that it will require $617,260 of annual revenue to pay principal and interest on its outstanding bond issues and interest and principal on the bonds to be issued at an assumed interest rate of 10 per cent per annum. Public's Exh No. 2 indicated that petitioner will require $610,551 annually to pay principal and interest on all indebtedness including the bonds to be issued at an assumed interest rate of 10 per cent per annum. The public's lower figure for debt service resulted in part because of the public's use of a five-year period from 1985 through 1989 to determine average annual interest and principal payments. Petitioner based its average annual debt service on eight years from 1985 through 1992. To assure sufficient revenue to pay principal and interest on petitioner's debt we find that an annual allowance of $617,260 for debt service should be utilized in determining petitioner's aggregate annual revenue requirement. Petitioner did present evidence that the assumed 10 per cent interest rate on the proposed bond issue was reasonable in light of current market conditions. Since the issuance of new bonds by petitioner may be at interest rates which are in excess of or less than 10 per cent we also find that petitioner should be required to report to the secretary of this commission, upon the issuance of the proposed bonds. In such report, petitioner should clearly set forth the effective interest rate at which said bonds have been

issued.

(c) *Working capital.* At the end of the test period petitioner had approximately $1,871,000 in cash and in investments distributed among various funds, excluding petitioner's meter deposit fund which had a balance of $46,497 in cash and in investments. Petitioner has not asserted any need for additional revenue for working capital purposes and the evidence clearly indicates that petitioner has sufficient funds available for working capital. Accordingly, we find that petitioner requires no annual revenue for working capital.

(d) *Payment in lieu of taxes.* This commission is required by law to approve rates and charges that are sufficient to compensate the municipality for taxes due to the municipality which would be paid on utility property were it privately owned. Petitioner has not requested any payment in lieu of taxes and presented no evidence upon which a computation of payment in lieu of taxes could be made. We find that no revenue should be included for payment in lieu of taxes in determining petitioner's aggregate annual revenue requirement.

(e) *Extensions and replacements.* Both petitioner and the public presented evidence concerning petitioner's historic average annual expenditures for extensions and replacements. For example, public's Exh No. 2 indicates average past expenditures for extensions and replacements in the amount of $5,526 annually. However, petitioner's evidence and the testimony of petitioner's witnesses indicated that future extensions and replacements would be provided for from revenue derived as a reasonable return on petitioner's utility plant and from funds on hand. Accordingly, no annual revenue will be required for future extensions and replacements.

(f) *Return on investment.* This commission is required to approve rates which are sufficient to include a reasonable return on petitioner's utility plant if the governing body of the municipality so elects. The governing body of petitioner elected to request a reasonable return on its utility plant through Ordinance No. 3081. As previously mentioned, petitioner's proposed rates and charges are reasonably estimated to generate slightly in excess of $2,314,000 of annual revenue. In light of our determinations hereinabove concerning petitioner's operation and maintenance expenses and debt service requirements, petitioner's proposed rates and charges will produce approximately $362,000 of annual revenue available as a return on petitioner's investment in property used and useful for the convenience of the public. Evidence of record indicates that petitioner's utility plant in service at the end of the test year, net of accumulated depreciation and contributions in aid of construction, was not less than $9,495,353 valued at original cost. Allowing a return of $362,221 for petitioner represents an approximately 3.8 per cent return on the value of petitioner's net utility plant in service. In support of the position that such a return is reasonable, petitioner's testimony established that the sum of $9,495,353 invested in those types of investments permitted by municipalities in the state of Indiana would yield no return greater than that requested by petitioner in these proceedings. No evidence of record was presented to indicate that petitioner's requested return on utility plant in service was unreasonable. In light of the evidence as presented, the commission finds that a return of $362,221 is not an unreasonable return for petitioner and should be utilized in determining petitioner's aggregate annual revenue requirement.

(g) *Petitioner's aggregate annual revenue requirement.* Petitioner's total annual revenue requirement is approximately $2,314,651 in the aggregate and is comprised of the following elements:

Operation and maintenance expenses	$1,335,170
Payment in lieu of taxes	-0-
Working capital	-0-
Debt service	617,260
Extensions and replacements	-0-

Return on utility plant	362,221
Total	$2,314,651

The commission finds that petitioner's existing rates and charges for services rendered by the utility are inadequate to provide for the foregoing requirement and as such are unjust and unreasonable. The commission also finds that to the extent petitioner seeks to increase its rates and charges in order to produce annual operating revenue of approximately $2,314,650 that such an increase in revenue is justified and should be allowed.

8. *Petitioner's proposed rates, allocation of rate increase, and authorized rates.* The governing body of petitioner has adopted Ordinance No. 3063 providing for a new schedule of rates and charges. The proposed schedule has been recommended by petitioner's utility service board and the proposed rates and charges were based upon a rate study performed by H. J. Umbaugh and Associates.

While there was generally little controversy concerning the amount of additional revenue which petitioner should be authorized to generate through a rate increase, there was considerable controversy concerning the method whereby such a rate increase should be allocated. Both the public and the intervenor vigorously opposed petitioner's proposed rate design. The public's witness Heid testified concerning numerous defects in the methodology employed by H. J. Umbaugh and Associates in its rate design study. Cross-examination of petitioner's witness Umbaugh revealed that the rate design proposed for petitioner's water utility was based upon rate design criteria for sewage treatment systems. Intervenor's witness Guntz enumerated five specific defects in the cost study upon which petitioner's proposed rates were based:

'First, the study lacks sufficient information to determine if it is an attempt to conform to either of the two generally accepted water industry approaches to providing a method of allocating a cost of service. Second, if the study is sponsored as being a different approach from the generally accepted water industry approaches as to a method of providing a cost of service, then the study is lacking in a definition of terms and reasons for deviating from the industry approaches. Third, if the study is sponsored as being either the commodity demand method or the base extra capacity method, which are two generally accepted water industry approaches, then the study is lacking in defining the term availability. Fourth, if availability is defined in terms other than demand related, it would appear that an essential component of cost allocation was not considered. Fifth, if availability is defined in demand-related terms, there is no evidence presented in this study to determine that a relationship based on the size of the meter properly reflects different demand relationships placed on the water utility by various classes of customers.'

We also note that public's Exh No. 1 and the testimony of witness Heid expressed similar concerns with reference to the Umbaugh rate design study. Perhaps the most serious flaw in petitioner's rate design methodology was petitioner's failure to recognize the different demands that customer classes place on the water utility system. Witness Umbaugh testified that he assumed all customer classes had similar demand characteristics. Such a premise is generally unacceptable by this commission absent quantitative data to support such an assumption. Generally, 'a proper cost-of-service study for any utility, regardless of its nature, should identify whether in fact different classes of customers place different cost burdens on the utility and if so, the rate design proposed should so reflect those different cost burdens,' Re Terre Haute Water Works Corp. Cause No. 35796, Feb. 13, 1980. Petitioner's rate design study did not calculate the cost of serving each customer class or the revenue to be derived from each customer class. Thus, there is no evidentiary basis for this commission to determine if petitioner's proposed rates adequately recover the cost of serving each of the customer classes.

While the failure of petitioner's rate design study to identify the different customer classes and their respective demands might be sufficient reason for the commission to reject the petitioner's rate design changes, we also believe other evidence indicates significant problems with petitioner's rate design changes. For example, petitioner's witness Umbaugh failed to

convincingly demonstrate that rate design criteria utilized for sewage treatment systems are appropriate for water distribution utilities. The intervenor contends that the system characteristics are vastly different between a water system and a sewage treatment system and therefore rate design methodology applicable to a sewage treatment system are not necessarily applicable to a water utility. Perhaps the most important difference revealed in the instant cause concerns fire protection. Generally a sewage treatment system has one function, to treat sewage effluent. Petitioner's water system not only provides water for use by its customers but also must provide water in sufficient quantities and at necessary pressures to provide fire protection service. Generally, there was insufficient justification presented by petitioner for the application of a rate design methodology utilized for sewage treatment systems to a water utility with petitioner's characteristics.

The public also questioned the meter size ratios which petitioner used to allocate the 'availability costs' to the various meter size groups. Witness Umbaugh testified that these meter size ratios were simply the ratios of the areas of the particular diameter pipe. On cross-examination witness Umbaugh was asked to calculate the hypothetical capacities of the various meter sizes using his meter size ratios, given that the capacity of a five-eighths-inch meter is 20 gallons per minute (gpm). Witness Umbaugh's calculations were as follows:

Size	Ratio	Capacity
0.625 inch	1.0	20 gpm (assumed)
1.0	2.5	50
1.5 inches	5.8	116
2	10.0	200
3	23.0	460
4	41.0	820
6	92.0	1,840

The public then entered public's Exh No. 3 which was a copy of p. 45 of the American Water Works Association (AWWA) Manual M22 'Sizing Water Service Lines and Meters.' Witness Umbaugh was then asked to read from Tables 5.6 and 5.7 the maximum meter capacities according to AWWA flow criteria. The applicable meter capacities from Tables 5.6 and 5.7 were as follows:

Size	Capacity

0.625 inch	20 gpm
1.0	50
1.5 inches	100
2	160
3	300
4	500
6	1,000

The commission finds from this evidence and the testimony of witness Heid that petitioner's meter size ratios significantly overstate the actual meter capacities and thereby distort the allocation of the 'availability costs.'

Public's Exh No. 1 included a comparison of charges associated with varying quantities of usage under present and proposed rates. This comparison shows that a residential customer using 3,000 gallons per month will have an increase of 45.2 per cent under proposed rates as compared with present rates. At the same time a residential customer using 6,000 gallons per month will have an 11.2 per cent increase and a residential customer using 9,000 gallons per month will have a 1.3 per cent *decrease*. Although it is not unusual for rates based upon a cost-of-service study to result in different percentage increases between customer classes, this commission finds little evidence to support the proposed rate change resulting in different treatment of customers within the same class.

The modification of an existing rate design and change in the existing revenue responsibility relationships between customer classes should be based upon a competent cost-of-service allocation study. As Judge Garrard has written:

'Rates, whether viewed technically as based on cost of service or, as here, as an addition to cost of service, must reflect a relationship to service or a benefit provided in order not to be unreasonable or to discriminate unduly among classes.' LaRowe v Kokomo Gas & Fuel Co., 179 Ind App 563, 386 NE2d 965, 975.

When scant evidence indicates that the existing rate structure of a utility is in any manner inappropriate and when serious defects in a cost-of-service study upon which proposed rates are based are shown, this commission is necessarily reluctant to approve a significant rate design change. In general, we find very little evidence of record to support a conclusion that petitioner's existing rate design is any way unjust or discriminatory. In the absence of convincing evidence to the contrary there is at least presumptive evidence that the relationships of the various existing rates to each other is satisfactory. See City of Terre Haute v Terre Haute Water Works Corp. (1962) 133 Ind App 232, 43 PUR3d 278, 180 NE2d 110, 117, citing Re Rochester Gas & E. Corp. (1940) 33 PUR NS 393. While we applaud petitioner's efforts [to] monitor and analyze its existing rate structure and cost-of-service allocations, we also believe that the weight of evidence in this cause indicates that petitioner's proposed rate design changes are based upon a seriously defective rate design study. The public utilities commission of Ohio, confronted with a defective cost-of-service study in a recent case, found as follows:

'Given the state of the record, the commission is of the opinion that the only reasonable method for assigning revenue requirements available for purpose of this proceeding is to direct applicant to increase current base revenue, exclusive of fuel, for each rate classification by the percentage increase in revenue authorized herein.' Re Dayton Power & Light Co. (1979) 29

PUR4th 145. See also City of Terre Haute v Terre Haute Water Works Corp., *supra*, 43 PUR3d 278, 180 NE2d at p. 117.

Thus, in the absence of evidence indicating that petitioner's existing rate structure is inappropriate, sound regulatory judgment and common sense dictate that the rate structure should not be radically modified if the study upon which such modifications are based is questionable in light of all the evidence of record.

Ultimately we believe that petitioner has failed to present sufficient evidence that its proposed rate design is demonstrably nondiscriminatory and based upon sound cost-of-service principles. In these circumstances we decline to approve a complete modification of petitioner's existing rate design most especially since the existing rate design does not appear significantly objectionable. Therefore, we find that the cost-of-service study and rate design based thereon submitted by petitioner should not be approved and the increase in revenues found to be necessary herein should be distributed in an across-the-board fashion

9. *Depreciation rates*. Originally in this cause it appeared that petitioner was proposing to recover depreciation in the amount of $212,733 as an annual revenue requirement. As this commission has stated in numerous prior orders, depreciation is a noncash item and the recovery of cash revenue for depreciation, in light of petitioner's ability to recover cash revenue for debt principal and extensions and replacements, would be redundant recovery. (See commission orders in Cause Nos. 36517, 36672, and 36860.) At the hearing in this cause it became apparent that petitioner did not specifically seek to recover depreciation as a distinct revenue requirement element in this cause. Instead, petitioner is seeking commission approval of the depreciation rates it uses for financial accounting purposes only. Public's Exh No. 1 indicated that the petitioner changed its existing depreciation rates in 1982 from a composite depreciation rate of 1.5 per cent to the following schedule of depreciation rates:

Facility	**Depreciation Rate**
Building and structures	1.5%
Water mains	1.25
Meters	5.0
Mechanical, electrical, furniture, and fixtures	5.0
Automobiles	20.0
Trucks	10.0

Public's Exh 1 indicates that the composite depreciation rate for the year ending May 31, 1982, using the new schedule of depreciation rates was 1.58 per cent. Public's Exh 1 recommends that the commission approve the above schedule of depreciation rates *for the limited purpose of recording depreciation on petitioner's financial books*. Public's Exh 1 emphasized that approving depreciation rates for this limited purpose should not be construed as approval of depreciation as an additional revenue requirement element beyond those recognized in Finding No. 6 hereinabove. Accordingly we find that the depreciation rates currently being utilized by petitioner should be approved for the limited purpose of recording

depreciation on petitioner's financial books but that such approval should in no way be interpreted as a recognition of a revenue requirement element for depreciation in addition to the revenue requirement elements for debt service and extensions and replacements.

End of Document

Attachment KAH-4

CITIZENS WATER
IURC CAUSE NO. 44644
EXHIBITS OF KERRY A. HEID
ON BEHALF OF INTERVENOR TOWN OF WHITESTOWN

Citizens Water's Response to OUCC Data Request 7-4

DATA REQUEST NO. 4:
Please provide an estimate of the quantity of water used for fire-fighting during each of the last three years.

RESPONSE:
In the AWWA Water Audit process, water used for fire-fighting is included in the category of "Unbilled Authorized Consumption: Unmetered." This category also includes water used for flushing mains and water quality flushing and testing. Determining specific volumes used for fire-fighting is problematic, particularly for a service territory including multiple fire departments. For this reason, as recommended in AWWA M36, Citizens used the default value of 1.25 percent of water into supply to estimate the total volume of Unbilled Authorized Consumption: Unmetered. As described in AWWA M36 in reference to documenting the volume of unbilled authorized consumption-unmetered water: "In most cases, the extra effort to document this consumption is not worthwhile. It is recommended that the default value be applied unless the auditor has documented evidence of Unbilled Authorized Consumption: Unmetered greater than this amount." (AWWA, 2009; p. 30)

Using the default value of 1.25 percent of water into supply for the system for each of the last three years results in the following estimates for "Unbilled Authorized Consumption: Unmetered," which includes water use for fire-fighting:

Calendar Year	Volume of Unbilled Authorized Consumption: Unmetered (MG)
2012	575.792
2013	559.498
2014	566.771

WITNESS:
Jeffrey A. Willman

VERIFICATION

I, Kerry A. Heid, affirm under penalties for perjury that the foregoing representations are true and correct to the best of my knowledge, information and belief.

Date: October 15, 2015

Kerry A. Heid

Kerry A. Heid

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