INDIANA-AMERICAN WATER COMPANY, INC.

DIRECT TESTIMONY

OF

CHARLES B. REA

SPONSORING ATTACHMENTS CBR-1 THROUGH CBR-5

March 31, 2023

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OF
CHARLES B. REA

INTRODUCTION

Q. Please state your name and business address.

A. My name is Charles B. Rea. My business address is 5201 Grand Avenue, Davenport, IA 52801.

Q. By whom are you employed and in what capacity?

A. I am employed by the American Water Works Service Company, Inc. ("Service Company" or "AWWSC"). My title is Senior Director, Regulatory Pricing and Affordability.

Q. Please summarize your educational background and work experience.

A. I received a Bachelor of Arts degree in Computer Science from the University of Illinois at Springfield in 1986 and a Master of Science degree in Statistics and Operations Research from Southern Illinois University at Edwardsville in 1990.

I have been employed by AWWSC since January 2018. Previous to my employment with AWWSC, I was employed by MidAmerican Energy Company from June 1990 through January 2018. I have more than thirty years of utility experience covering a wide range of issues including electric system planning, sales and revenue forecasting, electric load research, marketing, rates, class cost of service, and energy efficiency. Most recently at MidAmerican, I was Director, Energy Efficiency and Regulatory Analytics. In that position, I had responsibility for planning, evaluation, and operational management of MidAmerican's energy efficiency and demand response programs in Illinois, Iowa, and South Dakota, as well as direct responsibility for electric and natural gas sales and revenue

forecasting, electric peak demand forecasting, load research, retail pricing of electric and natural gas products, and electric and natural gas cost of service and rate design.

Q. What are your current employment responsibilities?

A. My primary responsibility in my role as Senior Director, Regulatory Pricing and Affordability is to serve as a subject matter expert on cost of service, rate design, revenue, and affordability of service issues for American Water Works Company, Inc.'s operating company affiliates, including Indiana-American Water Company, Inc. ("INAWC," "Indiana-American," or the "Company"). I am responsible for the development and preparation of cost of service and rate design analyses and filings, as well as rate design proposals to our internal and external stakeholders. I am also responsible for projections of revenue for rate case purposes, and I am responsible for developing and presenting information on the affordability of water and wastewater service to our customers.

Q. Have you previously testified before any regulatory commissions?

A. Yes. During my employment with AWWSC, I have provided testimony regarding the cost of service, rate design proposals, revenue projections, and affordability analyses for New Jersey-American Water Company, Inc., Virginia-American Water Company, Pennsylvania-American Water Company, Maryland-American Water Company, West Virginia-American Water Company, Iowa-American Water Company, Missouri-American Water Company, Indiana-American Water Company, and Illinois-American Water Company. I also have testified on numerous occasions in Iowa, Illinois, and South Dakota on issues regarding energy efficiency and electric and natural gas cost of service and rate design.

Q. What was your involvement in the preparation of Indiana-American's case in chief?

A. As a part of the preparation of Indiana-American's case in chief, I conducted the affordability analyses for water and wastewater service presented in this case and developed the Company's proposed rate design and changes to rate design including the Company's proposed Universal Affordability Tariff. In addition, I supervised the development of the Company's proposed cost of service analysis in this case, the modeling associated with the Company's residential usage analysis, and the development of the Company's proposed billing determinants and revenue calculations under present and proposed rates.

Q. What is the purpose of your Direct Testimony in this proceeding?

A. The purpose of my Direct Testimony is to sponsor INAWC's cost of service analysis and rate design proposals, affordability analyses, and revenue projections including adjustments to INAWC's historical billing determinants. Specifically, I will address the following issues:

- Affordability
- Water Rate Design
- Wastewater Rate Design
- Universal Affordability Tariff
- Cost of Service
- Analysis of INAWC Water Consumption
- Revenue Calculations

Q. Please identify the schedules you will be sponsoring and for which you will be providing testimony.

A. I am sponsoring the following schedules and Attachments to my Direct Testimony:

- Attachment CBR-1: Water Service Affordability Analysis
- Attachment CBR-2: Wastewater Service Affordability Analysis
- Attachment CBR-3: Proposed Rate Design
- Attachment CBR-4: Class Cost of Service
- Attachment CBR-5: Residential Declining Usage Model
- INAWC Financial Exhibit REV
  - Schedule REV 1 W
  - Schedule REV1 WW, and
  - Schedule REV2

AFFORDABILITY

Q. Please describe the concept of affordability.

A. The concept of affordability for water and wastewater service is based on the idea that everyone should have access to drinking water and wastewater service that is: (1) safe, meaning it complies with the U.S. Safe Drinking Water Act and regulations promulgated by the U.S. Environmental Protection Agency ("EPA"); (2) reliable, so that it is resilient in the face of floods, droughts, and other climate risks; and (3) affordable.

Q. Why is affordability of water and wastewater service an important issue to the Company?

A. The Company knows that its water and wastewater service is essential, and we know how important it is for that service to remain affordable. The affordability analyses done by the Company shows that INAWC's investment practices and management of and investment in its water and wastewater systems are in the long-term best interest of its customers; and the Company's affordability analysis also is a direct measure of the benefits that our customers gain from the Company's prudent management of the system.

Q. How does the Company assess the affordability of water and wastewater service?

A. The Company assesses affordability of water and wastewater service by comparing annual bills for water and/or wastewater service to household income in the communities that we serve. Such an assessment requires at least two data points – the average monthly or annual bill for water and wastewater service and some measure of household income for the customer population. For the broader residential customer base, the most commonly available household income measure is Median Household Income ("MHI"), which can be measured at a community level and is paired with a data set that provides the number of customers served in each community to arrive at a weighted number that represents MHI for the Company's entire service territory. At a more detailed level, individual household income is considered, and affordability can then be assessed across a full range of households based on their various income levels and bills for water and/or wastewater service. A variety of household income data is readily and publicly available from the U.S. Census Bureau through the American Community Survey ("ACS") at the state, county, and community levels.

Q. Has the Company provided an affordability analysis of its water and wastewater service for the proposed rates in this case?

A. Yes. The Company's affordability study for water service is provided in Attachment CBR-1 and the affordability study for wastewater service is provided in Attachment CBR-2. For water service (Attachment CBR-1), the analysis consists both of an Enterprise-Level Analysis and a Community-Level Analysis. For wastewater service (Attachment CBR-2), only the Community-Level Analysis is provided, as there is not enough historical data from which to develop an Enterprise-Level affordability analysis for wastewater service.

Enterprise-Level Analysis

Q. Please describe the Company's Enterprise-Level Analysis of affordability of service.

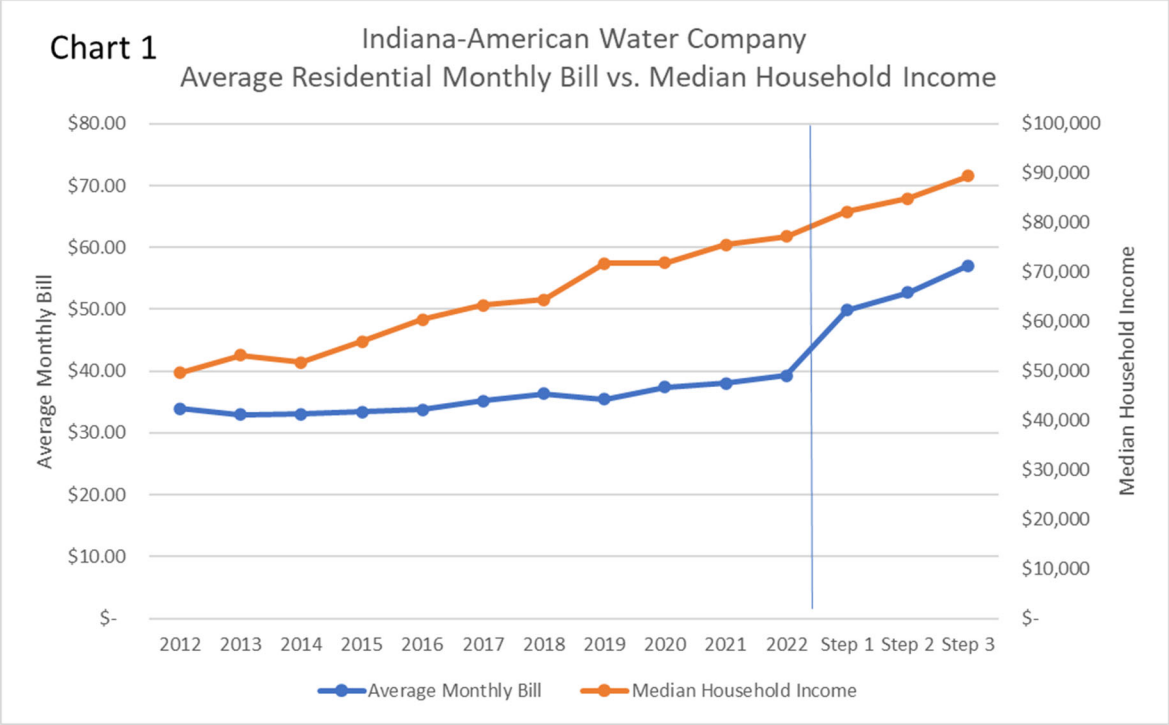
A. The Enterprise-Level Analysis of affordability for water service is an historical comparison of average monthly bills for INAWC residential customers to MHI for the Company's residential customers over the last ten years. The metric used to describe affordability is the Bill-to-Income ("BTI") Ratio, which is defined as annual water bills divided by estimated annual household income.

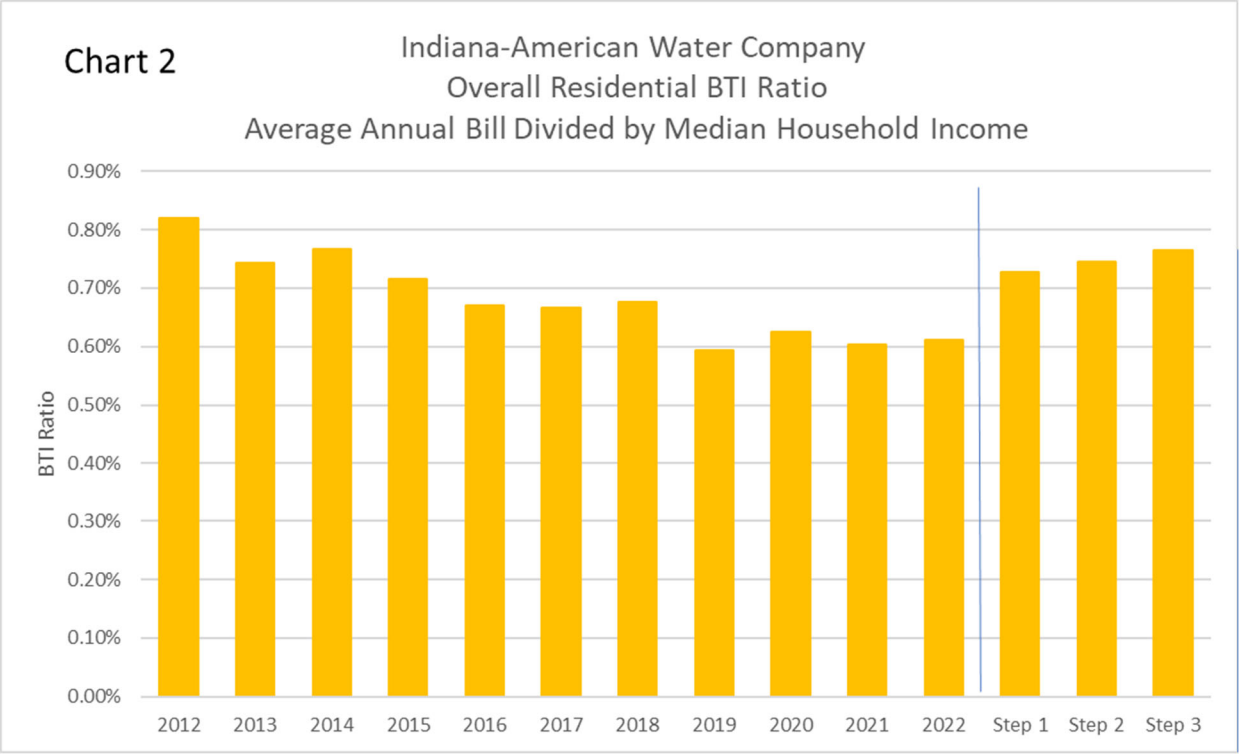
Q. How do you determine MHI for the customers in the Company's service territory?

A. The MHI for the Company's service territory is a weighted average of the number of customers the Company serves in each community in the service territory and the median household income in each of those communities for owner-occupied and single-unit renter occupied homes as reported by data in the ACS based on the most recent year's available data (2021 in this proceeding). The relationship between this service territory specific figure and the MHI for the State of Indiana for 2021 (also provided at the community level through the ACS) is then applied to historical MHI data for the State of Indiana to arrive at historical MHI data for the INAWC service territory.

Q. What are the results of your statewide enterprise-level analysis of affordability?

A. The charts below compare historical average monthly water bills to MHI for Indiana-American customers from 2012 through 2022 stated in absolute terms and stated in terms of BTI Ratio, along with estimated average monthly bills under the Company's proposed rates in this case and estimated MHI for Indiana-American customers during the Step 3 rate period. The data shows that the BTI Ratios for water service for Indiana-American customers have dropped from 2012 to 2022 starting at approximately 0.8% of MHI in 2012 to approximately 0.6% of MHI in 2022. Over the last ten years, affordability of water service has steadily improved for INAWC's customers and is expected to be 0.76% under the Company's proposed Step 3 rates in this case (the twelve-months ending April 30, 2025).





Q. Is there a generally accepted standard for the affordability of water and wastewater service expressed as a percentage of median household income?

A. A benchmark for affordability expressed as a total bill's percentage of MHI is a policy decision; however, bills less than 2.0% or 2.5% of MHI for water service and 4.0% to 4.5% of MHI for combined water/wastewater service are considered "affordable" by some.[1] As I previously testified, the overall BTI Ratios for water service for Indiana-American customers have improved over the last decade and is expected to be 0.76% under the Company's proposed Step 3 rates in this case, which is well below the thresholds considered to be the high-end limit of affordability for residential customers at the system-wide level.

[1] Teodoro, Manuel P. "Measuring Household Affordability for Water and Sewer Utilities." Journal AWWA, 2018, doi:10.5942/jawwa.2018.110.0002

Community-Level Analysis

Q. Please describe the Company's Community-Level Analysis of affordability.

A. The Community-Level Analysis takes a deeper dive into the affordability of water and wastewater service at a local level across different customer demographics and proposed rates for each community that the Company serves. For larger communities, the analysis is done at a zip-code level.

Q. What information is needed to conduct an analysis of the affordability of service at this detailed level?

A. The following information is used to assess affordability of service at the community level:

- Number of customers served in each community.
- The distribution of owner-occupied households and renter-occupied households by income level in each community.
- The percentage of occupied housing units that are owner-occupied households or renter-occupied households that are not in multi-dwelling buildings in each community.
- Average number of persons per household in each community for both owner-occupied and renter-occupied households
- The distribution of the size of households (one-person, two-person, etc,) for households of different income levels
- Standard definition of Basic Water Service
- Current or proposed rate structures

I will return to the Community Level Analysis after I discuss the concept of Basic Water Service.

Q. Please describe the concept of Basic Water Service.

A. Basic Water Service is a water usage level that reflects water consumption provided for basic human services (cooking, cleaning, sanitation, and general health requirements), which is then assumed to be constant from month-to-month and not subject to significant seasonality or weather conditions. This standard can be expressed in terms of gallons per resident per day. This service is different from discretionary seasonal water usage for filling swimming pools, lawn irrigation, etc. This definition of Basic Water Service can be used to customize a level of usage that accurately reflects water service for different sizes of households.

Q. How do you define Basic Water Service for the purposes of your customer-level affordability analysis?

A. For the purpose of the Company's affordability analyses, Basic Water Service is defined to be 40 gallons of water per household member per day. This figure is based on the review of relevant literature on the subject and a review of Company billing data for residential customers in months with minimum levels of discretionary water usage which supports the definition of 40 gallons of water per household per day.

Q. What information does your Community-Level Analysis provide?

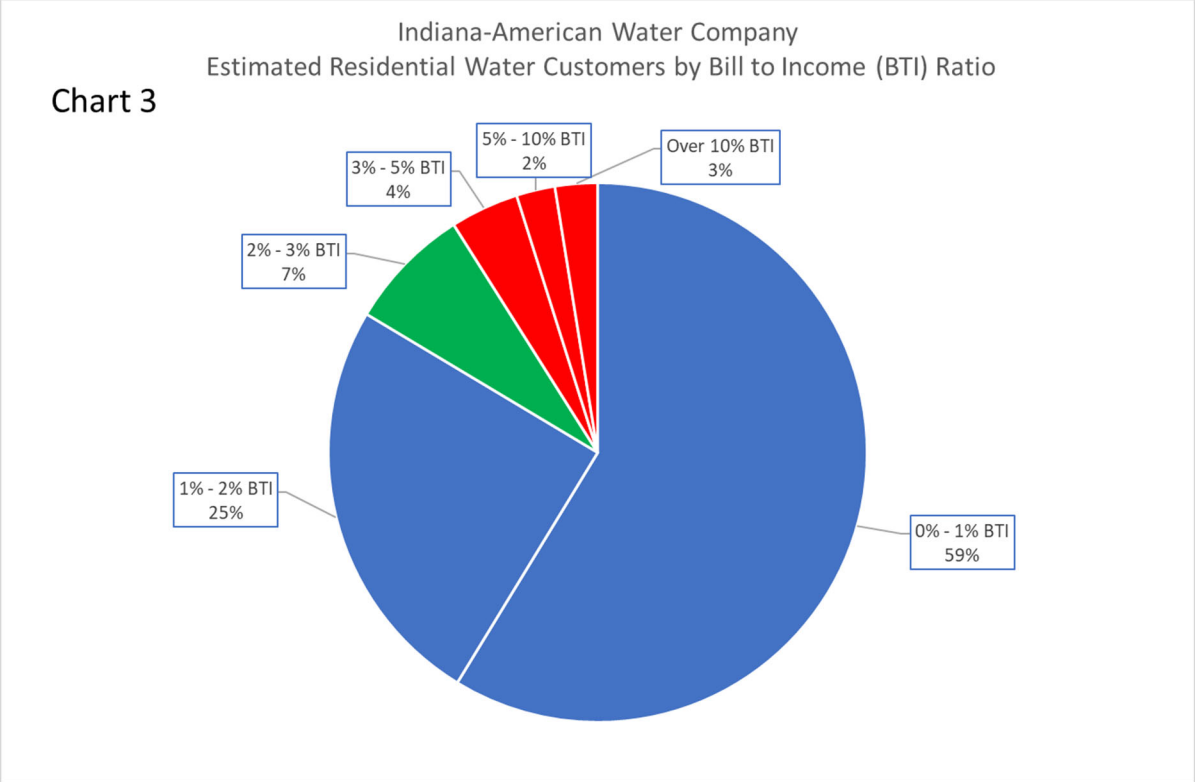
A. The Company's Community-Level Analysis provides a complete set of demographic information for the Company's customer base in each community and a set of Affordability Indices for its service territory in total, for each community, and for various cross sections of the Company's customers.

Q. What demographic information does the customer-level analysis provide?

A. The demographic information provided by this analysis is primarily economic in nature, although the analysis can be expanded to provide information on various identifiers such as race, languages spoken, etc. The primary demographic (economic) information provided by the analysis is the estimated number of customers at different levels of Federal Poverty Level ("FPL") and at different levels of household income. FPL is a measurement set by the U.S. Department of Health and Human Services of the minimum amount of annual income that is needed for individuals and families to pay for essentials, such as room and board, clothes, and transportation. The FPL takes into account the number of people in a household, their income, and the state in which they live. For Indiana, the FPL guidelines for 2023 are set at $13,590 for a household size of one and $4,720 per year for each additional household member.

Q. What does your Community-Level Analysis show?

A. Chart 3 below shows the estimated number of residential customers whose bills for Basic Water Service under the Company's proposed rates would take up varying levels of household income.



This chart shows that under the Company's proposed rate structure, the Affordability Index metric (discussed below) for the Company's service territory in total is 84%, meaning that 84% of our residential customers can expect to see bills for Basic Water Service to be less than 2% of their household income. The Company estimates that there are approximately 47,500 residential water customers that will see bills for Basic Water Service above 2% of their household income, which is approximately 16% of the total customer population.

Q. Please describe the Affordability Index.

A. The Affordability Index ("AI") is a metric that very simply reflects the percentage of a group of customers for whom Basic Water Service is expected to be less than a given percentage of annual household income. Consistent with my previous discussion in testimony regarding standards for affordability, the Company uses 2% of household

income as the benchmark for this metric which is at the conservative end of the range of affordability often cited. As an example, if for a certain group of customers, it is estimated that 80% of those customers will have bills for Basic Water Service that is less than 2% of annual household income, the AI value for that group of customers is 80%.

The AI metric is designed to reflect the percentage of residential customers in a state, community, or demographic group for whom Basic Water Service is expected to cost 2% or less of annual household income. An AI value of 100% means that all customers within a selected group can expect Basic Water Service at less than 2% of household income. An AI value of 70% means that approximately 70% of customers within a selected group can expect Basic Water Service at less than 2% of household income, which means that 30% of customers in that group and expect Basic Water Service to cost more than 2% of household income. The AI value is calculated based on modeling of proposed rates and community-level demographic information I previously described in my testimony which assess affordability across the entire range of customer demographics in each community we serve.

Q. Is affordability of service uniform across the Company's service territory?

A. No, it is not. While the Company's rates (and therefore bills) are the same for the vast majority of our customers, household income can vary significantly across the Company's service territory. Indiana-American has a very diverse service territory and serves customers in urban, suburban, and rural communities with household incomes that range from over $100,000 MHI in parts of suburban Indianapolis and Evansville to as low as $30,000 - $50,000 in cities such as Gary, Terre Haute, and Muncie. The Company's water affordability analysis provided in Attachment CBR-3 provides a breakdown by community

of the number of customers served in each community, the median household income for each community, and the BTI Ratios for Basic Water Service in each community.

Q. What are the Affordability Indices for some of the larger communities that INAWC serves?

A. The table shows the estimated customer population and AI Index under the Company's present rates for the 10 largest communities that the Company serves. The table shows that in Greenwood, an estimated 91% of residential customers will have bills for Basic Water Service less than 2% of household income based on the Company's proposed rates while in Gary (a community with very different economic conditions than Greenwood) we expect that 67% of customers will have bills for Basic Water Service at less than 2% of household income. This shows that in every community that we serve, regardless of demographics or economics, there will likely be some groups of customers for whom affordability of service may be challenging.

TABLE 1
Affordability Index for Top 10 Communities

	Customers	**Affordability Index**
Muncie	23,065	78%
Gary	22,646	67%
Terre Haute	21,457	79%
Greenwood	20,135	91%
Kokomo	19,664	85%
Richmond	13,182	78%
Noblesville	13,143	92%
New Albany	12,357	84%
West Lafayette	12,061	86%
Portage	10,981	85%

Q. You've identified a segment of the customer population with BTI Ratios greater than 2%. What are the economic demographics of this customer group?

A. The economic demographics of this customer group show household incomes generally less than $50,000 per year. Approximately 85% of the customers that have been identified as potentially having challenges with affordability of service have household incomes less than $35,000 per year.

Q. Do you have information on the Affordability Indices of service by income group?

A. Table 2 below shows AI values for the Company's residential customers by income level. This table shows that for households with annual income of $75,000 per year or more, we expect that Basic Water Service will equate to less than 2% of household income for virtually all of these customers which results in an AI value of 100%. For customers with household incomes in the $10,000 to $75,000 range we expect there will be a mix of customers for whom Basic Water Service will be less than 2% of household income which results in varying AI levels, and for customers with household incomes below $10,000 per year we expect that all bills under proposed rates will likely be higher than 2% of household income.

TABLE 2

Affordability Index by Annual Household Income	**Customers**	**Affordability Index**
Over $75,000	127,814	100%
$50,000 - $75,000	54,418	95%
$35,000 - $50,000	34,777	85%
$25,000 - $35,000	25,892	75%
$20,000 - $25,000	12,207	60%
$15,000 - $20,000	10,410	58%
$10,000 - $15,000	9,622	1%
$5,000 - $10,000	6,272	0%
$0 - $5,000	8,051	0%

Q. How is all of this affordability information useful?

A. Assessing affordability information of water and wastewater service for the entire residential customer population can tell you whether customers in general are having or would have difficulty paying their water bills under the Company's current or proposed tariff structure. Assessing affordability information of water and wastewater service for lower-income customers can tell you the number of customers that may be having trouble paying their utility bills, where the customers are in the Company's service territory, and the extent to which those bills may pose challenges for certain customers. This can, in turn, inform decision-makers about the size and scope of efforts that may be needed to help these vulnerable customers better afford water and wastewater service, both in terms of general rate design proposals that can reduce the cost of Basic Water Service for all customers, including lower-income customers, and customer assistance programs that may include customer grants, tariff discounts, levelized billing, and outreach programs.

Q. What conclusions do you draw based on the Company's Community-Level Affordability study?

A. There are three conclusions that can be drawn from Company's affordability study:

- The affordability of the Company's water service from 2012 through the forecast test period indicates that the way the Company has invested in and managed its water and wastewater systems in the INAWC service territory has indeed been for the long-term benefit of our customers.
- The Company's water service has been, is, and is expected to continue to be affordable for the vast majority of its residential customers, including under the rates proposed in this case.

- There are, however, groups of customers for whom affordability of water service may be challenging.

Q. How do the Company's affordability analyses and mitigation strategies enhance the value of the Company's water and wastewater service?

A. All stakeholders (regulators, customers, consumer advocates, community leaders, employees, shareholders, etc.) benefit from a financially sound utility providing safe, reliable, and affordable service to its customers. The Company's analyses provide important insights to the affordability of its services and can help inform all stakeholders on strategies for improving affordability for customer groups that may be struggling financially.

Q. Is the Company proposing to help customers for whom affordability of water and wastewater service is likely an issue?

A. Yes. The Company is proposing two changes to its pricing structure to assist with the affordability of its water and wastewater service. The first is a proposed change in rate design that will apply to all customers that is designed to help make Basic Water Service more affordable. While all customers will benefit from this change in terms of the impact on their water bill, that benefit will have a greater positive impact for customers who may have issues with affordability of service. The second is a Universal Affordability Tariff specifically designed so that all participating customers have an opportunity to receive Basic Water Service at a level of approximately 2% of annual household income or less. I will address these proposals later in my testimony.

WATER RATE DESIGN

Q. Please discuss some of the important guiding principles associated with sound rate design.

A. There are a number of important principles that pricing analysts and policymakers consider when developing appropriate design mechanisms for retail water and sewer service:

- **Cost Causation**: An important goal of rate design is to develop prices for water service to retail customers that are intended to recover the Company's approved revenue requirement and that reflect the cost of providing service to retail customers. Cost of service results inform pricing decisions and guide how rates should be set such that each customer class contributes to the revenue requirement commensurate with their cost to serve. The principle of cost causation, which simply states that customers should pay for the costs that they are deemed to cause the Company to incur, reflects the use of cost of service results in designing rates.
- **Revenue Stability**: Rates should be designed in a way that provides revenue stability to the utility and that can be reasonably expected to recover the utility's revenue requirement over the long run. Consistent recovery of the approved revenue requirement through well-designed rates helps the utility to prudently manage and invest in the water delivery system, while poor rate design decisions can hamper the utility's ability to make investments, operate, and maintain the water delivery system in a manner consistent with the long-term interest of its customers.
- **Efficiency of Use**: Rates should be designed to encourage the efficient use of water resources by customers. The volumetric charges for water service should

appropriately reflect the variable cost of providing water service while also providing customers an appropriate incentive to conserve water and manage their bills. Rates should communicate to customers the full cost of providing water service.

- **Gradualism**: Changes in rate design should be made in a manner that avoids inappropriate levels of rate shock. Rate shock can come both from general increases in revenues that can affect all customers and from changes in rate designs that can cause large increases to specific pockets of customers. Drastic changes in rates can cause customer confusion and dissatisfaction and have adverse effects on the utility's ability to provide quality customer service.
- **Avoidance of Discrimination**: Rates should not unduly discriminate between particular customer groups or provide different price signals to similarly situated customers taking similar services from the utility.
- **Simplicity and Feasibility**: Rate designs should be relatively simple and easy to understand and easy to communicate, manage, and should result in bills that are clear and understandable.
- **Affordability**: Affordability of service is an emerging principle in rate design. Development of rate designs that enhance the affordability of service to more vulnerable customers while still adhering to other more established principles of rate design is an important way that utility providers can enhance and maintain the value of service.

Q. How does the Company incorporate these guiding principles in its rate design?

A. Cost causation is the foundation of the Company's rate design in that revenue targets for customer classes to be recovered through rate design begin with the results of the Company's cost of service analysis, which allocates revenue requirements to customer class based on cost-causation principles. Cost causation, however, is not the be-all and end-all of rate design. Layered on top of cost causation are the other principles that I previously discussed (gradualism, revenue stability, avoidance of discrimination, affordability, for example) that ultimately result in a rate design that is fair to all customer groups and that is just and reasonable.

Q. Please describe the Company's current rate design for water service.

A. The Company's current rate design for general service and sales for resale water service is a two-area declining block rate design with the following features:

- Separate rate designs are identified for Area 1 (Statewide) and Area 2 (Mooresville & Winchester) for general service customers.
- Volumetric rates for general service are differentiated for Area 1 and Area 2 and both are declining block rate structures. All customers regardless of customer class (residential, commercial, industrial, public authorities) take service on the same rate structure. Volumetric rates for Area 1 and Area 2 are shown in the table below:

TABLE 3

Current Volumetric Rate	**Area 1**	**Area 2**
First 15,000 gallons per month	$0.51840	$0.41200
Next 3,725,000 gallons	$0.34814	$0.30225
Over 3,740,000 gallons	$0.20405	$0.19867

- Monthly meter charges are differentiated between general service and sales for resale. Meter charges start at $15.26 per month for general service for a 5/8" inch

meter and $23.23/month for sales for resale. Meter charges are not differentiated between Area 1 and Area 2. Distribution System Improvement Charges ("DSIC") and Service Enhancement Improvement ("SEI") charges, while not a part of base rates, are collected on a fixed charge basis by meter size and will be rolled into base rates in this proceeding.

- Volumetric rates for sales for resale are separate from general service rates and are also on a declining block rate structure. Volumetric rates for sales for resale are not differentiated between Area 1 and Area 2.
- Private fire rates are on a monthly charge basis based on meter size and are the same for Area 1 and Area 2.
- Public fire surcharges are on a monthly charge basis based on meter size and are the same for Area 1 and Area 2, but separate rates apply to West Lafayette, Seymour, Summitville, and Lowell.
- Additional tariffs are in place to provide service to two newly acquired service territories; River's Edge and Lowell; that I will discuss later in testimony.

Q. Is the Company proposing any changes to its water service rate design?

A. Yes. The Company is proposing an allowance-based rate for all customers in Area 1 and Area 2. In addition, the Company is proposing to consolidate volumetric rates for Area 1 and Area 2 customers.

Q. Please discuss the concept of an allowance-based rate.

A. An allowance-based rate is a rate design that features a level of usage offered to all customers at no additional charge above the fixed monthly meter service charge. Instead

of a volumetric rate that applies to all usage, there would be a level of usage provided to all customers (1,500 gallons of usage per month in the Company's proposed rate) at no additional charge beyond the monthly meter service charge.

Q. Is an allowance-based rate design a common rate design for water service?

A. It is. Different types of rate design are prevalent in different parts of the country depending on operational needs and usage characteristics. While an allowance-based rate design is not the predominant rate design used in water systems across the country, it is a commonly used rate design in many water systems.

Q. Do you have a comparison of how this allowance-based rate design compares to the Company's current rate design?

A. Yes. The table below provides a comparison of volumetric rates under an allowance-based rate compared to the Company's current rate design. Rates in this table are based on the Company's proposed rate in this case.

TABLE 4 ***Proposed Volumetric Rate***	**Allowance `Based Rate**	**Standard Rate**
First 1,500 gallons per month	$0.00000	$1.06065
First 13,500 gallons per month	$1.57415	$1.06065
Next 3,725,000 gallons	$0.47800	$0.47800
Over 3,740,000 gallons	$0.37800	$0.37800

Q. Why is the Company proposing an allowance-based rate design in this proceeding?

A. The Company is proposing an allowance-based rate to enhance affordability of Basic Water Service, especially for the Company's more economically vulnerable customers, without the need for these customers to directly apply for assistance through a discount tariff or some other type of customer-assistance program. Changes to pricing structures

that automatically reach all customers with no need to apply or enroll or track customer data are consistent with rate designs that adhere to the rate design principle of Simplicity and Feasibility that I mentioned previously in my testimony.

Q. Please explain how an allowance-based rate design improves the affordability of service for the Company's more economically vulnerable customers.

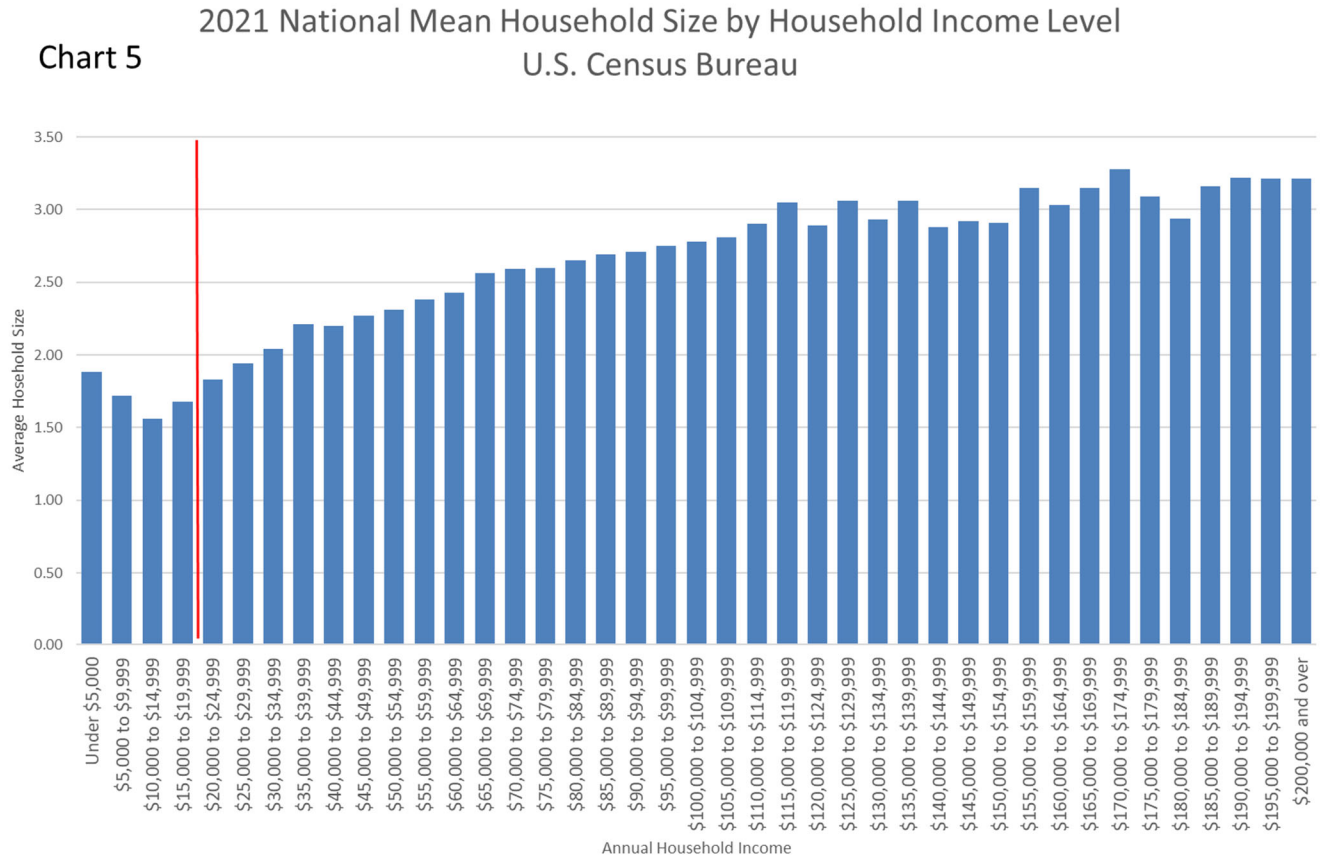
A. An allowance-based rate design improves the affordability of Basic Water Service by reducing monthly bills for lower monthly usage amounts (which tend to equate more to Basic Water Service) and increasing monthly bills for higher monthly usage amounts (which tend to equate more to discretionary seasonal water use).

Across the American Water footprint, usage data and customer demographic data shows that there is a positive correlation between household income and the seasonal use of water, meaning that communities with higher household incomes, and by extension the customers in those communities, generally have more discretionary seasonal use of water then communities with lower household incomes. Lower income customers generally don't use water for discretionary purposes in the summertime to the extent that higher income customers do. A rate design that results in lower bills for Basic Water Service therefore will help the affordability of service for these more economically vulnerable customers. Further, because of the impact that seasonal usage has on system capacity needs, such a rate design is more consistent with cost causation and cost of service principles than a straight volumetric rate that applies evenly to both Basic Water Service and seasonal usage.

Q. Do lower income customers tend to have lower usage requirements for Basic Water Service?

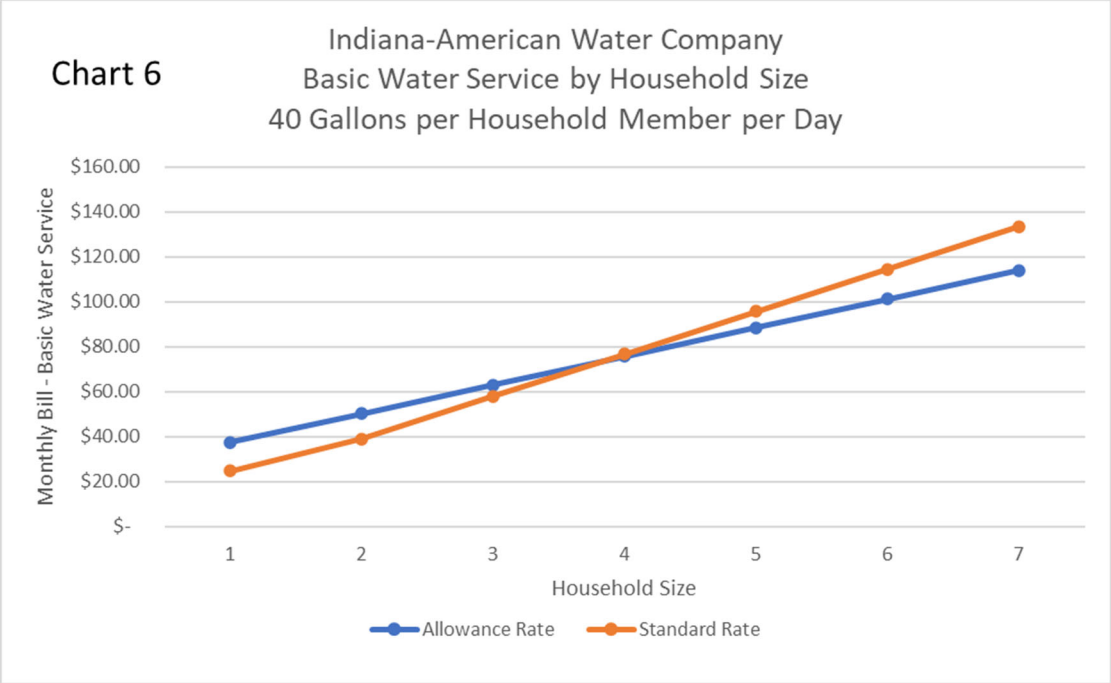
A. Yes. National U.S. Census Bureau data on the average size of households by household income level show that there is a correlation between household income and the size of the household, with higher income households tending to have more occupants than lower income households. The table below shows national data on the average size of households by household income level. Nationally, average household size across all income types is 2.50 persons per household, but for households with less than $20,000 per year the average household size is approximately 1.75 persons per household. This implies that lower-income households have lower requirements for Basic Water Service.

Chart 5



Q. Do you have a comparison of what bills for Basic Water Service would be under the Company's proposed allowance-based rate compared to the Company's current rate design?

A. Yes. A chart showing a comparison of bills under proposed rates for Basic Water Service for different household sizes is shown below:



Q. What does this chart show?

A. This chart shows that for household sizes of three or less, bills for Basic Water Service at 40 gallons per household member per day would be less under the allowance-based rate than they would under the standard rate, with bills for households of five or more people being higher under the allowance-based rate. Because the large majority of our economically vulnerable customers with incomes less than $20,000 per year are households with three or fewer people, the vast majority of the Company's customer base that may have issues of affordability of service would do better under the allowance-based

rate than under the Company's standard rate design. Table 5 below shows an estimate of the number of customers in the Company's service territory with incomes of $20,000 or less by household size.

TABLE 5

Estimated Household Size ***Household Income < $20,000***	**Customers**
1	19,586
2	8,503
3	2,932
4	1,865
5	884
6	356
7	230

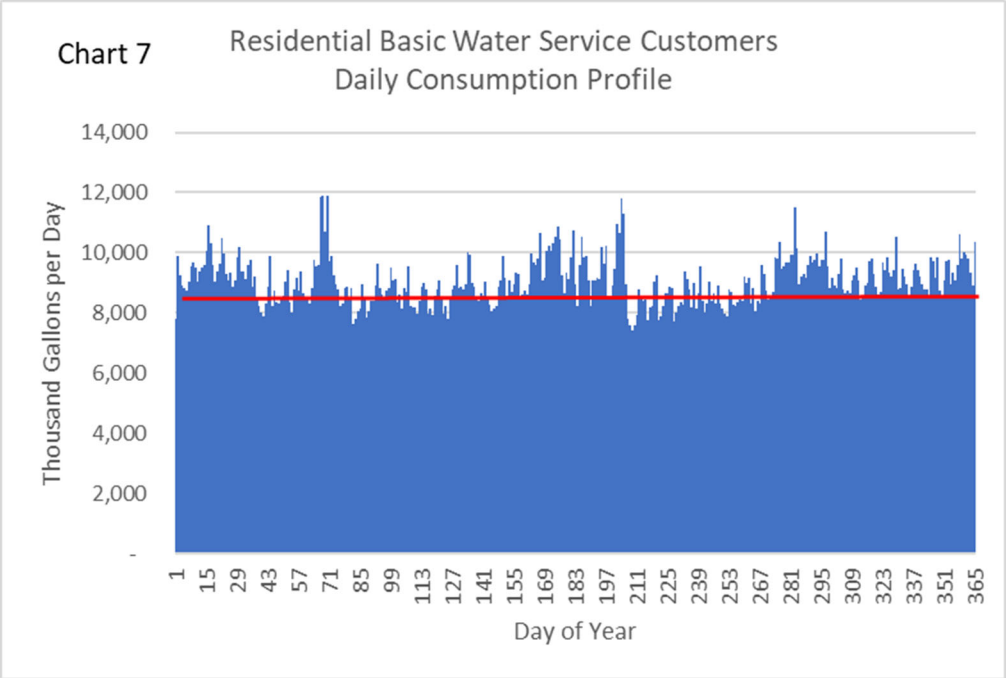
Q. Is a lower effective rate for Basic Water Service justified from a cost of service and cost-causation perspective?

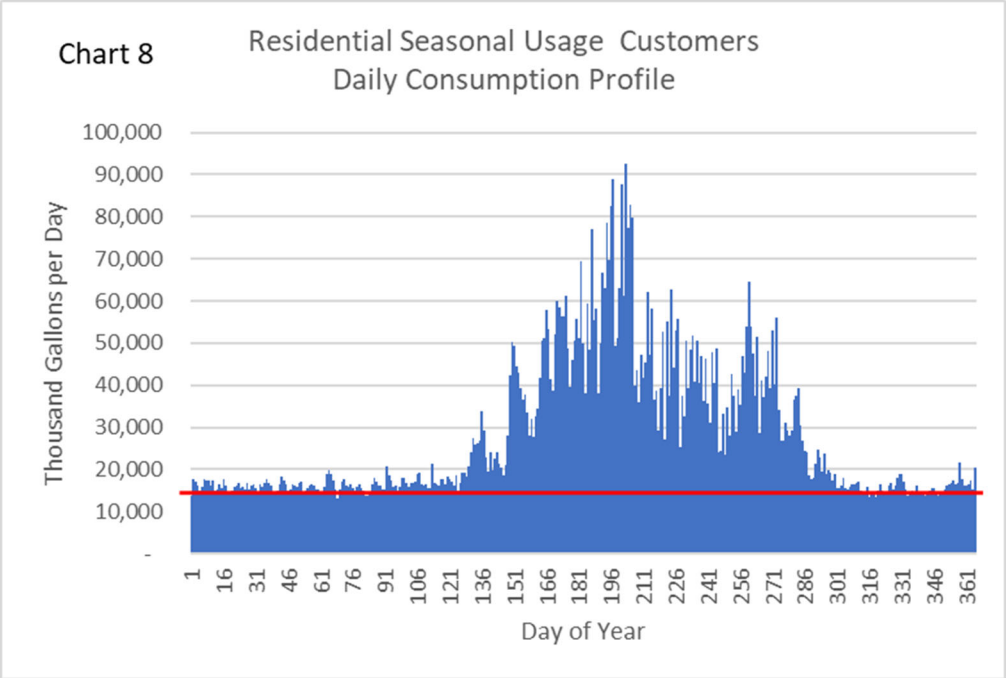
A. Yes. A lower volumetric rate for Basic Water Service is completely justified from the perspective of cost of service and cost causation.

Q. Please describe how a lower effective rate for Basic Water Service is justified from a cost of service and cost-causation perspective.

A. The charts below show daily consumption patterns for residential customers who use Basic Water Service and residential customers who use more seasonal discretionary water. These charts are derived from advanced metering infrastructure ("AMI") data used to develop cost of service allocators that I describe later in my testimony on cost of service. Chart 7 shows a daily consumption profile for residential customers whose usage is flat and constant throughout the year. This group of customers has very little seasonal usage, and nearly all of the consumption for these customers is at or below the baseline, which is

shown in red on the chart. The sawtooth pattern in this chart represents increased usage on weekend days relative to weekdays, which is a typical pattern for residential customers. Chart 8 shows a daily consumption profile for residential customers whose usage is much more seasonal. This group of customers represents those whose seasonal usage, or extra usage above the baseline, makes up 20% or more of their total annual consumption. The sawtooth pattern is also present in this chart in the non-summer months, but the primary feature of this chart is the seasonal nature of the consumption pattern for these customers.





Q. What do these charts show in terms of cost causation, cost of service, and relative pricing for these groups of customers?

A. The biggest driver of cost of service allocations to customer class for the purposes of setting rates is consumption patterns, and the consumption patterns for these two groups of customers are obviously very different. The Base/Extra allocation methodology for cost of service, which I describe later in my testimony and is widely regarded as the industry standard, is effectively designed to reward load factor (or capacity factor). This means that steadier flatter consumption patterns are allocated less cost per gallon of water served than consumption patterns that are peakier or more seasonal. This makes logical sense, in that the cost of investments used to serve higher amounts of water can be spread over a larger usage base with a resulting lower volumetric rate than the same cost of the same size investment that serves smaller amounts of water because the investment isn't utilized as efficiently.

In the example above in Chart 7, the maximum daily usage for the flat use group is approximately 12 million gallons per day and total usage for the year (the blue area in the chart) is approximately 3.3 billion gallons which equates to a 76% capacity utilization factor. Assuming a representative revenue requirement figure of $1.5 million per million gallons of capacity, the total allocated cost of this investment on a per thousand gallon basis is $5.45 per thousand gallons (3.3M gallons x $1,500 per million gallons / 3.3 billion gallons). In the example above in Chart 8, the maximum daily usage for the seasonal use group is approximately 90 million gallons per day but the total usage for the year (the blue area in the chart) is only 10.3 billion gallons which equates to only a 30% capacity utilization factor. Assuming a representative revenue requirement figure of $1.5 million per million gallons of capacity, the total allocated cost of this investment on a per thousand gallon basis is $13.50 per thousand gallons (90M gallons x $1,500 per million gallons / 10.3 billion gallons). This unit cost for the seasonal use group is more than twice the per unit cost for the flat use customer group.

Q. What does this imply about the cost of providing service to Basic Service Water customers compared to seasonal use customers?

A. These relationships show that from a cost causation perspective, it is cheaper on a per unit basis to provide Basic Water Service than it is to provide peakier seasonal service. It is, therefore, entirely appropriate from a cost of service perspective that Basic Water Service should be priced at a lower rate than seasonal water service.

Q. You mentioned previously in testimony that there is a relationship between seasonal water usage and household income?

A. Yes. As I mentioned previously, data across the American Water footprint shows that there is a positive correlation between household income and the seasonal use of water. This means that higher income households are more likely to have significant amounts of seasonal discretionary water use in the summertime and lower income households are much less likely to have significant amounts of seasonal water use and are therefore more likely to be Basic Water Service customers.

Q. What does this all of this say about subsidization of service between lower income customers and higher income customers?

A. If a) seasonal water service is more expensive on a per unit basis to serve than basic water service from a cost of service and cost causation perspective, b) higher income customers are more likely to have significant higher cost seasonal water use than lower income customers, and c) a single volumetric rate applies to all service for all customers, both Basic Water Service and seasonal service as is the case in the Company's service territory, the result is that ***lower income customers are actually subsidizing higher income customers*** under the Company's current rate design. This perspective provides support not only for a lower rate for Basic Water Service but also provides a foundation for the development of the Universal Affordability tariff that I will discuss later in my testimony.

Q. Would the allowance-based rate design only apply to lower-income customers?

A. No. The allowance-based rate applies to all residential, commercial, industrial, and public authorities just as the current declining block rate structure apples to these customer classes. Because of the nature of usage characteristics in the different classes and the nature of Basic Water Service (as compared to higher discretionary usage in the summer months),

the biggest impact of this rate will be seen by lower use residential customers regardless of their household income.

Q. If an allowance-based rate offers a first block of usage at no additional cost, doesn't that mean that other volumetric rates in the Company's rate design would have to be higher in order to collect the same amount of revenue compared to the Company's current rate design?

A. Yes. In order to collect the same amount of revenue compared to the Company's current rate design, other components of an allowance-based rate would need to be higher than they otherwise would be. This would either be in the form of higher monthly meter charges or higher volumetric rates for the non-allowance usage blocks.

Q. How is the Company proposing to increase other volumetric components of its rate design in order to make up for the apparent revenue shortfall caused by the allowance block?

A. While the Company's rate design does not distinguish between residential, commercial, and industrial customers, the apparent revenue shortfall caused by the allowance block is primarily recovered through the second volumetric block of the Company's proposed rates (the first block above the proposed allowance block), which effectively recovers the apparent revenue shortfall from other residential and commercial customers.

Q. In what rate block is the Company proposing to implement its proposed allowance-based rate?

A. The Company is proposing to implement its proposed allowance-based rate directly in Step 1 for all Area 1 and Area 2 customers.

Q. What impact will implementation of this proposed allowance rate have on typical bills for Basic Water Service compared to present rates?

A. While bills for Basic Water Service will increase for households of three or more (3,600 gallons per month or more), bills for two-person households (2,400 gallons per month) will be almost exactly the same as under present rates and bills for one-person households (1,200 gallons per month) will drop by more than $10 per month under the Company's proposed rates.

Q. Turning to rate consolidation, please explain why the Company is proposing to equalize rates between Area 1 and Area 2 customers.

A. In the last rate case filed by the Company (IURC Case No. 45142), the Company continued movement of Area 2 rates to Area 1 rates in order to achieve a single consolidated statewide tariff for water service. The Company's proposal in this proceeding will complete that process and will result in a single statewide water service territory. It is noteworthy that approximately 98% of the Company's residential customer already take service under Area 1 rates.

Q. How does the Company propose to implement the phase-in of Area 1 and Area 2 rates to a consolidated rate design?

A. The Company is proposing to phase in the consolidation of Area 1 and Area 2 rates proportionately over Step 1, Step 2, and Step 3, with full consolidation achieved at Step 3 rates. The phase-in will be proportional in that Area 1 and Area 2 rates will move closer together at the same rate that proposed revenue requirements are increasing from present rate revenues. Area 1 and Area 2 rates will move approximately 65% of the way to consolidated rates in Step 1 and approximately 80% of the way to consolidated rates in

Step 2, which coincides with amount of proposed revenue requirement increases realized in Step 1 and Step 2.

Q. Is the Company proposing to change monthly meter charges in this proceeding?

A. Yes. The Company is proposing to increase base rate monthly meter charges for 5/8" meters to $20.00 per month, and to increase other meter charges proportionally based on the current spread of meter charges for different meter sizes. Currently, the total combination of 5/8" meter charges for base rates, DSIC, and SEI is $24.29 per month ($15.25 plus $7.96 plus $1.07). The Company's proposed $20.00 monthly meter charge for 5/8" meters represent an approximate 50% consolidation of DSIC and SEI, which are already recovered on a fixed charge basis, into the fixed charges for base rates.

Q. What recent acquisitions are included in the Company's proposed rate design and how are those acquisitions treated?

A. There are two recent acquisitions to be included in the Company's water service rate design:

- **River's Edge**: This acquired service territory consists of approximately 50 unmetered and 25 metered residential customers. These customers will be placed on Area 1 rates proposed in this proceeding.
- **Lowell**: This acquired service territory consists of approximately 1,200 residential customers and 100 nonresidential customers. The Company is not proposing to make any changes to current rates for the Lowell acquired service territory until such time as Area 1 rates increase to a level with rates in Lowell.

Q. Please describe how the Company is proposing to allocate its proposed revenue increase to customer classes.

A. While the Company's block volumetric rates that applies equally to residential, commercial, industrial, and public authorities do not allow for a direct allocation of revenue increases to these customer classes, the Company is using the following general guidelines in allocating the proposed Step 3 revenue increase to customer classes as follows:

- Increases to industrial and sales for resale classes will be capped at 1.5 times the overall water service revenue increase requested in this case for Step 3 rates. Cost of service continues to indicate significant increases for industrial and resale customers. It is important that these subsidies be reduced; however, it is also necessary to mitigate the impact to these customers. Therefore, it is appropriate to cap increases for these classes at 1.5 times the system average to maintain a gradual approach.
- No increases are assigned to private and public fire, as cost of service indicates that decreases are in order for these classes.
- The remainder of the increase is allocated to residential and commercial classes in proportion to present rate revenues.

It should be noted that the above description relates to Step 3 revenue requirements. Volumetric rates for both Area 1 and Area 2 rates beyond the proposed allowance block for Step 1 and Step 2 are increased proportionally from current levels based on the relative increases in revenue requirements for Step 1 and Step 2 similar to how the proposed phase-in of Area 1 and Area 2 rates is to be accomplished as previously described in my testimony.

Q. Do you have a schedule that provides the Company's complete proposed rate design for water service in this case?

A. Yes. A complete schedule of present rates and proposed rates for Step 1, Step 2, and Step 3 are provided in Attachment CBR-3.

WASTEWATER RATE DESIGN

Q. Please describe the Company's current rate design for wastewater service.

A. The Company offers wastewater service under three different tariffs.

- In the Company's Somerset and Delaware County service territories, rate design for wastewater service is a flat monthly rate design for all customers differentiated between regular general service and multi-family service. The current monthly charge for general service customers is $72.18 per month. The current monthly charge for multi-family customers is $50.53 per month per multi-family unit.
- In the Sheridan service territory, service is provided through a combination of monthly meter charges that begin with a 5/8" meter charge of $22.27 per month and a volumetric rate of $9.01 per thousand gallons.
- In the Riley service territory, service is provided through a combination of monthly meter charges that begin with a 5/8" meter charge of $27.97 per month and a volumetric treatment rate of $7.74 per thousand gallons. In addition, all customers in Riley see a $8.68 fixed charge per month on top of the monthly meter service charge.
- Additionally, service is provided in the River's Edge service territory under a separate tariff that I will discuss later in this testimony.

Q. Is the Company proposing any significant changes to its wastewater rate design in this proceeding?

A. The Company is not proposing to change rate design for any of its tariff offerings, but the Company is proposing to consolidate wastewater rates for all of its customers into a single rate design be implemented in Step 3 rates. This movement to a consolidated rate design for wastewater customers at Step 3 will be similar to the proposed process I previously described for the Company's proposed consolidation of water service rates.

Q. Is the Company proposing to collect its entire proposed wastewater service revenue requirement through its wastewater rates?

A. No. The Company is proposing to collect 65% of its proposed wastewater revenue requirement (Step 3) from its wastewater customers and is proposing to move 35% of the proposed wastewater revenue requirement (Step 3) to water service customers to be collected through water service rates.

Q. Why is the Company proposing to collect a portion of its proposed wastewater revenue requirement from water service customers?

A. Indiana-American is proposing to move 35% of its wastewater revenue requirement to water service rates in order to dampen the impact on wastewater service customers. This is consistent with what has occurred in several recent cases, but it is even more necessary now. Without some movement of wastewater revenue requirement to water service customers, wastewater service customers would generally see rate increases of 100% or more. The Company’s objective with this proposal is to assist with the affordability of its wastewater service and keep wastewater bills for typical residential customers at approximately $100 per month.

Q. What are the impacts of the Company's proposed revenue requirement sharing on its wastewater and water service customers?

A. The impacts on water service customers of the Company's proposed sharing of wastewater revenue requirements to water service will be minimal. The 35% sharing of wastewater revenue requirement to water service represents approximately 0.5% of total water service revenue requirement and equates to approximately $0.07 per hundred gallons for the Company's residential water service customers. For a residential customer with average usage, this represents a bill impact of approximately $0.27 per month. But without this proposal, the average wastewater service bill would be approximately $150 per month. As it is, the average monthly wastewater service bill would be approximately $100 per month. Our proposal is consistent with the objective of gradualism that I previously described.

Q. What recent acquisitions are included in the Company's proposed rate design and how are those acquisitions treated?

A. There is a recent acquisition included in the Company's wastewater service rate design. The acquired River's Edge service territory consists of approximately 75 residential customers. The Company is proposing to move these customers to its proposed consolidated wastewater rate design at Step 3, transitioning these customers to consolidated Step 3 rates in the same manner as the Company is proposing consolidation for its other wastewater service territories.

Q. Do you have a schedule that provides the Company's complete proposed rate design for wastewater service in this case?

A. Yes. A complete schedule of present rates and proposed rates for Step 1, Step 2, and Step 3 are provided in Attachment CBR-3.

UNIVERSAL AFFORDABILITY TARIFF

Q. Does the Company currently have a low-income discount tariff pilot project?

A. Yes. Company witness Shimansky describes the Company's current low-income discount tariff offering including tariff qualification criteria and results.

Q. Is the Company proposing a new tariff in this proceeding?

A. Yes. The Company is proposing in this case to offer an expanded Universal Affordability Tariff which would significantly increase discounts to participating customers and would expand availability to all customers in the Company's service territory.

Q. Please describe the Company's proposed Universal Affordability Tariff.

A. The Company's proposed Universal Affordability Tariff for water service that includes multiple tiers of discounts based on different levels of household income stated as multiples of Federal Poverty Level ("FPL"). The tariff offers discounts on both the basic 5/8" meter charge and the volumetric charges for water service. The Company's proposed discount schedule is as follows:

TABLE 6 ***Household Income***	**Water Basic Service Discount**	**Water Volumetric Discount**
0% - 50% FPL	80%	80%
50% - 100% FPL	50%	50%
100% - 150% FPL	30%	30%

For 2023, the household income levels that would qualify customers for this program are as follows:

TABLE 7 ***Household Size***	**Household Income at 50% FPL**	**Household Income at 100% FPL**	**Household Income at 150% FPL**
1	$7,290	$14,580	$21,870

TABLE 7 *Household Size*	Household Income at 50% FPL	Household Income at 100% FPL	Household Income at 150% FPL
2	$9,860	$19,720	$29,580
3	$12,430	$24,860	$37,290
4	$15,000	$30,000	$45,000
5	$17,570	$35,140	$52,710
6	$20,140	$40,280	$60,420
7	$22,710	$45,420	$68,130

Q. What is the driving principle behind the Company' new Universal Affordability tariff?

A. The driving principle behind the Company's proposed Universal Affordability tariff is to provide all participating customers discounts such that the expected bill for Basic Water Service (40 gallons of water per household member per day) will be no more than 2% of their annual household income.

Q. Why is the Company proposing this new Universal Affordability Tariff?

A. The Company recognizes through the affordability analysis I have previously described in my testimony that there will always be groups of customers that will have issues with the affordability of water and wastewater service, regardless of the level of rates approved in this proceeding. The Company's proposed tariff along with the tariffs and process proposed for general water service in this proceeding will provide **every** Indiana-American water service customer access to pricing tools that are designed to help ensure that the cost of Basic Water Service will be no more than 2% of their annual household income.

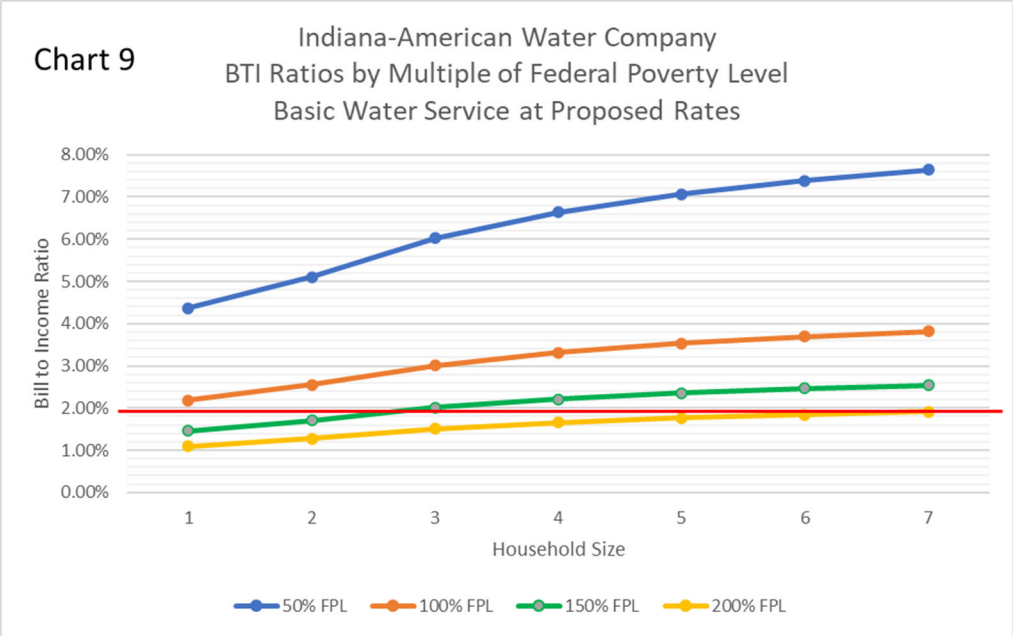
Q. What is the total population of customers that would be eligible for discounts under the Company's proposed tariff?

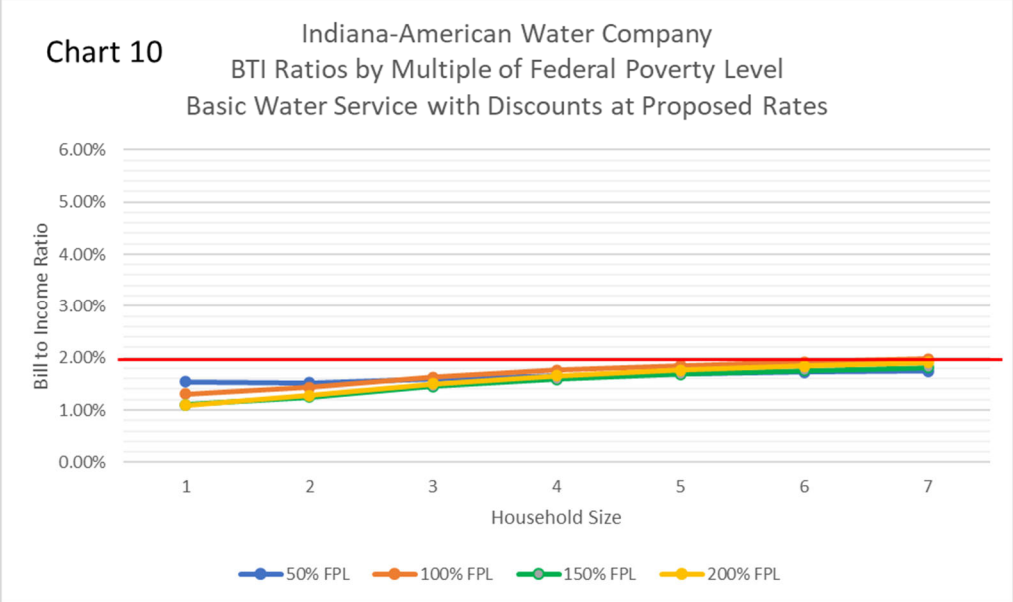
A. The Company estimates that there are approximately 54,000 water customers with household incomes at or below 150% of FPL that would qualify for service under the Company's proposed Universal Affordability tariff.

TABLE 8 *Household Size*	Estimated Customers 0%-50% FPL	Estimated Customers 50%-100% FPL	Estimated Customers 100%-150% FPL
1	5,006	6,722	8,364
2	3,830	3,836	6,326
3	1,612	2,045	3,358
4	1,214	1,944	2,755
5	679	1,258	1,828
6	328	702	904
7	252	485	567

Q. What impact will this proposed tariff have on the affordability of water service for lower-income customers?

A. The impact for customers associated with the proposed tariff will be significant. The charts below show expected bills for Basic Water Service as a percentage of household income for different household sizes and household incomes expressed as a percentage of FPL both before and after the Universal Affordability Tariff is applied based on proposed rates in this case.





The charts show that even under the Company's proposed allowance based rates, customers with household incomes at 100% FPL will still see bills for Basic Water Service at 2 to 3% of household income, and customers whose household incomes are at 50% of FPL will see bills for Basic Water Service at4% to 6% of household income. The Company's proposed tiered discounts provide customers at each interval of FPL the opportunity to have Basic Water Service bills in the 1% to 2% range of household income.

Q. Is the Company proposing to roll an assumed level of discounts offered under this tariff into base rates to be paid for by other water service customers?

A. Yes. The Company is proposing an assumption of 10% participation in the Universal Affordability Tariff in this proceeding as a basis for rolling in an assumed level of discounts to be paid for by other water service customers.

Q. How is the Company proposing to spread the costs of the assumed discounts across the different volumetric rates in the Company's proposed rate design that you testified to previously?

A. The total amount of discounts the Company is proposing to roll directly back into base rates is approximately $1.3 million for Step 2 rates and $1.4 million for Step 3 rates. While the Company's rate design does not distinguish between residential, commercial, and industrial customers, the discounts are to the maximum extent possible recovered through the second block of the Company's proposed rates (the first block above the proposed allowance block) which effectively recovers these discounts from other residential customers.

Q. What is the justification for offering a Universal Affordability Tariff?

A. As I discussed previously in my testimony, lower income customers that do not use water for seasonal discretionary purposes are actually subsidizing higher income customers that do use water for seasonal discretionary purposes. It therefore cannot be credibly asserted that a discount tariff that reduces cost for lower income customers is an undue subsidy. To the contrary, it is helping to reduce a subsidy that already exists in the other direction. The Company's affordability assessment, rate design analysis, and cost of service analysis provides the Commission all of the factual support necessary to target bills for all

residential customers at 2% of household income or less without unduly discriminating against any customer group. All stakeholders benefit from a financially stable utility providing safe, reliable, and affordable service to its customers and it is in the public interest to implement a rate design package that makes water and wastewater service affordable for as many customers as possible. The Company's proposed rate design in this case, along with the Company's proposed Universal Affordability tariff, does just that.

COST OF SERVICE

Q. What is a class cost of service ("COS") study?

A. A cost-of-service study is an analysis that calculates a utility's total investment and operating costs incurred to provide service to various customer groups, or service classes, for the purpose of establishing cost-based rates. The resulting cost determination process based on the allocation of costs to defined customer groups is called a cost-of-service study. Because the analysis is done by customer class, the study is often referred to as a "class cost of service study".

Q. Does the American Water Works Association ("AWWA") provide guidance on the appropriate methods to be used in conducting cost of service studies?

A. Yes. The AWWA M1 Manual, titled "Principles of Water Rates, Fees, and Charges" provides guidance on the appropriate allocation methodologies to use in allocating different types of costs to customer classes.

Q. Has the Company relied on the recommendations made in the AWWA M1 Manual in conducting its cost-of-service study submitted in this case?

A. Yes. Specifically, the AWWA M1 Manual outlines the use of the Base/Extra capacity method to allocate production and distribution costs to customer classes. The Company uses this Base/Extra capacity method in its class cost of service study as I describe later in testimony.

Q. Please describe the Company's cost of service study.

A. The Company's cost of service analysis allocates the total revenue requirement for INAWC water operations to various cost categories listed below in my testimony. The revenue requirement for each of these cost categories is then allocated to the various customer classes INAWC serves, with different cost categories allocated to customer classes using a class allocation factor that differs depending on the nature of the costs. In this study, the Company's aggregated cost of water service was allocated to the following customer classifications:

- Residential
- Commercial
- Industrial
- Public Authorities
- Sales for Resale
- Private Fire Service
- Public Fire Service

Q. How is the Company's cost of service study organized?

A. The Company's cost of service studies are organized into five different tabs, or sections:

- The "Account Detail" tab contains rate base, depreciation, and operations and maintenance ("O&M") balances by account and allocates each account to cost category.
- The "Summary" tab allocates the revenue requirement for each cost category to customer class and summarizes the results of the cost allocations by customer class and business function to get a total revenue requirement by class and business function. The "Summary" tab also compares the revenue requirements by customer class to Post Test-Year revenues under current rates.
- The "Returns by Class" tab provides information:
    - Allocation of rate base by customer class
    - Pro forma sales revenues at present rates by customer class
    - Allocation of other operating revenues by customer class
    - Allocation of pro forma operating expenses by function and customer class
    - Rate of return by customer class at present rates
    - Subsidy or excess at present rates by customer class
    - Revenues at equal rates of return by customer class at proposed rates
    - Revenues at proposed rates by customer class
    - Subsidy or excess at proposed rates by customer class
- The "Usage Statistics" tab contains usage information by customer class and other information necessary to calculate class allocation factors for the "Account Detail" tab.
- The "Class Allocators" tab provides detailed calculations of all class allocation factors used in the cost of service study.

- The "Allocation Summary" tab provides a summary of the class allocation factors.

Q. Is the Company's cost of service analysis performed on a district by district or on a consolidated statewide basis?

A. The Company's cost of service analysis is done on a statewide basis.

Q. Is the Company's providing a cost of service analysis for both water and wastewater service?

A. No. The Company's cost of service analysis in this case is for water service only.

Q. Do you have a separate cost of service analysis for revenue requirements for each of the Company's proposed revenue requirement steps?

A. No. The Company's proposed cost of service analysis in this case reflects Step 3 revenue requirements only.

Q. What are the various cost categories that the Company uses to group individual accounts?

A. The cost categories that the Company assigns to specific accounts are as follows:

- Variable Cost
- Capacity Cost
    - Source of Supply
    - Water Pumping
    - Water Treatment
    - Transmission Mains
    - Distribution Mains
    - Storage

- Metering Cost
- Service Line Costs
- Customer Service Costs
- Fire Hydrants

Q. Please describe how individual accounts that make up the Company's revenue requirement are assigned to a cost element.

A. Most of the accounts that make up the Company's revenue requirement are directly assigned to a single cost category. Examples of this include net plant for Collecting and Impounding Reservoirs, Purchased Water for water pumping, and Water Treatment labor expenses. Accounts not directly assignable to a single cost category are allocated among cost elements based on appropriate allocation factors. Examples of this include general and intangible plant, miscellaneous rate base deductions, administrative and general ("A&G") expenses, and payroll taxes. These accounts are allocated to cost categories based on net plant, O&M, or labor dollars associated with each cost element depending on the account.

Variable Costs

Q. Please describe what variable costs are and how variable costs are allocated to customer classes.

A. Variable costs refer to purchased electric power, purchased water, treatment chemicals and waste disposal costs. These are costs that tend to vary directly with the amount of water consumed and are allocated to customer classes in direct proportion to each class's annual water consumption.

Capacity Costs

Q. Please describe what capacity costs are and how capacity costs are allocated to customer classes.

A. Capacity costs refer to the cost of owning, operating, and maintaining the Company's water production, pumping, and distribution system that do not vary directly with the amount of water consumed. These costs are allocated to customer classes in a variety of ways as described below but generally are allocated through a methodology known as the Base/Extra capacity method.

Q. Please describe the Base/Extra capacity method as it is described in the AWWA M1 Manual.

A. The Base/Extra capacity method as explained in detail in the AWWA M1 Manual is generally accepted as a sound method for allocating the cost of water service and was used by the Company in previous cases. In short, the Base/Extra capacity methodology as described in the AWWA M1 Manual relies upon a combination of the average water consumption across the year for each customer class and each class's estimated maximum daily consumption for the year to allocate the fixed costs of the water production and distribution system to customer classes. The Base/Extra capacity allocator is a two-part allocator, the first part being the "Base" component and the second part being the "Extra" component.

The Base component for each class is simply the average daily consumption for the year (total annual sales divided by 365 days). For each class, the "Base" allocation component is each class's average consumption divided by the total sum of average consumption for all classes. The "Extra" component is the difference between the maximum daily

consumption for a given class and the average daily consumption for that class. For each class, the "Extra" allocator is each class's extra demand value divided by the total sum of the extra demand values for all customer groups.

For each class, the Base/Extra allocator is calculated as a weighted average of the Base and Extra allocators. The Base component is weighted by the total system load factor expressed as a percentage (average daily system production divided by maximum day production), and the Extra component is weighted by one minus the system load factor. These Base components and Extra components for each class result in maximum day peaking factors and maximum hour peaking factors that are then used in the cost-of-service study to allocate revenue requirements for various cost categories to customer class.

Q. Please describe how the maximum day peaking factors were developed by customer class for use in this cost-of service study.

A. Maximum daily consumption values and peaking factors for the residential, commercial, and public authorities classes are estimated based on daily and hourly consumption data collected via Advanced Metering Infrastructure ("AMI") meter data. Maximum daily consumption is estimated based on samples of customers across the American Water footprint for which American Water operating subsidiaries have AMI data. Theses samples, which are selected by customer class and subgroups within each class, are selected such that the customers in each customer class sample have monthly usage characteristics that are nearly identical to monthly usage characteristics that INAWC customers have and are expected to have during the forecast period, thus providing consistency between the usage characteristics of the customers in each sample and the usage characteristics of INAWC customers in total. For the industrial and Sales for Resale classes, maximum day

factors are calculated based on monthly usage profiles for these classes, with the peaking factors set to be average daily usage in the month of maximum usage for each class divided by average daily usage for the year.

Q. Please describe how source of supply costs are allocated to customer classes.

A. Source of Supply costs not included in the variable cost section described above are allocated to customer classes on the Modified Base/Extra methodology I have previously described.

Q. For purposes of allocating Source of Supply costs to customer classes, are all classes included in this allocation?

A. No, they are not. Source of Supply costs are not allocated to fire service classes.

Q. Please describe how water pumping costs are allocated to customer classes.

A. Similar to Source of Supply, water pumping costs not included in the variable cost section described above are allocated to customer classes based on the Modified Base/Extra methodology. Fire service classes do receive an allocation of Water Pumping costs.

Q. Please describe how water treatment costs are allocated to customer classes

A. Water treatment costs are allocated to customer classes based on the Modified Base/Extra capacity method. Water treatment costs are not allocated to fire service classes.

Q. Turning to the allocation of costs for transmission and distribution mains, how does the Company distinguish between transmission mains and distribution mains?

A. Generally, for cost allocation purposes, mains 10-inches and larger are classified as serving a transmission function and mains smaller than 10 inches are classified as serving a distribution function.

Q. Are transmission main costs allocated to all customer groups?

A. Yes. All customer groups are considered to take service from the Company's transmission system, and therefore transmission costs are allocated to all customer classes.

Q. Please describe how costs associated with transmission mains are allocated to customer classes.

A. Costs associated with transmission mains are allocated to customer class based on the Base/Extra capacity method.

Q. Are distribution main costs allocated to all customer groups?

A. No. It is often the case that for large customers, service is taken directly from the transmission system (10 inches and above); therefore, it would not be appropriate to allocate costs related to the smaller diameter distribution system to these customers. For each customer class, a calculation is done to estimate the percentage of water sales served to that class directly from the transmission system. That portion of sales in each class is not subject to an allocation of distribution costs. It is only the distribution-level sales in each class that are allocated distribution-related costs, and that relative level of sales is significantly different for different customer classes.

Q. Please describe how costs associated with distribution mains are allocated to customer classes.

A. After removing usage served at the transmission level, costs associated with distribution mains are allocated to customer classes based on the previously defined Base/Extra capacity method that is modified to include a component that recognizes maximum hourly demand (at the distribution level) instead of maximum daily demand. This is appropriate because the transmission main system functions as a conduit from production facilities to the distribution system and is sized to accommodate varying water demands from customers that take service at the distribution level. Sizing at the distribution level needs to accommodate higher demands for shorter periods of time. It is therefore appropriate to consider hourly consumption requirements for distribution main cost allocation, as opposed to daily requirements.

Q. Aside from the differences between maximum *hourly* consumption and maximum *daily* consumption, does the Base/Extra allocator work the same way as you have previously described.

A. Yes. In this case, the Base component for each class is the average hourly consumption for the year (total annual sales divided by 8,760 hours). The "Extra" component is calculated as the difference between the maximum hourly consumption for a given class and the average hourly consumption for that class. For each class, the Base/Extra allocator is calculated as a weighted average of the Base and Extra allocators. The Base component is weighted by the total system load factor expressed as a percentage defined this time as average hourly system consumption divided by maximum hourly system consumption, and the Extra component is weighted by one minus the system load factor.

Q. Please describe how the maximum hourly consumption values and peaking factors are calculated.

A. Similar to the process used to estimate maximum daily consumption values by customer class, maximum hourly consumption values for each customer class are estimated either from samples of customers across the American Water footprint for which AMI data is available. The samples used to estimate maximum hourly consumption are the same samples used to estimate maximum daily consumption to ensure that there is consistency in usage patterns. Maximum hourly consumption values are estimated for the residential, commercial, and public authorities classes. For the Industrial and Sales for Resale classes, maximum hour peaking factors are set are calculated based on monthly usage profiles for these classes, with the peaking factors set to be average hourly usage in the month of maximum usage for each class divided by average hourly usage for the year.

Q. Please describe how the Company allocates the revenue requirements associated with storage costs to customer classes.

A. Storage costs are allocated to customer class based on the Modified Base/Extra allocator using hourly estimated peak demand for the extra component, like the allocator used to allocate distribution mains costs. For the storage allocator, it is assumed that all fire service capacity requirements are served first from the Company's storage capacity, and the remaining capacity is allocated to non-fire service classes using the Base/Extra hourly allocator.

Customer Related Costs

Q. Please describe how the Company allocates the revenue requirements associated with the metering cost component to customer classes

A. Metering costs are allocated to customer classes based on a weighted number of customers calculation. Customer weights in each class are based on AWWA standard meter

equivalents by meter size. These ratios have been used in previous water class cost of service studies and the Company is not proposing to change the ratio of meter equivalencies by meter size in this case.

Q. Please describe how the Company allocates the revenue requirement associated with the service line cost component to customer class.

A. Service line costs are allocated to customer classes based on a weighted number of customers calculation and are the same as those used in the last INAWC water service rate case.

Q. Please describe how the Company allocates the revenue requirement associated with the customer service cost component to customer classes.

A. Customer service costs are allocated to customer classes based on the total number of customers in each class.

Fire Service Costs

Q. How are fire service requirements considered in the Company's cost of service analysis?

A. Fire service requirements are determined through a combination of information on firefighting requirements provided by the American Insurance Association. This information relates firefighting requirements in terms of maximum gallons per minute and the duration of time those requirements are needed to serve general population levels. Given the population of the INAWC service territory, a firefighting demand of 20,000 gallons per minute for 10 hours was used. This firefighting demands were split between private fire and public fire customer classes based on the relative potential water demand

for each class, which is in turn based on the number and size of service lines and hydrants in each class.

Other Allocation Factors

Q. How are A&G costs and cash working capital costs allocated to cost categories and customer classes?

A. Administrative and general costs are generally allocated to cost categories and customer classes on the same basis that direct costs were allocated. For most A&G expenses, costs are allocated the same way that non-A&G direct O&M costs are allocated. A&G costs that are associated with employee costs, however, are allocated directly based on labor expenses. Cash working capital is allocated based on total O&M expense.

Q. How are depreciation costs allocated to cost categories and customer classes?

A. Annual depreciation accruals are allocated on the basis of the function of the facilities represented by the depreciation expense for each depreciable plant account. The original cost less depreciation of utility plant in service was similarly allocated for the purpose of developing factors for allocating items such as income taxes and return. These factors are based on the result of allocating other costs and are computed internally in the cost allocation program.

Q. How are income taxes and operating income requirements allocated to cost categories and customer classes?

A. Income taxes and operating income requirements are allocated to cost categories and customer classes based on the amount of total rate base allocated to each customer class.

Q. Do you have a summary of the results of the Company's cost of service analysis?

A. Yes. A summary of the results of INAWC's cost of service analyses is provided in the Summary Tab of Attachment CBR-4.

ANALYSIS OF INAWC USAGE

Q. Are there revenue adjustments the Company is proposing in this case that require a quantitative analysis of water consumption by INAWC's customers?

A. Yes. I will explain the modeling used to develop the revenue forecasts for the residential customer class, and thereafter, I will discuss the development of the revenue projections for all customer classes (residential, commercial, industrial, public authorities, and sales for resale). For residential customers, the Company is modeling historical monthly usage per customer from January 2013 through December 2022 to forecast monthly usage per customer for the period January 2023 through December 2025 taking into account trends in declining use, weather normalization, and the impact of the COVID-19 public health emergency on water consumption for INAWC's water service customers. These adjustments for declining use, weather, and COVID-19 require the Company to analyze water consumption and determine (1) if there is a significant and pervasive rate of decline in water use per customer over time, (2) if there are significant relationships between water consumption and weather conditions in the Company's service territory, and (3) if the COVID-19 public health emergency has had a significant impact on water consumption for INAWC's customers, to determine if a COVID-related adjustment to usage is appropriate in months where usage may have been affected by the pandemic..

Q. How do you determine the parameters and relationships necessary to analyze declining water use, weather impacts on water consumption, and the impact of COVID-19 on water consumption for INAWC's customers?

A. The parameters and relationships necessary to analyze declining use, weather, and COVID-19 on water consumption for INAWC's customers are estimated using statistical linear regression modeling

Q. What is a statistical linear regression model?

A. Statistical linear regression modeling is a commonly used type of mathematical predictive analysis. The overall idea of regression modeling is to examine two things: (1) does a set of independent explanatory variables do a good job of predicting an outcome (dependent) variable, and (2) which independent explanatory variables, in particular, are significant predictors of the dependent variable, and in what way do they help predict the results of the dependent variable.

There are three major uses for statistical linear regression analysis. These major uses are: (1) determining the predictive power of independent explanatory variables; (2) forecasting the effect that independent variables have on a dependent variable; and (3) trend forecasting. First, the regression analysis can be used to identify the strength of the effect that independent explanatory variables have on a dependent variable. A typical question is: "What is the strength of the relationship between summer heat, precipitation, and water sales?" Second, the regression analysis can be used to forecast the effects or impacts of changes. That is, the regression analysis helps us understand how much the dependent variable changes with a change in one or more of the independent variables. A typical question is: "How much water sales can the Company expect to lose for each inch of

rainfall above normal in any given period?" Third, regression analysis can predict trends and future values. The regression analysis can be used to get point estimates of future values of the dependent variable based on assumed values for the independent variables. A typical question can be: "Given current trends in water sales, what can we expect water sales to be each month next year assuming normal weather?"

Q. What does a statistical linear regression model produce?

A. A statistical linear regression analysis is a way of mathematically validating which independent variables have a significant impact on the dependent variable – the main factor, the one you are trying to better understand or predict. A statistical linear regression model produces an equation that describes a historical relationship between a set of independent variables and a single dependent variable that can be used to forecast future values of the dependent variable based on assumed values of the independent variables. An example of such an equation is shown below:

UPCn = a0 + (a1 x RAINn) + (a2 x CDDn) + (a3 x HDDn)
+ (a4 x COVID-19n) + (a5 x TIMEn)

Where:
UPCn = Use per customer in month n
RAINn = Rainfall in month n
CDDn = Cooling Degree Days ("CDD") in month n
HDDn = Heating Degree Days ("HDD") in month n
COVIDn = COVID-19 effect in month n (0% to 100%)
TIMEn = Year/Month for month n

and:
a0 = constant term
a1 = coefficient for RAIN

a2 = coefficient for CDD

a3 = coefficient for HDD

a4 = coefficient for COVID-19 impact per customer

a5 = coefficient for TIME (declining use value)

In this example, use per customer is the dependent variable (outcome) and all other variables are independent variables (predictors).

Q. Can statistical linear regression models be used to weather normalize historical water sales for different customer classes?

A. Yes. In the statistical model in the example above, the a1 coefficient for RAIN can be used to estimate the impact of rainfall on use per customer in any given historical period and estimate the impact of what use per customer would have been if rainfall had been different, especially when actual precipitation was higher or lower than normal. Below is a sample calculation of how weather normalization works with a statistical regression model that uses the weather as a strong predictive independent variable that affects the use per customer dependent variable.

IMPACTn = a1 x (ACTUAL RAINn – NORMAL RAINn)

Where: IMPACTn = Weather impact due to abnormal rainfall in period n

ACTUAL RAINn = Actual Rainfall (in inches) in period n

NORMAL RAINn = Average Rainfall (in inches) in period n

If the value of the a1 coefficient for rainfall is -0.30 in this example, actual rainfall for the period is 6 inches and normal rainfall for the period is 4 inches, the weather impact for the period due to higher-than-normal rainfall is a negative 600 gallons per customer meaning that the Company sold 600 fewer gallons per customer of water than it otherwise would

have [-0.30 x (6 – 4) = -0.60]. If there are multiple weather variables in the statistical regression analysis, this calculation is completed separately for each variable and the sum of the calculations is rolled up into a single weather impact. This approach to weather normalization allows an analyst to independently assess the impact of each weather component, and also allows an analyst to state the weather impacts over time both in terms of consumption and in terms of revenues by multiplying the consumption impact by a volumetric price.

Q. Can statistical linear regression models be used to estimate the impacts of COVID-19 on water sales for different customer classes?

A. Yes. In the statistical model example above, the a4 coefficient for COVID-19 is the estimate of the impact of the COVID-19 public health emergency on monthly use per customer. The historical data set contains a variable for each month that indicates the assumed qualitative level impact of COVID-19 in that month. In all months prior to April 2020, that value was set at 0%. From April 2020 through December 2021, that value is set at 100% when maximum COVID-19 impacts are observed or can be set at a level less than 100% where we see reduced COVID-19 impacts on usage. The coefficient for the COVID-19 impact variable estimates the average monthly use per customer based on the months that have been designated as COVID-19 months. This coefficient can then be used to (1) identify a normal level of usage that is not influenced by the impact of COVID-19, in a manner similar to a normalization calculation that adjusts for the influence on water usage associated with weather conditions that depart from normal, and (2) reflect estimates of future impacts of the COVID-19 public health emergency.

Q. Can these models be used to estimate trends in declining use per customer for different customer classes?

A. Yes. In the same statistical model example represented above, the a5 coefficient for TIME is the estimate of declining use per customer per month. This coefficient measures the rate of decline in use per customer over the historical data set independent of the effect of any other variable in the model. The historical data set contains a variable for each month which is a timestamp that starts at 1 for the first month in the dataset and increases by 1 for every month going forward. This acts as a trend variable for both historical periods in the dataset and future forecast periods. The coefficient for this trend variable is applied to future increasing values of the trend which results in decreasing forecasts of use per customer.

Q. How does one assess the accuracy of a statistical linear regression model?

A. A statistical linear regression model produces a set of statistics that can be used to judge the accuracy and fitness of the model. The most common statistics are (1) the "R-Squared" value, which is a statistical measure in a regression model that determines the proportion of variance in the dependent variable that can be explained by the independent variables, and (2) values and standard deviations for the coefficients, which can be used to determine "t-statistics" and "p-values" which tell how accurately and precisely the different coefficients are being calculated and whether the associated independent variables are strong predictors of the dependent variable.

In the equation described above, the "R-Squared" value is a statistic that measures the percentage of variation from time period to time period in the dependent variable (water use per customer) that is explained by the mathematical relationship with the independent

variables. The R-Squared can range from 0% (no explanatory ability) to 100% (perfect explanatory accuracy). In general, the higher the R-squared, the better the predictive value of the model.

The second major test involves comparisons of the values of each of the model coefficients and their associated standard errors. Because a statistical regression model estimates an explanatory relationship between a dependent variable and a set of independent variables, there will always be some degree of uncertainty around what that explanatory relationship actually is. As a result, each model coefficient has a level of uncertainty around it, and this level of uncertainty is represented by measuring how many standard errors each coefficient is away from zero, which the model also calculates.

Dividing the value of each coefficient by its standard error yields a t-statistic which can be used to judge the predictive power of the independent variable that the coefficient represents. For example, in the case of the generic statistical model described above, if the value of the a1 coefficient for rainfall is -0.30 and the standard error for that coefficient is 0.05 (meaning that the real value of the coefficient could be anywhere between -0.35 and -0.25 with -0.30 being the most likely value), the value of the t-statistic is -6.0 (-0.30 divided by 0.05 = 6.0). Generally speaking, t-statistic values greater than 2.0 for positive coefficients or less than -2.0 for negative coefficients indicate an acceptable predictive relationship between that independent variable and the dependent variable of interest. The higher the t-statistic value, the greater the confidence we have in the coefficient as a predictor. Values between 2.0 and -2.0 indicate that the predictive power of that independent variable may not be very strong.

Q. Are there other more qualitative ways to determine whether a statistical linear regression model is accurate and produces reasonable results?

A. Yes. There are also several qualitative ways to determine whether a statistical regression model accurately describes the relationship that a chosen set of independent variables has with the dependent variable:

- **Does the model represent reality?** If it is generally known that water consumption is seasonal and is driven in the summertime by heat and precipitation, it is logical to assume that a statistical model that attempts to describe and predict seasonal water consumption would have explanatory variables related to summer heat and precipitation, and those explanatory variables would be shown to have a strong predictive value in the model. Models that attempt to accurately describe the drivers behind water consumption that do not contain statistically significant coefficients for independent variables that are logically known to drive water consumption are likely not strong predictive models.
- **Are the signs of the coefficients for major independent variables correct?** If water consumption increases in the summertime with increasing heat and decreases in the summertime with increasing precipitation, it is logical to expect that the coefficients for the independent variables that represent summertime heat and summertime precipitation would be positive and negative, respectively.
- **Is the model based on a robust data set?** It is easy for a statistical model with many independent variables and relatively few observations of the dependent variable to accurately explain variation in the dependent variable, but that does not mean that the model has strong predictive power if the data set being analyzed is

small in scope. A statistical model that attempts to describe water consumption that has good predictive explanatory power over multiple years of monthly historical data is very useful and accurate in projecting future trends and in explaining how changes in strong predictive independent variables will affect levels of the dependent variable.

- **Do the impacts on the dependent variable that the model describes make logical sense?** It is possible outside of a statistical linear regression model to make ballpark estimates of other facts like the impact of COVID-19 on water consumption and long-term trends in declining use. This can be done with a simple linear plot of annual usage data by year. For example, if a linear plot of annual usage data suggests that there is a downward trend of approximately 1,000 gallons per customer per year, one would expect that a statistical model that is measuring that impact would yield a result that is similar. The same is true when looking at the potential impacts of COVID-19 on water consumption. If a visual examination of data suggests that water use per customer for a commercial class has decreased by 2,000 gallons per customer in 2020 due to the COVID-19 emergency, it is logical to expect a statistical regression model that attempts to statistically measure that impact to yield estimates consistent with that expectation.

Q. Please describe the statistical linear regression model you are using to analyze water consumption data for INAWC.

A. In this proceeding, we are using a multiple regression statistical model to analyze use per customer for the residential class that relates the dependent variable (i.e., water use per customer) to a collection of independent variables. The models use 120 months of monthly

data beginning in January 2013 and running through December 2022. Each regression model uses independent variables that can be broken down into four categories to explain monthly use per customer. The four categories are:

- **Weather:** The weather variables used in the models are Cooling Degree Days ("CDDs") and precipitation. These weather variables are a weighted average of current month and lagged month weather readings taken by the National Oceanic and Atmospheric Administration from across the Company's Indiana service territory. This weighted average lagged approach is used to account for the differences between billing month sales and calendar month weather. Coefficients from these variables show the impact of weather on monthly use per customer over the 10-year period. Weather variables are modeled as monthly deviations from normal for each month in the data set (actual weather for the month less normal weather for the month for each individual weather variable). Normal weather is calculated for each month of the year based on the weather over the ten-year period that the historical data spans.
- **Time:** The time variable is a trending variable that notes the passage of time in the model and produces a coefficient that estimates the monthly decline in usage per customer over the 10-year model. The time variable captures the range of conservation efforts that have been implemented by customers over time, such as the installation of more water-efficient fixtures and appliances. Time on its own is of no consequence, but it is a powerful variable because it is the medium for capturing the conservation effect.

- **COVID-19 indicator**: The COVID-19 indicator variable is set at 0% for months prior to April 2020 and 100% for the months of April 2020 through December 2021. The effect of this variable in the model is to look specifically for increases or decreases in use per customer for the April 2020 through December 2021 timeframe that may have happened due to systemic changes in the amounts of water customers use as a result of the COVID-19 public health emergency.
- **Monthly indicators:** The monthly indicator variables in the model measure structural monthly and/or seasonal changes in use per customer that cannot be explained by any of the other variables in the model.

Q. What information do these models provide that is useful for developing pro forma adjustments to revenues that you are sponsoring in your testimony?

A. Each model produces a set of weather coefficients that can be used to weather-normalize historical sales, a coefficient that indicates the monthly trend in declining use per customer for each class, and a coefficient that shows for each class the average use per customer impact associated with changes in usage due to COVID-19.

Q. You mentioned that you have developed models for customer usage relating to the residential class. Are you also modeling usage for the commercial, industrial, public authorities, and sales for resale customer classes, and for fire service classes?

A. No. The statistical modeling in this case is only for the residential class. Usage estimates for the commercial, industrial, public authorities, and sales for resale classes are developed using a simple multi-year average and are described later in the revenue section of my testimony.

Q. Is this modeling approach different from the modeling approaches that have been used by the Company in previous rate cases in Indiana?

A. Yes. The modeling approach proposed in this case is a monthly model with 12 monthly data points for each of the 10 years covered in the model, which results in models with 120 historical data points. Modeling approaches in previous rate cases relied on ten years of data but used an annual modeling approach where there was only one data point for each year which resulted in models with 10 historical data points.

Q. Why is the Company proposing to move from an annual model with one data point for each year to a monthly model with 120 historical data points?

A. The Company is moving to a monthly modeling approach to improve the accuracy of the modeling process. Monthly modeling that incorporates monthly weather information and that allows for monitoring of customer usage from month to month significantly improves the Company's ability to understand the impacts of weather on customer usage. Additionally, this approach allows for a more detailed analysis of other factors that affect customer usage like the COVID-19 emergency. This approach to modeling significantly improves the accuracy of the Company's analysis of customer usage.

Q. You previously discussed the various statistical tests used for accuracy and predictability. Please discuss the results of these tests for your models and why they are appropriate to use in this proceeding.

A. As shown in Attachment CBR-5, the Adjusted R-Squared statistic for the residential usage model is 85%. This indicates that the explanatory variables (weather, COVID-19 impacts, declining use, etc.) strongly explain the variability in use per customer over time. The

values of the coefficients, standard errors, and t-statistics for the major explanatory variables in the models are as follows:

TABLE 9

Residential Model Major Explanatory Variables	**Coefficient**	**Standard Error**	**t-Statistic**
Declining Use Trend	-.0041	.0006	-6.6021
Precipitation	-.1455	.0302	-4.8182
CDD	.0021	.0009	2.4350
COVID-19 Impact	.1958	.0535	3.6567

The statistics for the individual explanatory independent variables above show a high degree of explanatory power with all parameters having t-statistics all outside of the +/- 2.00 range. The sign for the precipitation variable is negative as expected, meaning that more rainfall over a summer period results in less seasonal water usage from our residential customers. The sign for the CDD variable is positive, which indicates that the hotter the weather gets in the summer, customers use more water, which is expected, and the COVID-19 impact variable indicates that residential usage went up as a result of COVID-19. The sign for the declining use variable is negative and is statistically significant which means that there is a pervasive decline in use per customer for residential customers over the ten-year historical period.

Q. Your regression models show a trend of declining use per customer. What is the amount of declining use your models have identified?

A. The annual amount of declining use identified for residential customers is approximately 585 gallons per year per customer.

Q. Why do you believe that declining use is a valid trend for residential customers that will continue?

A. Consumption patterns for the Company's customers are similar to those for other American Water operating companies which have experienced a decline in residential consumption per customer averaging approximately -2.0% per year over the last 10 years. According to the 2010 Water Research Foundation report, "many water utilities across the United States and elsewhere are experiencing declining water sales among households." The report further states: "A pervasive decline in household consumption has been determined at the national and regional levels."[2]

Q. What is causing the decline in residential customers' usage?

A. Several factors drive the decline in residential customers' usage. These factors include the incremental introduction of low-flow fixtures and appliances, new regulations that lead to further reductions in fixture flow rates, conservation programs, and public initiatives that have led to greater consumer water conservation awareness.

Plumbing fixtures such as toilets, showerheads, and faucets available to consumers today are more water-efficient than were those fixtures manufactured in the past. Similarly, appliances such as dishwashers and washing machines are also more water efficient. When a customer replaces an older toilet, washing machine, or dishwasher with a new unit, the new unit will almost certainly use less water than the one it replaced. Similarly, the construction of new homes results in the installation of water-efficient fixtures meeting new, more efficient, regulatory standards.

[2] Coomes, Paul et al., North America Residential Water Usage Trends Since 1992 – Project #4031, page 1 (Water Research Foundation, 2010).

Q. How much water do the new fixtures and appliances save?

A. The Energy Policy Act of 1992 mandated the manufacture of water-efficient toilets, showerheads, and faucet fixtures. For example, a toilet manufactured after 1994 must use no more than 1.6 gallons per flush, compared to a pre-1994 toilet, which typically used from 3.5 to 7 gallons per flush. In fact, toilets using only 1.28 gallons per flush or less are becoming more prevalent in the marketplace. Replacing an old toilet with a new one, therefore, can save from 2 to nearly 6 gallons per flush. The United States Environmental Protection Agency estimates that there are more than 220 million toilets in the United States and that approximately 10 million new toilets are sold each year for installation in new homes and businesses or replacement of aging fixtures in existing homes and businesses.

The Energy Independence & Security Act of 2007, which established stringent efficiency standards for dishwashers and washing machines, has further reduced indoor water consumption. Dishwashers manufactured after 2009 and washing machines manufactured after 2010 must use 54% and 30% less water, respectively. All other factors being equal, a typical residential household in a new home constructed in 2015, with water-efficient toilets, washing machines, dishwashers, and other fixtures, uses approximately 35% less water for indoor purposes than a non-retrofitted home built prior to 1994.

Q. Are there other factors contributing to the continued decline in water consumption patterns?

A. Yes. Programs to raise customer awareness and interest in the benefits of conserving water and energy continue to increase. As awareness of water and energy efficiency increases, customers may decide to replace a fixture or appliance even before it has broken.

Additionally, customers may further reduce consumption by changing their household water use habits in other various ways.

Q. Do you expect the trend of declining usage to continue in the future?

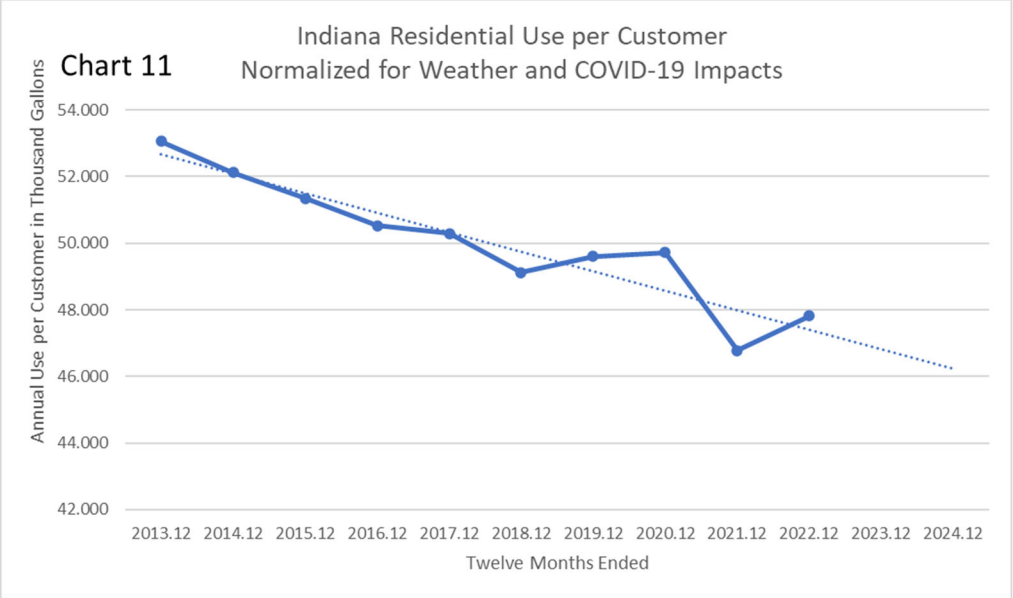
A. Yes. Water-efficient fixtures and other drivers such as conservation education and government-mandated standards will continue to drive further efficiency into residential and nonresidential usage per customer. In fact, the trend is well established and continues to affect water usage on the Company's system as well as most water utilities across the United States. The rate of the continued trend is dependent on the pace of fixture replacement within the Company's footprint as well as the broadening acceptance of a conservation ethic through raised customer and business awareness programs, government conservation policy, and similar behavior modification-related programs.

Technology is now available for newer, more water-efficient products that further improve on Energy Policy Act levels, and there has been a growing movement to codify these more stringent specifications. The introduction of progressive code modifications – such as the International Code Council's International Green Construction Code and the International Association of Plumbing and Mechanical Officials Green Plumbing and Mechanical Code Supplement (2011) – support uniform implementation of increased water efficiency standards. An article in the June 2012 issue of the AWWA Journal entitled "Insights into declining single-family residential water demands" recognizes this decline in water consumption: "[r]educed residential demand is a cornerstone of future urban water resource management. Great progress has been made in the last 15 years and the industry appears

poised to realize further demand reductions in the future."[3] The trend of declining water consumption based on improved water efficiency has continued over time.

Q. Normalizing historical usage for weather and the COVID-19 emergency, what has the overall trend been for use per customer for the residential class?

A. The statistical analysis of residential usage shows that once weather effects and the one-time effects of COVID-19 have been accounted for, there is a significant downward trend in usage for residential customers. Chart 11 below shows use per customer for the residential class for the ten years ending December 2022, adjusted for the weather impacts and COVID-19 impacts I previously described in my testimony.



[3] DeOreo, William and Mayer, Peter. American Water Works Association Journal. Vol. 104. Issue 6. http://apps.awwa.org/WaterLibrary/showabstract.aspx?an=JAW_0076117. June 2012

Q. What conclusions do you draw from this chart and your supporting analysis?

A. The chart and the supporting analysis demonstrate that there has been a significant and pervasive decline in normalized use per customer for residential customers in the INAWC service territory. The Company's modeling normalizes for weather and COVID-19 and shows that there is a pervasive decline in residential usage over the past ten years. The historical trends in adjusted monthly use per customer for the residential class will continue through the for the relevant time periods going forward.

REVENUE CALCULATIONS

Q. Please explain the development of Indiana-American's pro forma revenues in this case as set forth in Schedules REV1 W and REV1 WW.

A. The process of developing the proposed increase in this case begins with revenues recorded on the Company's books of account for the 12-month period ending September 30, 2022, to which various adjustments were made. A summary of pro forma revenues for Indiana-American's water and sewer operations under present and proposed rates is provided in Schedules REV1 W and REV1 WW, which show operating revenues by customer class for the base year under present rates (twelve months ended September 30, 2022) and for the Step 1 (12-monhts ended December 31, 2023) and Step 2 and Step 3 (12-months ended April 30, 2025) forecast periods. Detailed calculations that support these adjustments can be found in the Electronic Workpapers REV2 WP1, file entitled IN 2023 Rate Case - Water Workpaper, and REV2 WP2, file entitled IN 2023 Rate Case - Wastewater Workpaper, supporting this schedule.

Q. Please describe the development of base year revenues for the 12 month period ended September 30, 2022.

A. Base year revenues for the 12 months ended September 30, 2022 are based on actual billing determinants for the base year period and are annualized using the rates that became effective November 2022 that reflect the impact of removing the Utility Receipts Tax from revenue requirements.

Q. Please describe the development of revenues for future test years at present rates.

A. Revenues for future test year at present rates for Step 1 are based on current rates and projected billing determinants by customer class for the 12-month period ending December 31, 2023, as well as projections for other miscellaneous revenues. These projections of revenues for the Step 1 period at present rates compared to the calculated revenue requirement for the same period is the basis for the requested increase in this case for Step 1. For Step 2, revenues at present rates are based on proposed rates from Step 1 and projected billing determinants by customer class for the 12-month period ending April 30, 2025. For Step 3, revenues at present rates are based on proposed rates from Step 2 and projected billing determinants by customer class for the 12-month period ending April 30, 2025.

Q. How were the revenues by customer class component developed?

A. For each class, forecasted sales were determined by multiplying forecasted customer counts for each class by forecasted use per customer. Metering billing determinants were developed by applying forecasted customer counts to the base year pattern of meter sizes in each class. Usage billing determinants were determined by applying forecasted sales to the base year pattern of usage by rate block in each class. Forecasted billing units for both

monthly meter charges and usage were multiplied by current rates to get forecast revenue at present rates for Step 1 and were multiplied by Step 1 proposed rates to get forecast revenue at present rates for Step 2 and then multiplied by Step 2 proposed rates to get forecast revenue at present rates for Step 3. Specifics on how forecasted customer and usage by customer class component for organic growth were determined are as follows:

- Residential: Residential use per customer is based on a long term trend analysis of historical residential usage data that includes a declining usage component, a weather component, and a COVID-19 component that I described previously in my Direct Testimony. Customer counts for the future periods are projected based on three years of average annual customer growth from October 2019 through September 2022.
- Commercial: Projected commercial use per customer is based on average annual use per customer from October 2019 through September 2022. Customer counts are based on base year data adjusted for average annual customer growth from October 2019 through September 2022.
- Industrial: Projected industrial usage is based on average monthly usage by month from October 2019 through September 2022. Customer counts are based on September 2022 with no assumed growth.
- Public Authorities: Public Authority usage is based on average monthly usage by month from October 2019 through September 2022. Customer counts are based on September 2022 with no assumed growth.

- Sales for Resale: Sales for Resale usage is calculated individually for each customer and is based on average monthly usage by month from October 2019 through September 2022.
- Private Fire: Customer counts are based on September 2022 data with average customer growth from October 2019 through September 2022 assumed in the forecast.
- Public Fire: Public fire billing determinants are based on monthly meter charge billing determinants for the residential, commercial, industrial, and public authorities classes.

Q. How were the various components of Other Revenues developed?

A. Revenue projections for returned check charges, reconnect fees, after hours charges, and miscellaneous service revenues are all based on a three-year average for the calendar years 2018, 2019, and 2021. Revenue projections for rental fees are based on current lease agreements and revenue projections for usage data revenues are based on calendar year 2022 active customers and the current usage data tariff fees. Revenue projections for late payment fees are based on the actual ratio of late payment fees to total revenue for the twelve-months ended September 2022 base year projected to forecast test year revenue amounts.

Q. Please describe the development of Revenues for future test year at proposed rates.

A. Revenues for future test year at proposed rates, which is also provided in Schedules REV1 W and REV1 WW, are based on the same billing determinants used for the Step 1 and Step 2/3 test periods under present rates I've previously described, but with INAWC's proposed

rate design as outlined in Attachment CBR-3. There are separate revenue calculations for revenues under proposed rates at Step 1 (12-months ended December 2023) and Step 2/3 for the 12-month period ending April 30, 2025.

Q. Are the billing determinants used in the calculation of revenues under proposed rates for Step 1, Step 2, and Step 3 the same?

A. Billing determinants for Step 1 are based on forecasted usage and customer count information for the 12-month period ended December 2023. Billing determinants for Step 2 and Step 3 are identical and are based on forecasted usage and customer count information for the 12-month period ended April 2025

Q. Do you provide a summarization of the adjustments made to get from base year revenues to revenues for future test periods at present rates?

A. Yes. Workpapers REV2 WP1 and REV2 WP2 provide a breakdown and categorization of all of the adjustments made to get from base year revenues to revenues for future test year at present rates.

Q. Does this conclude your Direct Testimony?

A. Yes, it does.

VERIFICATION

I, Charles B. Rea, Senior Director, Regulatory Pricing and Affordability, affirm under penalties of perjury that the foregoing representations are true and correct to the best of my knowledge, information and belief.

Charles B. Rea

Charles B. Rea

Date: March 27, 2023

ATTACHMENTS CBR-1 THROUGH CBR-5 ARE FILED AS EXCEL DOCUMENTS