Preston N. Carter (ISB No. 8462)
Morgan D. Goodin (ISB No. 11184)
Givens Pursley LLP
601 W. Bannock St.
Boise, ID 83702
Telephone: (208) 388-1200
Facsimile: (208) 388-1300
prestoncarter@givenspursley.com
morgangoodin@givenspursley.com

Attorneys for Veolia Water Idaho, Inc.

BEFORE THE IDAHO PUBLIC UTILITIES COMMISSION

IN THE MATTER OF THE APPLICATION OF VEOLIA WATER IDAHO, INC. FOR AUTHORITY TO INCREASE ITS RATES AND CHARGES FOR WATER SERVICE IN THE STATE OF IDAHO	Case No. VEO-W-22-02

BEFORE THE IDAHO PUBLIC UTILITIES COMMISSION
DIRECT TESTIMONY OF ANN T. BUI

SEPTEMBER 2022

INTRODUCTION

Q. Please state **your name, occupation, and business address.**

A. My name is Ann Bui, and I am a Managing Director with Black & Veatch Management Consulting LLC ("Black & Veatch"), responsible for the firm's Water Advisory Practice. I am testifying on behalf of Veolia Water Idaho, Inc. ("VWID" or the "Company") in this case. Black & Veatch is headquartered at 11041 Lamar Avenue, Overland Park, Kansas.

Q. Please summarize your educational background and professional experience.

A. As detailed in my attached resume (Appendix A), I am a Chemical Engineer by training at the University of British Columbia, Canada, and the University of California at Los Angeles. My Master of Business Administration from the University of California at Davis specializes in Finance and Organization Management.

My experience includes helping utilities with organizational effectiveness studies, reducing carbon footprints for energy-intensive activities, addressing affordability and assistance program needs, quantifying the financial impact of deferred asset maintenance, and developing innovative approaches for structuring alternative delivery projects using private and public financing instruments. During my 32-year career, I have worked on more than 450 engagements, providing financial and business planning services for public and investor-owned utilities of all sizes. These services have spanned all aspects of rate filings, from revenue requirements to cost of service and rate design.

Over the past two decades, I have provided expert witness testimony in front of the California Public Utilities Commission, the Indiana Utilities Regulatory Commission, and the Kentucky Public Service Commission. For long-standing clients such as the Philadelphia Water Department and Washington Suburban Sanitary Commission, I have testified before utility rate commissions in numerous rate filings on cost-of-service matters. I have also provided expert witness testimony supporting litigation matters for the City of San Diego, CA, Greater Cincinnati Water Works, the City of Baton Rouge, LA, the City of Atlanta, GA, and the City of Holland, MI.

I am a long-standing member of several industry associations that are key to developing and providing guidance to the rate-making community. As an active member of the American Water Works Association (AWWA), the National Association of Water Agencies, and the Water Environmental Federation (WEF), I have served in the following leadership positions:

- Past Chair of AWWA's Finance, Accounting, and Management Controls (FAMC) Committee (3 years)
- Vice-Chair of FAMC (3 years)
- Member of AWWA's Rates and Charges (R&C) and FAMC committees
    - Co-Chair of Publications Subcommittee (Joint R&C and FAMC)
    - Vice-Chair of R&C Rate Design subcommittee
    - Member of R&C Water Reuse subcommittee
    - Member of R&C System Development Charges subcommittee
    - Member of R&C Executive Committee

- Chair for current revision to AWWA's M29 Manual, Water Utility Capital Financing

In addition to serving on industry committees, I have also contributed as an editor, author, and reviewer for AWWA's M1-Principles of Water Rates, Fees and Charges (6th and 7th editions, and the currently under development, 8th edition); WEF's Manual of Practices 27- Financing and Charges for Wastewater Systems (3rd and 4th editions), and WEF's User-Fee-Funded Stormwater Program.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to provide a cost-of-service overview and describe the methodology and results of the Black & Veatch's Cost of Service Study (COSS) prepared for this proceeding.

Q. Please identify the supporting schedules provided with your testimony.

A. Black & Veatch is sponsoring Exhibit 14 with the following schedules:

Exhibit 14-1 summarizes the COSS and compares the cost of service, by customer class, with revenues under existing and proposed rates. The schedule also presents the COSS increase by customer class.

Exhibit 14-2 summarizes the distribution of test year operation and maintenance (O&M) expenses, depreciation expense, taxes, return, and rate base to the customer classes.

Exhibit 14-3 presents the distribution of O&M, depreciation, taxes, return, and rate base to the functional cost components.

Exhibit 14-4 illustrates the allocation of demand-related fire service costs to private and public fire customers.

Exhibit 14-5 (a-c) presents the development of charges for the 5/8" meter, billed consumption, and private fire service.

Exhibit 14-F presents the allocation factors used in the COSS.

COST OF SERVICE OVERVIEW

Q. What is the purpose of a Cost-of-Service Study?

A. The purpose of a cost-of-service study is to analyze the assignment of cost responsibility to customers serviced and to guide the development of rates in rate cases. As it is neither economically practical nor often possible to determine cost responsibility and applicable rates for each individual customer, rate practitioners conducting a cost-of-service analysis use groups or classes of customers with similar water-use characteristics for cost allocations. Ratemaking endeavors to assign costs to classes of customers in a non-discriminatory, cost-responsive manner so that rates can be designed to meet the cost of providing services to customer classes.

Q. Was the Cost-of-Service Study in this proceeding consistent with Generally Accepted Industry Guidelines?

A. Yes. The cost-of-service analysis conducted by Black & Veatch utilizes a cost-causative approach endorsed by AWWA's Principles of Water Rates, Fees, and Charges, Manual of Water Supply Practices M1 (M1 Manual). The methodology produces cost of service allocations recognizing the projected customer service requirements for the Company. Proposed rates are designed according to allocated service costs and local policy considerations. Furthermore, the methodology used

in the COSS is consistent with the approach agreed to by the Company and the Idaho Public Utilities Commission (PUC) in prior rate proceedings.

Q. Please describe the various components of a COSS.

A. Essentially, a COSS consists of three parts that can be summarized as follows:

- Revenue and Revenue Requirements. Rates and charges should generate adequate revenues to meet the operating and capital costs and provide for the utility's financial stability. Under this step, we project the Company's test year revenues under existing rates and compare them to the projected test year operational and capital needs.
- Cost of Service. The cost-of-service analysis evaluates the existing utility and the relative load placed on the utility by the different customer classes to allocate costs based on services received fairly. The cost-of-service analyses consider the functional aspects of utility operations and cost components such as base, extra-capacity, meter, customer, and other direct costs. This step provides a means of apportioning costs and the overall return to each customer class.
- Rate Design. Under this step, we develop rates and charges that reflect cost-of-service principles and the Company's goals and objectives.

COST OF SERVICE AND RATE DESIGN

Q. Please summarize Black & Veatch's COSS.

A. Black & Veatch's cost-of-service analysis uses the Base-Extra Capacity method and methodology accepted by the PUC in past proceedings. The M1 Manual

recognizes the Base-Extra Capacity approach as an acceptable means of determining the costs of service.

Under the Base-Extra Capacity method, the identified revenue requirements are allocated to functional cost components. Simply put, functional cost components can be considered activities that drive costs. For the COSS, these functional cost components are Average Daily Use, Maximum Day Use, Maximum Hour Use, Meters, Services, Billing & Collection, and Fire Protection.

Next, we identify the billing determinants for each customer class by functional cost component. After this is completed, the functional costs are allocated to the residential, commercial, public authority, and fire protection customer classes based on the number of units calculated in Step 2. Finally, we determine the revenue gap between the cost of service and revenues under existing rates for each class.

Q. Does the cost of service by customer class presented in the COSS reflect the actual Test Year and Test Period data presented in the filing?

A. Yes. Black & Veatch used the revenue requirements in this proceeding and allocated them to the functional cost components and customer classes using factors and ratios that reflect current operations and requirements. The System maximum day and hour ratios and those for the residential, commercial, and public authority classes are based on Black & Veatch's Customer Class Load Study (Load Study), which is included in Appendix B.

Q. Please describe any major findings of the Load Study.

A. The Load Study results indicate that the System maximum day ratios are consistent with the Company's ratios based on correlating the highest annual maximum water production day for the last ten years. Moreover, the Load Study found that although each customer class had distinct maximum day and maximum hour ratios, the system-wide diversity factors are slightly below the typical range cited in the M1 Manual of 1.10 to 1.40. In other words, water conservation efforts, commercial irrigation patterns, and storage management have produced a system whereby all customer classes peak at close to the same time (coincident peaking). Consequently, the benefits of non-coincidental peaks provided by different classes are substantially reduced. This observation supports the Company's belief that having one general service rate for all customers is appropriate.

Q. Does the Load Study identify new customer classes, such as those with an alternative irrigation source?

A. No. The Black & Veatch study examined over a half billion data points gathered via Advanced Infrastructure Metering (AMI) and non-AMI methods. None of the data provided a means to determine which customer accounts have an alternative irrigation source. Short of separating metering the alternative source, there is no way of knowing when customers use the potable water system versus the alternative source on any given day. Moreover, the reviewed data showed no customer classes or groups exhibiting significantly different usage patterns.

Q. Please discuss Exhibit 14-1, which summarizes the results of the COSS.

A. Exhibit 14-1 shows that for the test year ending March 31, 2023, the total revenue requirement reflects a 23.4% revenue increase. The COSS suggests that the overall average revenue increase by customer class would be:

- Residential – an increase of 27.5%
- Commercial – an increase of 21.8%
- Public Authority – an increase of 2.5%
- Private Fire – a decrease of 62.9%

Q. How do the proposed rates set forth in Company witness Tim Michaelson's testimony differ from those calculated in the COSS?

A. As noted earlier, the design of rates should also reflect the Company's goals to propose rates that fairly reflect the cost of providing service while maintaining gradual shifts in rates that minimize the impact on residential and others.

For example, the COSS indicates that private fire protection charges should decrease because of a slight change in required fire durations: The COSS based total fire demand on 1 4-hour, 4,500 gallons per minute (gpm) fire, 1 4-hour, 4,000 gpm fire, and 1 2-hour 1,500 gpm fire. This is a change from a total system demand for a 10-hour, 10,000 gpm fire. The Company's proposed fire sprinkler rates reflect a policy of gradualism and no change to the current fire rate schedule.

The Company's approach concerning General Service rates is consistent with the "across the board" methodology accepted in the 2011, 2015, and 2020 rate proceedings. The proposed increase of 24.1% is comparable across the customer classes, which is why the Company proposes the same approach in this rate proceeding.

Q. Please discuss why you believe the proposed revenue increase allocation is fair.

A. The Company continues to make substantial infrastructure and operational improvements to the water system. The overall revenue increase reflects the magnitude of these investments and is distributed to all customers in the same, fair manner.

Q. Are any changes to the rate structure being proposed in this filing?

A. No.

Q. Does this conclude your direct testimony?

A. Yes, it does.

APPENDIX A

PROFESSIONAL QUALIFICATIONS

OF

ANN T. BUI

BLACK & VEATCH MANAGEMENT CONSULTING LLC.

Ann T. Bui

Managing Director

Ms. Bui serves as a Managing Director with Black &Veatch's Global Advisory business. In this role, she oversees all rate and financial planning work for water and wastewater clients. Ann has more than 30 years of experience gained through more than 450 engagements, providing financial and business planning services for public and investor-owned utilities of all sizes.

Ann has more than 30 years of experience with clients in North and South America, Europe, and Asia gained through more than 450 engagements, providing financial and business planning services for public and investor-owned utilities of all sizes.

Ann's recent assignments have focused on water scarcity and insecurity; addressing affordability and assistance program needs; quantifying the financial impact of deferred asset maintenance; developing innovative approaches for structuring alternative delivery projects using private and public financing instruments and preparing financial feasibility reports supporting more than $14 billion of revenue bond sales, $4 billion in state revolving fund loans, and over $1 billion of grant applications. Her work on due diligence efforts have supported the successful buy-side/sell-side of water and wastewater assets totaling over $12 billion.

Ms. Bui has completed due diligence engagements for entities of many internationally well-established companies such as KKR, Macquarie Capital, Credit Suisse, Morgan Stanley, J.P. Morgan, Goldman Sachs, Bank of America Merrill Lynch, Rothschild, Canada Pension Plan Investment Board, Barclays, Fiera Infrastructure, Alma Global, and PGGM.

Over the past two decades, Ms. Bui has provided expert witness testimony in front of the California Public Utilities Commission, the Indiana Utilities Regulatory Commission, and the Kentucky Public Service Commission. She has served as an expert witness in front of utility rate commissions for such clients as the Philadelphia Water Department and Washington Suburban Sanitary Commission. She has also provided expert witness testimony supporting rate litigation matters for the City of San Diego, CA, Greater Cincinnati Water Works, City of Baton Rouge, LA, City of Atlanta, GA, and the City of Holland, MI.

An active proponent of advancing the water industry, Ms. Bui is a long-standing member of several industry associations. She is a past Chair of the American Water Works Association (AWWA) Finance, Accounting, and Management Controls

EDUCATION

Masters, Business Administration, Finance, University of California – Davis, 1995

MS, Chemical Engineering, University of California Los Angeles, 1989

BS, Chemical Engineering, University of British Columbia, 1986, Canada

YEARS EXPERIENCE

32

PROFESSIONAL REGISTRATION

License, Engineer-In-Training, #XE094654, California, 1995

PROFESSIONAL ASSOCIATIONS

AWWA

Past Chair - AWWA's Finance, Accounting & Management Controls Committee

Member - AWWA's Strategic Management Practices Committee

Member – AWWA's Rates & Charges

WEF

NACWA's Utility Management Committee

RELEVANT EXPERTISE

Financial & Management Consulting Services; Debt Issuance Support; Elasticity Studies; Cost of Service & Rate Design; Institutional & Organizational Studies; Alternative Financing; Valuations/M&A

(FAMC) Committee and is involved with AWWA's Rates and Charges Committee, the National Association of Clean Water Agency's (NACWA's) Utility Management Committee, and with the Water Environment Federation (WEF).

Ann serves as an author, editor, and peer reviewer for many of the rate-making industry's manuals of practice, including AWWA's M1 – Principles of Water Rates, Fees and Charges, the current update to M1, the current update of WEF's Manual of Practice 27, Financing and Charges for Wastewater Systems, and WEF's User-Fee Funded Stormwater Program. She is the lead author and editor of AWWA's book ***Financial Management for Water Utilities: Principles of Finance, Accounting and Management Controls.*** Presently, Ann is the Chair for the update to AWWA's M29 – Water Utility Capital Financing.

REPRESENTATIVE EXPERIENCE

Philadelphia Water Department; Water, Wastewater and Stormwater Cost of Service Studies; Pennsylvania; 2003 – 2006; 2017-Present

Project Director. Ms. Bui has worked with the City of Philadelphia since 2003 and currently serves as the Project Director for Black & Veatch's multi-utility cost of service work with the Philadelphia Water Department (PWD). The 2020 Rate Case incorporated program costs for PWD's long-term control plan, green infrastructure, public-private grants to incentivize stormwat er improvements, and restructuring of the City's assistance programs. The 2020 Rate Case also included development of a customer assistance rate rider as well as changes in public fire protection cost recovery. Black & Veatch is currently preparing the rate filing for the customer assistance program petition for increasing rates, and a separate reconciliation filing the 2020 Rate Case black-box settlement.

Washington Suburban Sanitary Commission; Comprehensive Water and Wastewater Rate Study; Laurel, Maryland, United States; 2016-Present

Project Director. Ms. Bui is the project director responsible for Black & Veatch's engagement with WSSC Water. Since 2016, we have completed numerous assignments with WSSC Water, including conducting a comprehensive water and wastewater rate study, analysis and development of a new overhead cost allocation methodology, creation of miscellaneous fees, and provided litigation support to WSSC on rate-setting matters in front of the Maryland PSC. For the rate study, we performed an analysis of WSSC's current rate structure as well as numerous alternative rate structures and conducted extensive public outreach to a bi-county working group as well as stakeholder groups. Workshops included explanation of the rate-making process, WSSC priorities and goals for rate setting, and discussion of stakeholder issues and concerns. The Black & Veatch team continues to advise WSSC on alternative rate structures as management and the Board consider a new rate structure that better addresses WSSC's goals and objectives.

Great Lakes Water Authority; System Water Audit and Units of Service for Non-Master Metered Customers – Phase I; Detroit, Michigan, 2017

Project Director. Ms. Bui served as the Project Director for the first phase of Black & Veatch's engagement with the Great lakes Water Authority (GLWA). The engagement is entering its 6th year. GLWA provides water to approximately 3.5 million customers in southeastern Michigan, including the City of Detroit and

over 100 surrounding communities. Under Phase I, Black & Veatch was hired to develop the Units of Service for communities for which GLWA supplies water, but do not have a master meter.

Water Supplies Department; Water Conservation and Loss Analysis, Hong Kong, China; 2016

Technical Reviewer. Ms. Bui is serving as the lead reviewer and subject matter expert for the regulatory and infrastructure governance aspect of Black & Veatch's engagement with the Hong Kong Water Supplies Department (WSD) as part of a larger Total Water Management program. The WSD supplies more than 7 million people. Under this part of the engagement, Ms. Bui is reviewing recommendations made to improvement the organization's governance and structure to meet current and future regulatory needs.

Sewerage and Water Board of New Orleans; Operations Reports, Comprehensive Financial Planning and Cost of Service Studies and Customer Assistance Program; Louisiana; 2017-Present

Project Director. Ms. Bui serves as the Project Director for Black & Veatch's ongoing engagement for the Sewerage and Water Board of New Orleans. Our work for the Board has been on a continual basis for over 45 years. Services provided include the annual report on operations for water, wastewater, and storm drainage utilities, including evaluation of management, operations, financing and compliance with bond covenants; engineering bond reports; and the development and implementation of the Board's first comprehensive customer assistance program.

Charleston Water Systems; Comprehensive Financial Planning and Cost of Service Studies; South Carolina; 2015-Present

Project Director. Ms. Bui serves as the Project Director supporting Black & Veatch's comprehensive financial services to the Charleston Water Systems. We have provided revenue bond, rate design and other financial service to the Charleston Water Service for several decades. The comprehensive water and wastewater rate study and rate schedules were recently updated in 2018. In addition, contracts with wholesale customers were reviewed and updated. Current work includes asset valuation for specific parts of the water system that are being considered for purchase by an existing customer.

American Water Company; Automated Metering Infrastructure Rate Case Support and Water-Budget Rate Setting Expert Witness; California;2016-2019

Project Director. Ms. Bui served as the Project Director for California American Water's (CAW's) Rate Case petition for an Automated Metering Infrastructure (AMI) program in front of the California Public Utilities Commission (CPUC). CAW retained Black & Veatch to help support the development of an AMI framework and provide expert witness testimony. As part of the framework, we developed cost estimates for different AMI configurations and evaluated both tangible and intangible benefits of AMI. The CPUC is currently reviewing the petition and Black & Veatch is serving as an expert witness. Concurrent with the work, Ms. Bui served as an expert witness for CAW's separate CPUC rate petition regarding its water budget-based rate design for the Monterey service area.

Midwestern & Eastern US - Water, Wastewater, Stormwater, Solid Waste & Gas Utility Enterprise Financial Planning, Rate & Cost-of-Service Studies, System Development Charges, Indirect Cost Allocations, & Business Planning Activities

- City of Dayton, OH
- Greater Cincinnati Water Works, OH
- Metropolitan Sewer District of Hamilton County, OH
- City of Mason, OH
- City of Columbia, OH
- City of Wyoming, MI
- City of Detroit, MI
- Great Lakes Water Authority, MI
- City of Grand Rapids, MI
- City of Holland, MI
- City of Rochester Hills, MI
- Philadelphia Water Department, PA
- Philadelphia Gas Works, PA
- Alleghany County Sanitary Authority, PA
- Sewerage and Water Board of New Orleans, LA
- Baton Rouge, LA
- JEA, FL
- Florida Governmental Utility Authority, FL
- City of North Miami, FL
- Miami-Dade Water and Sewer Department, FL
- City of Surfside, FL
- Puerto Rico Aqueduct and Sewer Authority, PR
- Palmas Del Mar Utilities, PR
- Northern Kentucky Water District, KY
- Louisville Water Company, KY
- Warren County, KY
- Johnson County Wastewater, KS
- Unified Government of Wyandotte County, KS
- WaterOne, KS
- Kansas City Board of Public Utilities, KS
- City of Leavenworth, KS
- City of El Dorado, KS
- City of Topeka, KS
- City of Kansas City, MO
- City of St Louis, Water Division, MO
- Broken Arrow Municipal Authority, OK
- Tulsa Municipal Utility Authority, OK
- City of Jasper, AL
- City of Highland, IL
- City of Aurora, IL
- Thorn Creek Basin Sanitary District, IL
- City of Bloomington Department of Utilities, IN
- New Jersey American Water, NJ
- Suez Water, NY
- City of High Point, NC
- City of Raleigh, NC
- Town of Clayton, NC
- Johnson County, NC
- City of Columbus, SC
- City of Charleston, SC
- Charleston Water System, SC
- Beaufort-Jasper Water and Sewer Authority, SC
- Renewable Water Resources, SC
- Woodruff Roebuck Water District, SC
- Gulf Coast Water Authority, TX
- San Antonio Water System, TX
- City of Arlington, TX
- North Texas Municipal Water Authority, TX
- City of Hudson Oaks, TX
- City of Taylor, TX
- Lower Colorado River Authority, TX
- North Texas Municipal Water District, TX
- Washington Suburban Sanitary Commission, MD
- City of Norfolk, VA

Western US - Water, Wastewater, Stormwater, & Solid Waste Utility Enterprise Financial Planning, Rate & Cost-of-Service Studies, Indirect Cost Allocations, Management Audits /Organizational Assessment Studies, & Business Planning Activities

- City of Glendale, AZ
- City of Phoenix, AZ
- City of Tucson, AZ
- City of Flagstaff, AZ
- City of Scottsdale, AZ
- City of Henderson, NV
- City of Las Vegas, NV
- City of Santa Monica, CA
- Los Angeles Bureau of Sanitation
- City of Long Beach, CA
- City of Orange, CA
- City of Palo Alto, CA
- City of Napa, CA
- City of South Gate, CA
- City of San Diego, CA
- County of San Diego, CA
- Cambria Community Services District, CA
- Marin Municipal Water District, CA
- Helix Water District, CA
- Rancho California Water District, CA
- Indio Water Authority, CA
- City of San Clemente, CA
- City of Soledad, CA
- San Joaquin County, CA
- City of Port Hueneme, CA
- Santa Ynez River Water Conservation District, CA
- Guam Waterworks Authority
- City of Salem, OR
- City of Oxnard, CA
- City of Los Angeles, Stormwater Division
- City of San Juan Capistrano, CA
- City of Downey, CA
- Camrosa Water District, CA
- City of Pico Rivera, CA
- Leucadia Water District, CA
- City of Orange, CA
- City of Yuba City, CA
- City of Antioch, CA
- Encinitas Wastewater Authority, CA
- City of Escondido, CA
- Dublin San Ramon Service District, CA
- Padre Dam Municipal Water District, CA
- Sweetwater Authority, CA
- Western Municipal Water District, CA
- Cucamonga Valley Water District, CA
- City of Patterson, CA
- City of Chino Hills, CA
- Riverside Public Utilities, CA
- Vallecitos Water District, CA
- City of Fountain Valley, CA
- City of Westminster, CA
- City of Santa Ana, CA
- City of Lomita, CA
- Atascadero Mutual Water Company, CA
- Golden States Water Company
- California American Water
- City of Ontario, CA
- City of San Jose, CA
- County of San Bernardino, CA
- Goleta Water District
- Burbank Water & Power, CA
- Metropolitan Water District of Southern California
- Vallejo Flood Control District, CA
- Central Contra Costa Sanitation District, CA
- LA DWP, CA
- City of Santa Clara, CA
- City of Menlo Park, CA
- Olivehain Municipal Water District, CA
- Port of San Diego, CA
- Simi Valley Sanitation, CA
- City of Banning, CA City of Tacoma, WA
- Cherry Hills Sanitation District, CO
- Parker Water and Sanitation District, CO
- Waste Management Inc., CO
- Southeastern Colorado Water Conservancy District, CO
- Las Campanas Water & Sewer Cooperative, NM
- Suez Water, ID

PUBLICATIONS & PRESENTATIONS

"The Conundrum of Water Affordability. What's at Stake," Lead story, Water Finance & Management, February 2021.

"Customer-centricity for Utilities" Zyprme Webinar, October 29, 2020.

"Can't Pay; Won't Pay: COVID Implications for Water Utility Funding" Water Online, September 16, 2020

"How Much is it Worth? An Overview of Valuing Water Utilities" Journal AWWA, August 2020.

"Municipal Water and Privatization" Bank of America Merrill Lynch Water Investors Conference, December 2019

"Water Reuse Cost Allocations and Pricing" Journal AWWA, November 2019.

"A Smoother Road to AMI: Leveraging applicable lessons from the Power Industry" Journal AWWA, September 2017.

"What is a World-Class Utility and How Does Yours Become One?" Water Online, July 25, 2017

"Where are We Heading Next? Strategic Directions in the Water Industry", presented at the Conference of Infrastructure Financing Agencies, Federal Policy Meeting in Washington, D.C., April 2017.

"What's in Your Wallet? Ways to Address Aging Infrastructure and Lack of Money." Annual Utility Management Conference. June 2016

"No More Sacred Cows", published in Journal AWWA, January 2016.

"Business Risks to the Capital Financing Process", published in AWWA's Opflow magazine, September 2015.

"Securing Solid Revenues Streams for Water Utilities is Crucial for Financial Resilience", published in Breaking Energy, September 10, 2015.

"Revenues and Expenses and Ratios, Oh My! A Finance Primer for Non-Finance Professionals", presented at the Annual Utility Management Conference in Glendale, Ariz., March 2013.

Bui, Ann T., Editor, Financial Management for Water Utilities: Principles of Finance, Accounting and Management Controls, 2012, published by AWWA, Denver, Colo.

"Checks and Balances: An Overview of the New Financial Management for Water Utilities Handbook", presented at the Annual AWWA Conference in Dallas, Tex., June 2012.

"Introduction to Financial Planning" presented at the Pacific Northwest Section of the Clean Water Association Winter Short Course University, Portland, Oreg., February 2010.

"Money Makes the World Go 'Round: An Overview of the New Financial Management for Water Utilities Handbook," presented at the Annual AWWA Conference in San Diego, Calif., June 2009.

"Key Performance Indicators" presented at the Annual AWWA Conference in San Diego, Calif., June 2009.

"Everything You Ever Wanted to Know About Finance Management but were Afraid to Ask: An Overview of the New Financial Management for Water Utilities Manual", presented at the Annual AWWA Conference in Atlanta, Ga., June 2008.

"Alternative Funding Sources" presented at the Regional Water Authority Conference in Rancho Cordova, Calif., April 2007.

"Financial Benchmarks" presented at the Annual AWWA Conference in San Francisco, Calif., June 2005.

"Maximize Debt Market Options – Minimize Revenue Adjustments" presented at the Kentucky/Tennessee AWWA/WEF Conference in Nashville, Tenn., August 2004.

"Quantification and Reduction of Risk from Hazardous Air Emissions - Keynote address," presented at the AIChE Annual Conference in San Francisco, Calif., November 1994.

VEOLIA WATER IDAHO INC.

Customer Class Load Study

BLACK & VEATCH PROJECT NO. 411087

PREPARED FOR

Veolia Water Idaho Inc.

SEPTEMBER 27, 2022

BLACK & VEATCH

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Legal Notice

This report was prepared for Veolia Water Idaho, Inc (Client) by Black & Veatch Management Consulting, LLC (Consultant) and is based on information provided by the Client, not within the control of Consultant. While the information, data, and opinions contained herein are believed to be reliable under the conditions and subject to the limitations set forth in this report, Consultant does not guarantee the accuracy thereof. Consultant has assumed that the information provided by others, both verbal and written, is complete and correct. Any projections set forth in this report are intended as "forward-looking statements." In formulating projections, Consultant has made certain assumptions with respect to conditions, events, and circumstances that may occur in the future. While Consultant believes the assumptions are reasonable, actual results may differ materially from those projected, as influenced by the conditions, events, and circumstances that occur. As such, Consultant does not take responsibility for the accuracy of data or projections provided by or prepared on behalf of the Client, nor does Consultant have any responsibility for updating this report for events occurring after the date of this report.

Use of this report or any information contained therein by any party other than the Client shall constitute a waiver and release by such third party of Consultant from and against all claims and liability, including but not limited to liability for special, incidental, indirect, or consequential damages in connection with such use. Such use of this report by a third party shall constitute agreement by the third-party user that its rights, if any, arising from this report shall be subject to the terms of this Report Limitations, and in no event shall the third party's rights, if any, exceed those of the Client under its contract with B&V. The benefit of such releases, waivers, or limitations of liability shall extend to the related companies and subcontractors of any tier of Black & Veatch and the shareholders, directors, officers, partners, employees, and agents of all released or indemnified parties.

Executive Summary

Study Context

Veolia Water Idaho, Inc., ("VWID" or "the Company") agreed to complete a load study to provide calculated maximum-day (MD) and maximum-hour (MH) factors for the total system as well as by appropriate customer class. This study leverages the Company's investment in Advanced Metering Infrastructure (AMI) by utilizing AMI meters to provide data in hour increments to inform max-day and max-hour estimations in a way that will provide more granular data than reliance upon bi-monthly billing data.

The study was guided by principles defined in the American Water Works Association's ("AWWA") Manual M1: Principles of Water Rates, Fees, and Charges (Seventh Edition) and included the following objectives:

- Establish a basis for selecting maximum day and maximum hour ratios for each appropriate customer classification and the total system. Private Fire Protection customers will not be included in the Load Study.
- The ratios will be used for allocating the maximum day and hour extra capacity costs in the next cost of service allocation study, which will be used as a guide for designing a proposed rate structure.
- The Company will consider input on load study components from interested parties, including customer class definitions, sampling methodologies, and data sources.

Data Requirements & Analysis

The study was data-intensive, utilizing records from system production data, water storage data, customer billing data, AMI data (for those customers with AMI meters), and Geographical Information System (GIS) data. Over half a billion data points were managed and available for analysis as part of the study. The data were used to identify:

- The appropriate MD and MH timeframe for the system and customer classifications. June 1st – August 31, 2021, was identified as an appropriate timeframe for the analysis based on a review of historical data.
- Representative AMI meters for each customer class. As not all VWID customers have AMI data, it was necessary to ensure that AMI meters selected for analysis were representative of the customer classifications. This was achieved by looking at average annual and seasonal water use metrics and identifying a total of 14,245 meters for inclusion in the analysis.

Once an appropriate timeframe and representative AMI meters were identified, the analysis was performed to extrapolate MD and MH peaking factors for each customer class and the system.

Development of Coincident Peaking Factors

Based on production and storage data, the system MD occurred on 7/9/2021 with a system input value of 12,009,565 (cubic feet) CF cumulative volume for the day. The system max hour occurred on 7/19/21 at 5:00 AM, with a system input volume of 968,291 CF for the hour. The coincident demands (i.e., the demands occurring at the same time as the system peak) are shown in Table 4-1.

Table ES1 Coincident Peaking Factors (Volumes in Cubic Feet)

	(1)	(2)	(3)=(2)/(1)	(4)	(5)	(6)=(5)/(4)
Customer Class	Avg. Day	Max. Day (MD)	MD Peaking Factor	Avg. Hour	Max. Hour (MH)	MH Peaking Factor
Residential	3,783,854	7,775,536	2.05	157,661	757,375	4.80
Commercial	1,952,834	3,681,223	1.89	81,368	174,798	2.15
Public Auth.	10,892	12,073	1.11	454	2,066	4.55
SYSTEM	5,932,606	12,009,565	2.02	247,192	968,291	3.92

Development of Non-Coincident Peaking Factors

Non-Coincident Peaks are measured for each customer class independently of the overall system peak. The MD occurs on a different day for each class, and the MH also occurs on a different hour (and different day) for each class. Each customer class has a unique peaking profile, with class peaks occurring at different times (see Appendix C). The non-coincident demands are shown in Table ES2.

Table ES2 Non-Coincident Peaking Factors (Volumes in Cubic Feet)

	(1)	(2)	(3)=(2)/(1)	(4)	(5)	(6)=(5)/(4)
Customer Class	Avg. Day	Max. Day (MD)	MD Peaking Factor	Avg. Hour	Max. Hour (MH)	MH Peaking Factor
Residential	3,783,854	8,071,659	2.13	157,661	773,287	4.90
Commercial	1,952,834	3,681,223	1.89	81,368	229,733	2.82
Public Auth.	10,892	15,716	1.44	454	2,134	4.70

Development of System Diversity Factors

The relationship of the noncoincident to coincident demands is referred to as the measure of the system diversity of demand (AWWA Manual M1). Table ES3 shows the system diversity factors for the VWID system. The values shown represent the combined demands of only the Commercial, Public Authority, and Residential Class Customers. The system diversity ratio is often in the range of 1.1 to 1.4, though different system diversity measures may arise. For example, a system that consists almost entirely of residential customers would have a diversity factor very close to 1.0, because the noncoincident demand of the residential customer class would be approximately equal to the coincident demand of the system.

Table ES3 System Diversity Factors (Volumes in Cubic Feet)

	(1)	(2)	(3)=(2)/(1)	(4)	(5)	(6)=(5)/(4)
Type	Avg. Day	Max. Day (MD)	MD Peaking Factor	Avg. Hour	Max. Hour (MH)	MH Peaking Factor
Coincident	5,747,581	11,468,832	2.00	239,483	934,239	3.90
Noncoincident	5,747,581	11,768,598	2.05	239,483	1,005,154	4.20
System Diversity Factor (Noncoincident / Coincident)			1.03			1.08

1.0 Background

Veolia Water Idaho Inc. ("VWID" or "The Company") agreed to complete a load study to provide calculated max-day and max-hour factors for the total system as well as by appropriate customer class. As defined in Board Order No. 35030, the Company will work with interested parties to take input on load study components, including customer class definitions, sampling methodologies from those classes, and data sources (e.g., Advanced Metering Infrastructure ["AMI"], Supervisory Control and Data Acquisition ["SCADA"], meters). After taking input from interested parties, the Company will determine how the load study shall be performed.

1.1 VWID CUSTOMERS

VWID's data and billing systems currently define customers as Residential, Commercial, Public Authority, or Private Fire Protection. The current tariff includes an Industrial classification; however, no active customers are in this class. VWID charges customers based on meter size and usage obtained via a mix of meter reading methods, including AMI and non-AMI (i.e., manual or Automated Meter Reading [AMR]). Table 1-1 summarizes the split between AMI and non-AMI customers.

Table 1-1 Count of Customers by Meter Reading Method and by Customer Class

Customer Class	AMI Customers	Non-AMI Customers	Total
Commercial	2,552	7,491	10,043
Public Authority	23	45	68
Residential	18,461	73,178	91,639
TOTAL	21,036	80,714	101,750

1.2 STUDY OBJECTIVES & APPROACH

Black & Veatch understands that the key study objectives include the following:

- Establish a basis for selecting maximum day and maximum hour ratios for each appropriate customer classification and the total system. Private Fire Protection customers will not be included in the Load Study.
- The ratios will be used for allocating the maximum day and hour extra capacity costs in the next cost of service allocation study, which will be used as a guide for designing a proposed rate structure.
- The Company will consider input on load study components from interested parties, including customer class definitions, sampling methodologies, and data sources.
- The selected consultant's scope of services includes preparing exhibits and testimony for presentation to the Commission in the first general rate case filing after the study's conclusion.

This study was guided by principles defined in the American Water Works Association's ("AWWA") Manual M1: Principles of Water Rates, Fees, and Charges (Seventh Edition), hereinafter referred to as AWWA Manual M1. AWWA Manual M1 states that "*…the determination of appropriate peaking factors by customer class for use in cost-of-service allocations and/or rate design is a significant challenge in rate-making. One means for determining peaking factors by customer class is to undertake a formal demand*

study. Formal demand studies involve daily and hourly consumption records of samples of customers from each class of service and are analyzed over a period of weeks or months. With the increasing availability of automated meter-reading equipment, enhanced billing software, and data processing capabilities, these formal design studies, although still costly, are not as difficult or costly as they were in the past. However, they are not without costs, and there are less sophisticated though adequate calculations that may be employed to estimate customer class peaking factors using readily available data in the utility's records".

The VWID Load Study fits the category of formal demand study per AWWA Manual M1 as it leveraged hourly and daily consumption measurements of VWID customers made possible by the investments in AMI. Such studies are relatively uncommon within the water utility sector as AMI is not yet prevalent. Still, they can provide much greater granularity and insights into customer consumption patterns than the use of bi-monthly billing records.

The study was data-intensive, utilizing records from system production data, water storage data, customer billing data, AMI data (for those customers with AMI meters), and Geographical Information System (GIS) data. Over half a billion data points were managed and available for analysis as part of the study.

2.0 Identification of Max Day and Max Hour Timeframe

2.1 SYSTEM MAX DAY & MAX HOUR

One of the initial study tasks was to identify the appropriate maximum-day (MD) and maximum-hour MH periods for the system and customer classifications. AWWA Manual M1 Appendix A[1] suggests using system-wide data to identify the highest system MD to system average-day (AD) demand over a representative number of recent years.

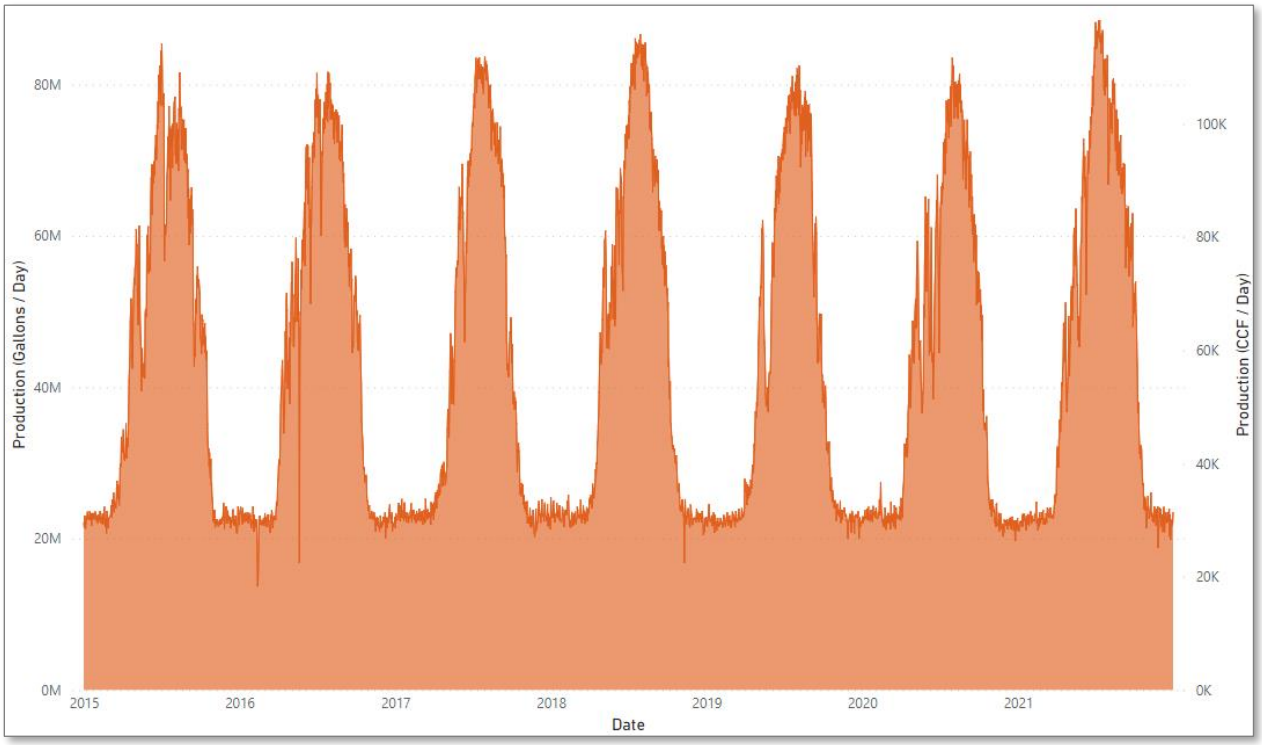


Figure 2-1 VWID Production Demand 2015-2021

Figure 2-1 shows daily production data for the VWID system and indicates that the highest max day production value occurred in 2021. Hourly production data from 2019-2021 was also analyzed, confirming that the 19 highest hourly production volumes during this timeframe occurred in July of 2021. Therefore, 2021 was selected as the focal timeframe for reviewing customer AMI data in detail to establish peaking factors by customer class. In addition, other factors supporting the selection of 2021 included:

- Weather data confirmed 2021 as the hottest summer in the last few years (see Appendix A).
- 2021 is less impacted by COVID-19 than 2020.
- 2021 is the most recent year available for analysis at the time of the study.
- More AMI data is available for analysis in 2021 compared to earlier years due to the ongoing expansion of AMI coverage throughout the VWID system.

[1] Appendix A: Development of Peaking Factors by Customer Class

2.2 DETERMINING AN ANALYTICAL WINDOW

As AMI data is being used to determine customer class-based MD and MH values, it is necessary to identify a plausible window that will contain the MD and MH periods and then process the raw AMI data to prepare it for analysis within that analytical window. It would not be feasible and would expend unnecessary effort to analyze *all* the raw AMI data for every period due to the validation that needs to be applied to the data. For example, meter changeouts, rollovers, and other data anomalies that typically occur in raw data and would adversely impact the analysis need to be screened out. Based on a review of Figure 2-1 and its supporting data, it was determined that the period of 06/01/2021 – 08/31/2021 would define the analytical window and would contain the MD and MH values for the system and customer classes (Figure 2-2 shows a more detailed view of this period with the system peaking the most in early July 2021). Figure 2-3 supports the selection of this period and confirms that both the system and customer classes peak during this period. Therefore, AMI data was prepared for this timeframe.

The system data reflects all the water put into the distribution system (from both production sources and storage) to satisfy system demands. The customer class data shown in Figure 2-3 reflect the summed volume of the *AMI customers only*, disaggregated by customer class. As not all customers have AMI meters, the sum of the customer class totals in Figure 2-3 will not approximate the system total; however, the profile of the trends lines are similar and indicates that this period contains the peaking periods for the system and also the individual customer classes based on the available AMI data from over 20,000 AMI customers.

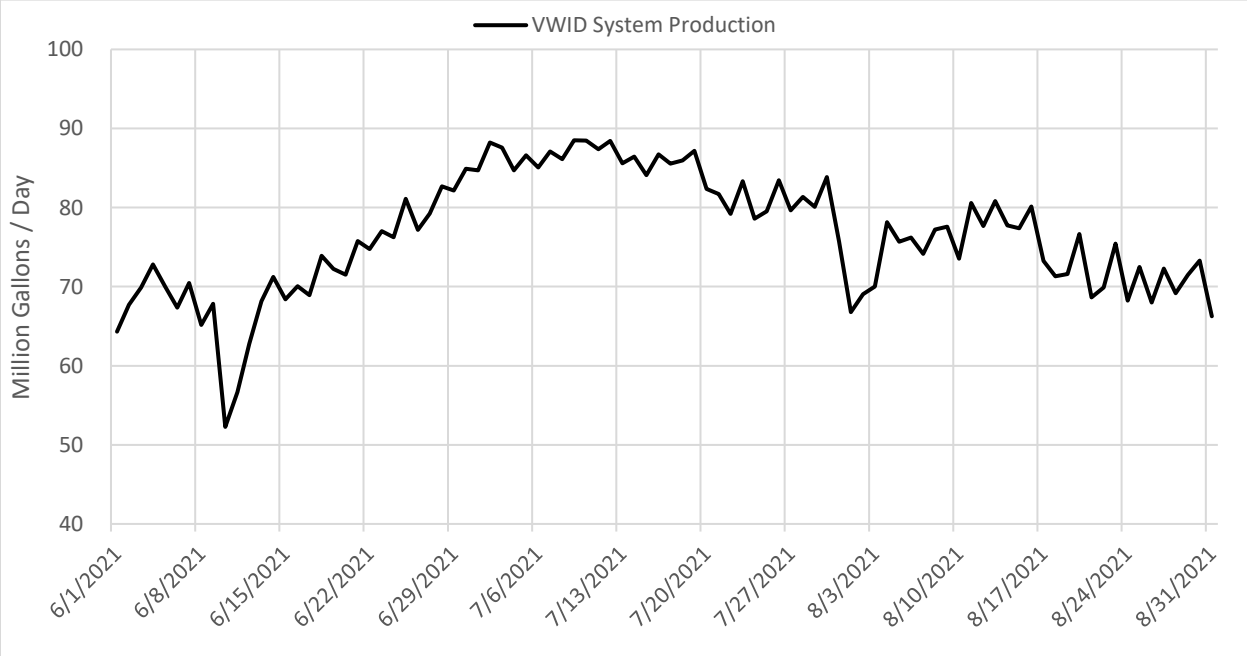


Figure 2-2 VWID System Daily Production Jun-Aug 2021

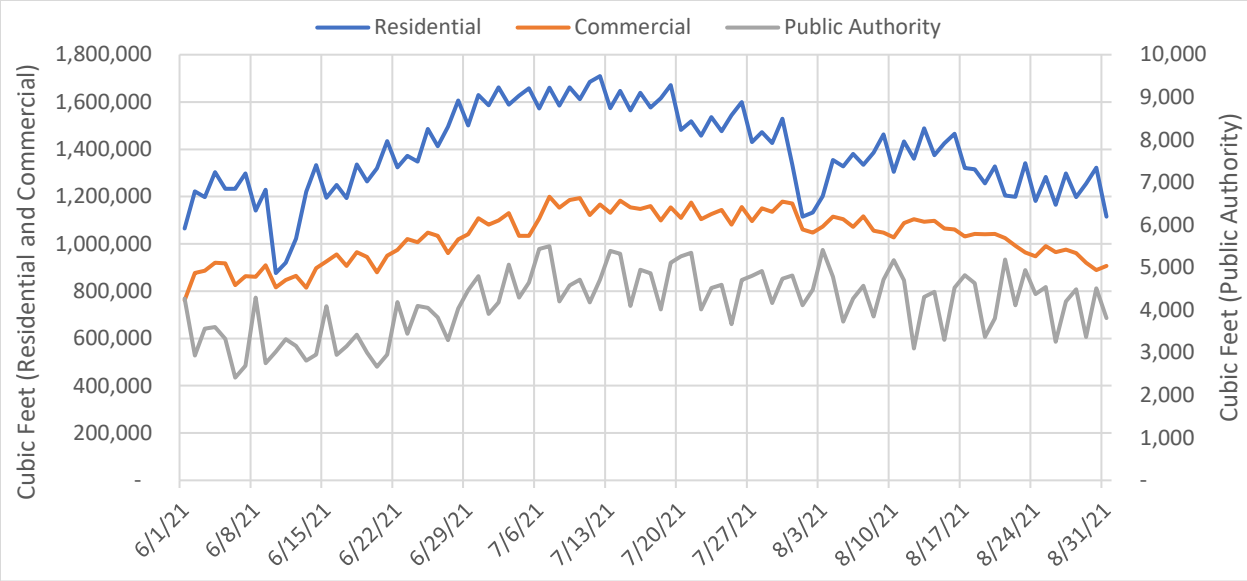


Figure 2-3 Daily Usage by Customer Class (from Available AMI meters) Jun-Aug 2021

3.0 Selection of Representative Customer Data

As discussed in section 2.2, not all VWID customers have AMI meters. Therefore, it is necessary to ensure that the AMI data selected for analysis is representative of the customer class as a whole because the AMI data is used to extrapolate peaking profiles and factors for the customer class as a whole.

3.1 METHODOLOGY TO SELECT REPRESENTATIVE CUSTOMERS

The bi-monthly billing data for the VWID system was reviewed and analyzed to determine if the available usage data from AMI meters is representative of the customers as a whole. For each customer class (Residential, Commercial, Public Authority), the approach used can be summarized as follows:

- Calculate the average monthly usage per bill and the average seasonal usage per bill for *all customers* within the customer class.
- Calculate the average monthly usage per bill and the average seasonal usage per bill *for customers with available AMI data* within the customer class.
- Compare results for all customers against AMI-only customers.
- If necessary, revise the selection of AMI customers to match the average and seasonal usage profile of all customers.

The following sections provide more details and results on the above steps.

3.2 COMPARING BILLING DATA FOR ALL CUSTOMERS AND AMI CUSTOMERS

Billing data for the 2021 calendar year was reviewed to determine the average monthly usage and the average seasonal usage for each customer class to examine if AMI-only customers were representative of All Customers for the respective customer classes. As the VWID system uses bi-monthly billing, not all customers are read at the same time (i.e., every month), so usage characteristics were developed as follows:

- Average monthly usage was calculated as the sum of all billing volume in the year, divided by 12.
- Peak Usage was derived from bills with Transaction Months of June through October.
- Off-Peak Usage was derived from bills with Transaction Months of January through May and November through December.
- The Seasonal Peaking Factor was the ratio of peak usage to off-peak usage.

Multiple datasets were linked using common identifiers to determine which accounts were billed on AMI and non-AMI meters. The above metrics were developed, and Table 3-1 shows the results by customer class.

Table 3-1 Descriptive Statistics by Customer Class

CUSTOMER CLASS	AVERAGE MONTHLY USAGE CCF			SEASONAL PEAKING FACTOR		
	All Customers	AMI-only	% Difference	All Customers	AMI-only	% Difference
Commercial	59.1	67.3	+13.8%	1.95	2.22	+13.5%
Public Authority	48.7	51.8	+6.4%	4.57	4.14	-9.4%
Residential	12.6	13.2	+4.9%	2.63	3.04	+15.4%

It can be observed that, for each class, the AMI-only customers used more water on average than the All-Customers group. Seasonal peaking factors were also higher for the AMI-only commercial and residential customers compared to all customers. For example, for the Commercial class, the AMI-only average monthly usage for 2021 was 59.1 hundred cubic feet (CCF); for AMI-only customers, it was 67.3 CCF, or 13.8% higher. The seasonal peaking factor was higher for AMI-only customers by 13.5%. This is not a surprising finding as utilities often deploy AMI meters to high-usage customers who benefit the most from the near real-time insights that AMI data can provide.

3.3 SELECTING REPRESENTATIVE AMI METERS

Given the results shown in Table 3-1, it is necessary to select a subset of AMI-only customers that more closely reflect the characteristics of the respective customer class as a whole. Therefore, for each customer class, the direction of skew in the data was determined. Records were then randomly removed for customers skewing the data until the AMI-only subset of customers matched the respective customer class as a whole. For example, AMI meters with higher-than-average usage and higher than average seasonal peaking factors (compared to the respective customer class average) were identified and then a portion were randomly removed. This was an iterative process using a randomized and automated analysis applying thousands of iterations to derive a subset of AMI meters with usage characteristics more representative of all customers for each customer class. The automated randomized iterations would end once the metrics for the AMI-only customers matched the metrics for the respective customer class as a whole. The goal was to match within ±0.25%, which was achieved for commercial and residential customers, but was not achieved for public authority due to the relatively small number of meters for this class. The public authority class metrics were matched within ±0.50%.

The usage characteristics for the selected AMI customers (subset) are shown in Table 3 2. The table shows that the usage characteristic for the selected AMI customers matches the All Customers for each customer class.

Table 3-2 Descriptive Statistics by Customer Class after AMI Selection

CUSTOMER CLASS	AVERAGE MONTHLY USAGE CCF			SEASONAL PEAKING FACTOR		
	All Customers	Selected AMI	% Difference	All Customers	Selected AMI	% Difference
Commercial	59.1	59.1	0.0%	1.95	1.95	-0.1%
Public Authority	48.7	48.5	-0.4%	4.57	4.56	-0.4%
Residential	12.6	12.5	-0.2%	2.63	2.63	0.0%

A total of 14,245 meters are included in the AMI subset and represent meters of all sizes for each customer class. A summary of the meters is included in Table 3-3. The selected meters represent between 13% and 19% of total meters for each customer class and utilize approximately 69% of the total AMI meters available within the VWID system.

Table 3-3 Count of Meters in Representative AMI Subset

METER SIZE	COMMERCIAL	PUBLIC AUTHORITY	RESIDENTIAL
5/8”	73	1	3,445
3/4”	244	2	5,719
1”	393	5	3,643
1.5”	221	2	72
2”	362	3	40
3”	15	-	-
4”	2	-	-
6”	2	-	-
8”	1	-	-
TOTAL	**1,313 (13%)**	**13 (19%)**	**12,919 (14%)**

3.3.1 Developing MD and MH Estimations

The subset of AMI meters was then used to develop estimations of MD and MH for the VWID system. An average hourly usage profile was developed for each customer class for the timeframe identified in section 2.2. This average usage profile was multiplied by the number of service points to estimate the total water usage hourly and daily for each customer class.

3.3.2 Data Quality

Water usage data is derived from meter reading devices that, like other technology, have the potential to generate erroneous data. With AMI technology, any "bad reads" can be more easily resolved as a new read and captured without sending a meter reader to the meter location. However, it is possible that bad reads are still generated, such as when equipment fails or when a meter register rolls over. Black & Veatch worked with raw, incremental meter readings; therefore, the data for each meter was screened in several ways to ensure good data quality. Depending on the situation, either a correction to the meter reading was made (e.g., interpolation between two good reads if minimal data was missing or suspect), or the meter was excluded from the analysis. The tests are described as follows:

- Negative Consumption: Any meter that registered an hourly interval with significant negative consumption was excluded. One meter was excluded based on this test.
- Completeness of record: Any meter that had significant missing data was excluded from the analysis. 0.5% of meters were excluded as they had less than 50% of the hourly interval readings available during the analytical window. Meter readings can be interpolated if some interval data are missing.
- Meter size was considered in evaluating if a meter reading (and corresponding calculated usage) was plausible. I.e., small meters have lower potential flow rates than larger meters. No meters were excluded based on this test.
- Where necessary, cross-checks were performed to compare the usage calculated directly by Black & Veatch based on the raw meter read data against the usage billed to the customer. No anomalies were found in the volume of usage.

4.0 Development of Peaking Factors

Following the identification of a suitable timeframe that captures system and customer peaks, and the identification of a sample of AMI meters that are representative of the respective customer class usage, the peaking factors were developed for the VWID system.

4.1 VWID PRODUCTION VERSUS SYSTEM DEMAND

Figure 3-1 shows a graphical representation of the hourly VWID system input volumes and system demand for the MD and MH periods for 2021. The source data used for this study were stored in multiple data systems and formats. It was necessary to ensure that each data set was correctly converted to Mountain Time for analysis purposes. Each data series is explained below:

- System Input is the volume entering the distribution system. It is the sum of production volumes from wells and treatment plants plus net storage releases into the distribution system. The VWID system manages 32 storage reservoirs to help smooth production and meet fire protection requirements. Storage typically fills in the afternoon and empties in the early morning hours to help meet periods of high demand.
- Commercial is the estimated volume of usage (or demand) from customers in the Commercial class, based on the subset of representative Commercial meters extrapolated to the full number of Commercial customers in the VWID system.
- Public Authority is the estimated volume of usage (or demand) from customers in the Public Authority class, based on the subset of representative Public Authority meters extrapolated to the full number of Public Authority customers in the VWID system. Due to this classification's very small relative size, it is hard to visualize in Figure 3 1, but it appears between the Commercial and Residential bars.
- Residential is the estimated volume of usage (or demand) from customers in the Residential class, based on the subset of representative Residential meters extrapolated to the full number of Residential customers in the VWID system.
- Non-Revenue Water is another form of 'demand' on the system. It is comprised of the three components of i) real losses (physical leakage), ii) apparent losses (metering inaccuracies, unauthorized consumption, etc.), and iii) unbilled authorized uses (e.g., Fire Department usage and flushing). This value was estimated from reports provided by the Company and is held constant as these volumes are typically unmetered.

The demand components (commercial, public authority, residential, and non-revenue water) are represented as stacked bar series in Figure 3 1. It is important to note that a perfect alignment between system input and demand is not to be expected. Hourly data is unavailable for all customers in the VWID system, and so the customer demand components are developed from an extrapolation of representative subsets of customers, as explained in section 3.0.

The close alignment between the aggregate demand (top of the blue bars) and the total system input (black line) through repeated diurnal cycles indicates that the methodology and approach to define a subset of representative AMI customers and extrapolate to the total system demand is likely reliable and that sound conclusions can be drawn from interpreting the data.

If significant deviations between the system input and aggregate demand lines were observed, it would indicate that the sampling or extrapolation method was unreliable. As more AMI meters are deployed over time, the alignment between system input and system demand will likely become closer still, and any future studies leveraging AMI data for insights on MD and MH demands (and for other operational insights) will become even more reliable as they will rely on less extrapolation.

4.2 DIURNAL DEMAND TRENDS

Figure 4-1 shows a repetitive diurnal pattern. Demand typically accelerates after midnight through to the early morning hours with the highest peak of the day around 5-6am which is likely associated with irrigation systems operating around this time. Demand then falls to a low in the mid-afternoon around 2-3 pm, with system storage being replenished at this low demand time. Demand then rises with a secondary peak around 9-10 pm, with demand then falling slightly towards midnight. Appendix B is provided to show this diurnal pattern in more detail.

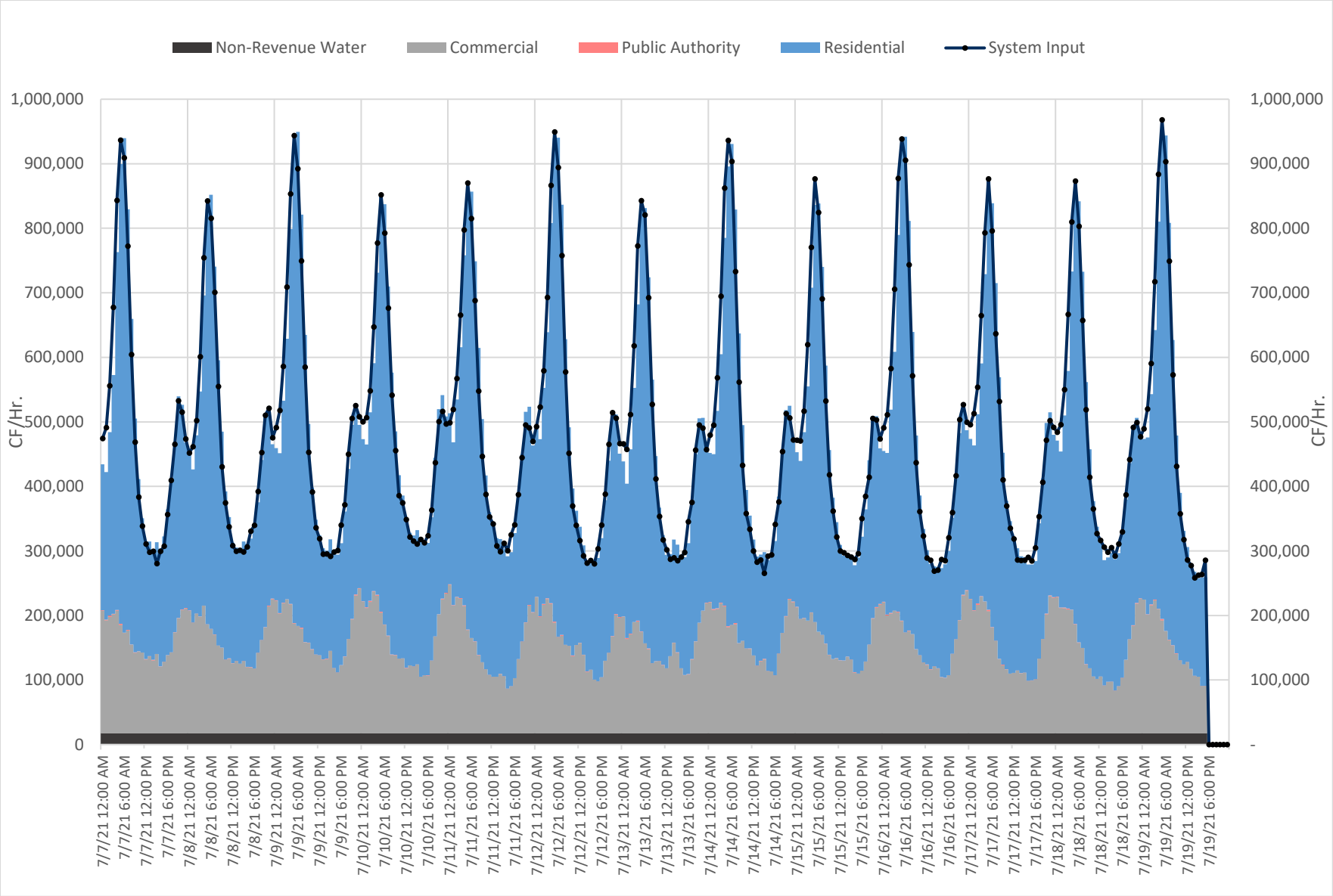


Figure 4-1 VWID System Inputs and Demands (Hourly) for Peak Period

4.2.1 Coincident Peaking Factors

Based on production and storage data, the system MD occurred on 7/9/2021 with a system input value of 12,009,565 CF cumulative volume for the day. The system max hour occurred on 7/19/21 at 5:00 AM, with a system input volume of 968,291 CF for the hour. The coincident demands (i.e., the demands occurring at the same time as the system peak) are shown in Table 4-1.

Table 4-1 Coincident Peaking Factors (Volumes in Cubic Feet)

	(1)	(2)	(3)=(2)/(1)	(4)	(5)	(6)=(5)/(4)
Customer Class	Avg. Day	Max. Day (MD)	MD Peaking Factor	Avg. Hour	Max. Hour (MH)	MH Peaking Factor
Residential	3,783,854	7,775,536	2.05	157,661	757,375	4.80
Commercial	1,952,834	3,681,223	1.89	81,368	174,798	2.15
Public Auth.	10,892	12,073	1.11	454	2,066	4.55
SYSTEM	5,932,606	12,009,565	2.02	247,192	968,291	3.92

4.2.2 Non-Coincident Peaking Factors

Non-Coincident Peaks are measured for each customer class independently of the overall system peak. Table 4-2 shows the timing of MD and MH peaks for each of the three customer classes. The MD occurs on a different day for each class, and the MH also occurs on a different hour (and different day) for each class. It can be observed that each customer class has a unique peaking profile, with class peaks occurring at different times (see Appendix C).

Table 4-2 Timing of Non-Coincident Peaks

Customer Class	Max. Day (MD)	MD Date	Max. Hour (MH)	MH Date/Time
Residential	8,071,659	7/12/2021	773,287	7/12/21 6:00 AM
Commercial	3,681,223	7/9/2021	229,733	7/11/21 12:00 AM
Public Auth.	15,716	7/14/2021	2,134	7/17/21 5:00 AM

The non-coincident demands are shown in Table 4-3.

Table 4-3 Non-Coincident Peaking Factors (Volumes in Cubic Feet)

	(1)	(2)	(3)=(2)/(1)	(4)	(5)	(6)=(5)/(4)
Customer Class	Avg. Day	Max. Day (MD)	MD Peaking Factor	Avg. Hour	Max. Hour (MH)	MH Peaking Factor
Residential	3,783,854	8,071,659	2.13	157,661	773,287	4.90
Commercial	1,952,834	3,681,223	1.89	81,368	229,733	2.82
Public Auth.	10,892	15,716	1.44	454	2,134	4.70

4.2.3 System Diversity Factors

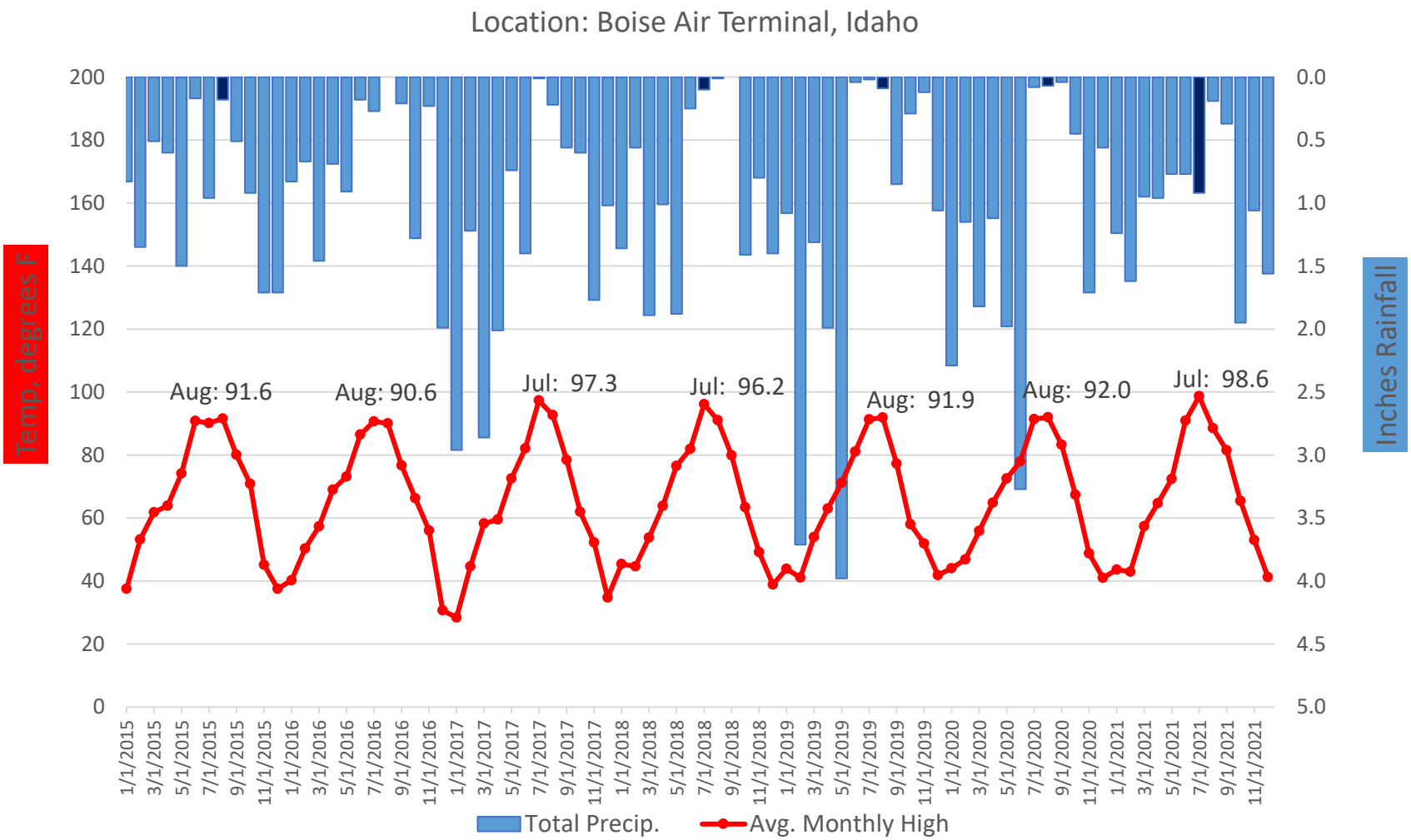
The relationship of the noncoincident to coincident demands is referred to as the measure of the system diversity of demand (AWWA Manual M1). Table 4-4 shows the system diversity factors for the VWID system. The values shown represent the combined demands of only the Commercial, Public Authority, and Residential Class Customers. The system diversity ratio is often in the range of 1.1 to 1.4, though different system diversity measures may arise. For example, a system that consists almost entirely of residential customers would have a diversity factor very close to 1.0, because the noncoincident demand of the residential customer class would be approximately equal to the coincident demand of the system.

Table 4-4 System Diversity Factors (Volumes in Cubic Feet)

	(1)	(2)	(3)=(2)/(1)	(4)	(5)	(6)=(5)/(4)
Type	Avg. Day	Max. Day (MD)	MD Peaking Factor	Avg. Hour	Max. Hour (MH)	MH Peaking Factor
Coincident	5,747,581	11,468,832	2.00	239,483	934,239	3.90
Noncoincident	5,747,581	11,768,598	2.05	239,483	1,005,154	4.20
System Diversity Factor (Noncoincident / Coincident)			1.03			1.08

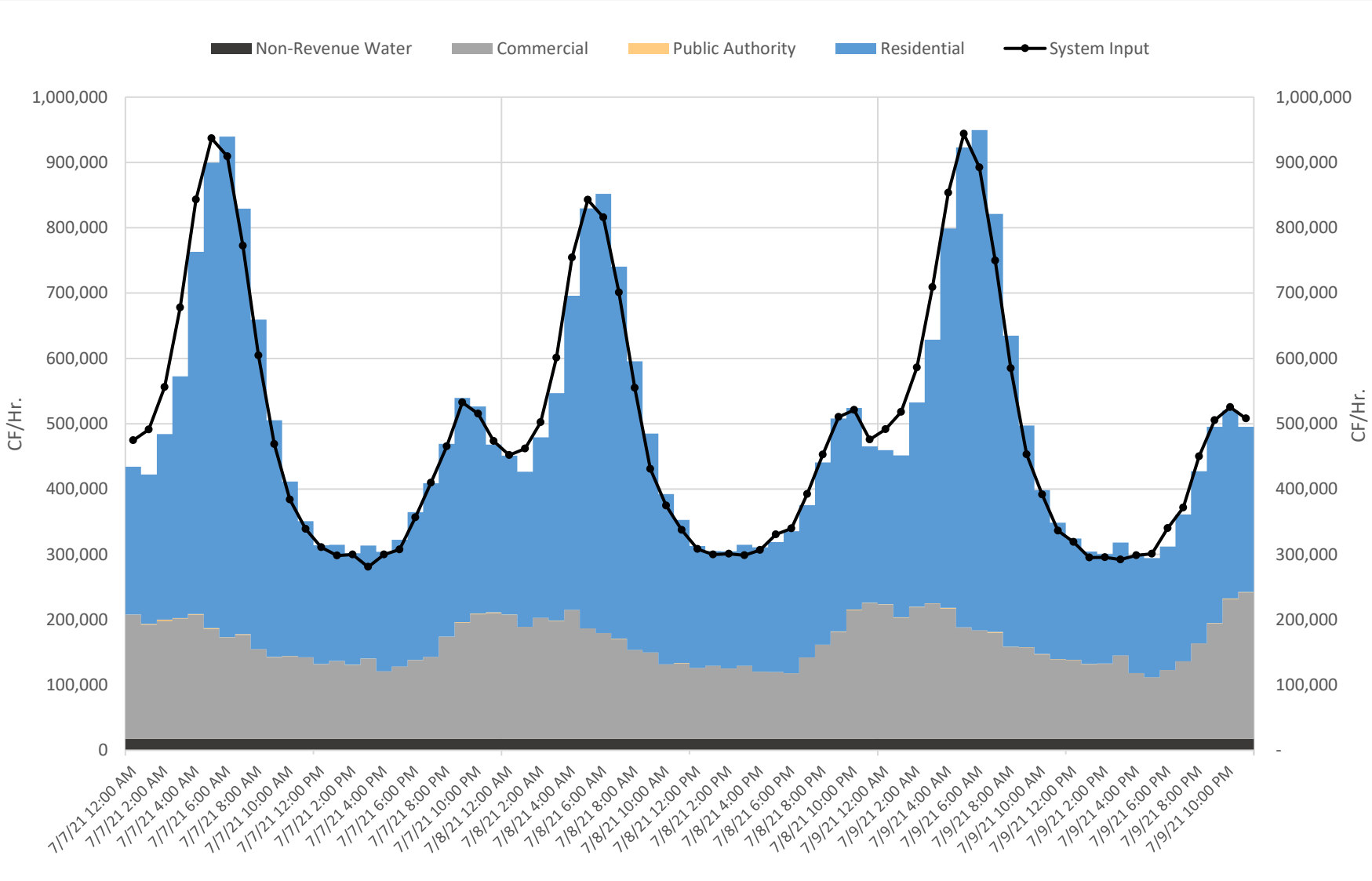
Appendix A

A review also informed the selection of an appropriate year for weather data analysis between 2015 and 2021. July 2021 saw the highest average monthly high temperature over the past seven years. Although the total rainfall for July 2021 was unusually high, over 90% of the entire volume recorded for July occurred in one day (July 31st, 2021), meaning it was generally also a typically dry month.



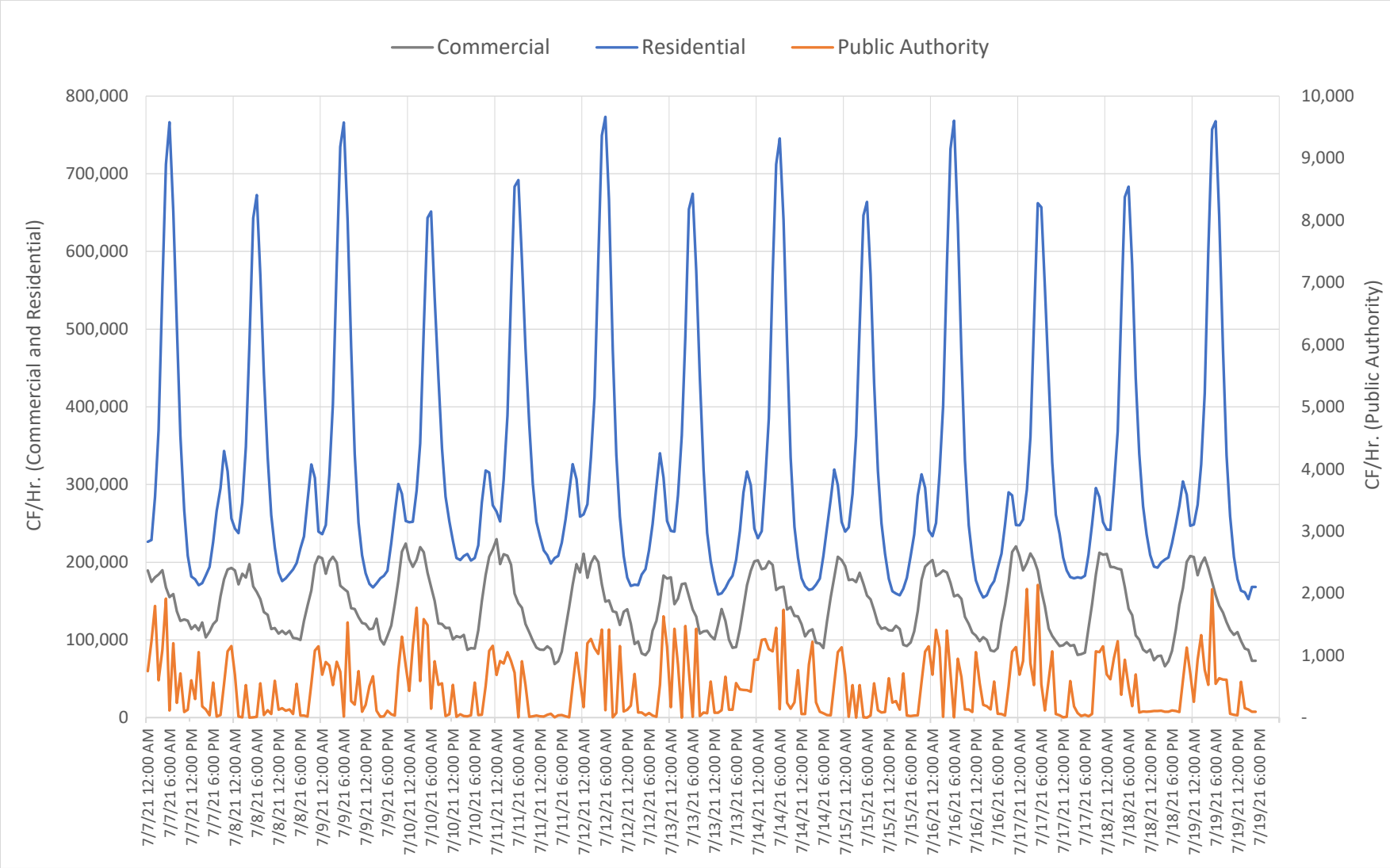
Appendix B

Three-day diurnal Trend demonstrating daily water use patterns by customer class



Appendix C

Individual Customer Class Demands (due to scale differences, Public Authority on the right-hand axis)



Preston N. Carter (ISB No. 8462)
Morgan D. Goodin (ISB No. 11184)
Givens Pursley LLP
601 W. Bannock St.
Boise, ID 83702
Telephone: (208) 388-1200
Facsimile: (208) 388-1300
prestoncarter@givenspursley.com
morgangoodin@givenspursley.com

Attorneys for Veolia Water Idaho, Inc.

BEFORE THE IDAHO PUBLIC UTILITIES COMMISSION

IN THE MATTER OF THE APPLICATION OF VEOLIA WATER IDAHO, INC. FOR AUTHORITY TO INCREASE ITS RATES AND CHARGES FOR WATER SERVICE IN THE STATE OF IDAHO	)	Case No. VEO-W-22-02

BEFORE THE IDAHO PUBLIC UTILITIES COMMISSION

EXHIBIT 14 TO ACCOMPANY THE

DIRECT TESTIMONY OF ANN BUI

Exhibit 14-1
COMPARISON OF ADJUSTED COST OF SERVICE WITH REVENUES UNDER EXISTING AND PROPOSED RATES
FOR TEST YEAR ENDED MARCH 31, 2023

	Cost of Service		Revenues, Present Rates		Revenues, Proposed Rates		Proposed Increase		Cost of Service
Customer Classification	Amount	Precent	Amount	Precent	Amount	Precent	Amount	Precent	Percent Increase
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Residential	44,816,162	70.3%	35,139,116	68.0%	43,590,762	68.3%	8,451,646	24.1%	27.5%
Commercial	18,314,608	28.7%	15,042,723	29.1%	18,660,857	29.3%	3,618,134	24.1%	21.8%
Public Authority	159,553	0.3%	155,695	0.3%	193,144	0.3%	37,448	24.1%	2.5%
Private Fire Service	499,143	0.8%	1,344,703	2.6%	1,344,703	2.1%	0	0.0%	-62.9%
Total Sales	63,789,466	100.0%	51,682,238	100.0%	63,789,466	100.0%	12,107,228	23.4%	23.4%
Other Revenues	35,620		35,620		35,620		0	0.00	
Total	$ 63,825,086		$ 51,717,858		$ 63,825,086		$ 12,107,227	23.4%	23.4%
Total Revenue Requirements	$63,825,086								

Exhibit 14-2
COST OF SERVICE FOR THE TEST YEAR ENDED MARCH 31, 2023
ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account	Factor Ref	Cost of Service	Residential	Commercial	Public Authority	Fire Protection Private	Fire Protection Public
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)
OPERATION AND MAINTENANCE EXPENSES							
SOURCE OF SUPPLY EXPENSES							
Operation Supervision and Engineering - Labor	2	68,558	44,753	23,624	181	0	0
Operation Supervision and Engineering - Other	2	23,939	15,627	8,249	63	0	0
Operation Supervision and Engineering - Fringe Benefits	2	27,060	17,664	9,324	71	0	0
Operation Labor	2	57,703	37,667	19,884	152	0	0
Operation Expenses	2	7,452	4,865	2,568	20	0	0
Operation Fringe Benefits	2	21,873	14,278	7,537	58	0	0
Purchased Water	1	316,694	203,683	111,938	1,073	0	0
Miscellaneous	2	1,119	730	386	3	0	0
Rents	2	3,385	2,210	1,167	9	0	0
TOTAL SOURCE OF SUPPLY EXPENSE - OPERATION		527,783	341,476	184,677	1,630	0	0
Maintenance of Structures and Engineering - Labor	2	10,609	6,925	3,656	28	0	0
Maintenance of Structures and Engineering - Other	2	49,301	32,183	16,989	130	0	0
Maintenance of Structures and Engineering - Fringe Benefits	2	3,181	2,076	1,096	8	0	0
Maintenance of Structures and Engineering - Rivers and Intake	2	2,559	1,671	882	7	0	0
Maintenance of Wells and Springs - Chemicals	1	6,094	3,919	2,154	21	0	0
Maintenance of Wells and Springs	2	1,129	737	389	3	0	0
TOTAL SOURCE OF SUPPLY EXPENSE - MAINTENANCE		72,873	47,511	25,165	197	0	0
TOTAL SOURCE OF SUPPLY EXPENSES		$ 600,656	$ 388,987	$ 209,842	$ 1,827	$ -	$ -

Exhibit 14-2 (continued)
COST OF SERVICE FOR THE TEST YEAR ENDED MARCH 31, 2023
ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account	Factor Ref	Cost of Service	Residential	Commercial	Public Authority	Fire Protection Private	Fire Protection Public
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)
PUMPING EXPENSES							
Operation Supervision and Engineering - Labor	3	132,841	84,876	44,807	344	560	2,256
Operation Supervision and Engineering - Other	3	72,647	46,416	24,504	188	306	1,233
Operation Supervision and Engineering - Fringe Benefits	3	40,173	25,667	13,550	104	169	682
Fuel or Power Purchase for Pumping - Labor	3	1,291	825	436	3	5	22
Fuel or Power Purchase for Pumping - Other	3	0	0	0	0	0	0
Fuel or Power Purchase for Pumping - Power Costs	1	2,036,784	1,309,964	719,920	6,900	0	0
Fuel or Power Purchase for Pumping - Amort Power Costs	1	534,778	343,944	189,022	1,812	0	0
Fuel or Power Purchase for Pumping - Fringe Benefits	3	0	0	0	0	0	0
Pumping Expense - Labor	3	1,223,332	781,617	412,626	3,164	5,155	20,771
Pumping Expense - Other	3	177,759	113,575	59,958	460	749	3,018
Pumping Expense - Fringe Benefits	3	487,000	311,156	164,263	1,259	2,052	8,269
Miscellaneous Expenditures	3	60,830	38,866	20,518	157	256	1,033
TOTAL PUMPING EXPENSE - OPERATION		4,767,435	3,056,905	1,649,603	14,391	9,252	37,284
Maintenance Supervision and Engineering - Labor	3	2,206	1,409	744	6	9	37
Maintenance Supervision and Engineering - Other	3	306	196	103	1	1	5
Maintenance Supervision and Engineering - Fringe Benefits	3	583	373	197	2	2	10
Maintenance of Structures and Improvements - Labor	3	0	0	0	0	0	0
Maintenance of Structures and Improvements - Other	3	215,808	137,885	72,791	558	909	3,664
Maintenance of Structures and Improvements - Fringe Benefit	3	0	0	0	0	0	0
Maintenance of Power Production Equipment - Labor	3	0	0	0	0	0	0
Maintenance of Power Production Equipment - Other	3	65,176	41,642	21,984	169	275	1,107
Maintenance of Power Production Equipment - Fringe Benefits	3	0	0	0	0	0	0
Maintenance of Pumping Equipment - Labor	3	3,631	2,320	1,225	9	15	62
Maintenance of Pumping Equipment - Other	3	6,893	4,404	2,325	18	29	117
Maintenance of Pumping Equipment - Fringe Benefits	3	1,669	1,066	563	4	7	28
TOTAL PUMPING EXPENSES - MAINTENANCE		296,273	189,296	99,932	766	1,248	5,030
TOTAL PUMPING EXPENSES		$ 5,063,708	$ 3,246,201	$ 1,749,535	$ 15,157	$ 10,501	$ 42,314

Exhibit 14-2 (continued)
COST OF SERVICE FOR THE TEST YEAR ENDED MARCH 31, 2023
ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account	Factor Ref	Cost of Service	Residential	Commercial	Public Authority	Fire Protection Private	Fire Protection Public
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)
WATER TREATMENT							
Operation Supervision and Engineering - Labor	2	789,279	515,219	271,975	2,085	0	0
Operation Supervision and Engineering - Other	2	34,541	22,548	11,903	91	0	0
Operation Supervision and Engineering - Fringe Benefits	2	28,048	18,309	9,665	74	0	0
Chemicals	1	519,783	334,300	183,722	1,761	0	0
Operation Labor and Expenses - Labor	2	73,295	47,845	25,256	194	0	0
Operation Labor and Expenses - Other	2	156,821	102,368	54,039	414	0	0
Operation Labor and Expenses - Lab Testing	2	159,423	104,067	54,935	421	0	0
Operation Labor and Expenses - Fringe Benefits	2	311,750	203,501	107,425	823	0	0
Miscellaneous Expenses - Labor	2	0	0	0	0	0	0
Miscellaneous Expenses - Other	2	30,285	19,769	10,436	80	0	0
Miscellaneous Expenses - Fringe Benefits	2	0	0	0	0	0	0
Amortization Miscellaneous	2	0	0	0	0	0	0
TOTAL WATER TREATMENT EXPENSE - OPERATION		2,103,225	1,367,926	729,356	5,943	0	0
Maintenance Supervision and Engineering	2	0	0	0	0	0	0
Maintenance of Structures and Improvements - Labor	2	0	0	0	0	0	0
Maintenance of Structures and Improvements - Other	2	61,281	40,002	21,117	162	0	0
Maintenance of Structures and Improvements - Lab Testing	2	0	0	0	0	0	0
Maintenance of Structures and Improvements - Fringe Benefit	2	0	0	0	0	0	0
Maintenance of Water Treatment Equipment - Labor	2	0	0	0	0	0	0
Maintenance of Water Treatment Equipment - Other	2	53,146	34,692	18,313	140	0	0
Maintenance of Water Treatment Equipment - Fringe Benefits	2	0	0	0	0	0	0
TOTAL WATER TREATMENT EXPENSE - MAINTENANCE		114,427	74,695	39,430	302	0	0
TOTAL WATER TREATMENT EXPENSE		$ 2,217,652	$ 1,442,620	$ 768,786	$ 6,245	$ -	$ -

Exhibit 14-2 (continued)
COST OF SERVICE FOR THE TEST YEAR ENDED MARCH 31, 2023
ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account	Factor Ref	Cost of Service	Residential	Commercial	Public Authority	Fire Protection Private	Fire Protection Public
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)
TRANSMISSION AND DISTRIBUTION EXPENSES							
Operation Supervision and Engineering - Labor	10	47,635	30,818	16,336	160	64	257
Operation Supervision and Engineering - Other	10	4,334	2,804	1,486	15	6	23
Operation Supervision and Engineering - Fringe Benefits	10	13,319	8,617	4,568	45	18	72
Storage Facility Expense	5	10,059	7,171	2,235	36	122	494
Mains Expense - Labor	6	4,618	3,089	1,243	14	54	218
Mains Expense - Other	6	42,199	28,228	11,357	131	494	1,989
Mains Expense - Fringe Benefits	6	1,632	1,092	439	5	19	77
Meter Expense - Labor	8	426	278	146	1	0	0
Meter Expense - Other	8	50	33	17	0	0	0
Meter Expense - Fringe Benefits	8	193	126	66	1	0	0
Miscellaneous Expense - Purchased Power	1	455,256	292,800	160,915	1,542	0	0
Miscellaneous Expense - Other	10	64,904	41,990	22,258	218	87	350
TOTAL T&D EXPENSE - OPERATION		644,626	417,046	221,068	2,169	864	3,481
Maintenance Supervision and Engineering	11	49,435	39,723	8,882	101	145	584
Maintenance of Structures and Improvements - Labor	11	0	0	0	0	0	0
Maintenance of Structures and Improvements - Other	11	0	0	0	0	0	0
Maintenance of Structures and Improvements - Fringe Benefit	11	15,020	12,069	2,699	31	44	178
Maintenance of Distribution Reservoirs and Standpipes	5	197,877	141,073	43,974	713	2,409	9,708
Maintenance of T&D Mains - Labor	6	595	398	160	2	7	28
Maintenance of T&D Mains - Other	6	33,825	22,626	9,104	105	396	1,595
Maintenance of T&D Mains - Fringe Benefits	6	217	145	59	1	3	10
Maintenance of Services - Labor	9	1,545,679	1,269,297	273,400	2,982	0	0
Maintenance of Services - Other	9	307,427	252,456	54,378	593	0	0
Maintenance of Services - Fringe Benefits	9	607,892	499,195	107,524	1,173	0	0
Maintenance of Hydrants - Other	7	25,960	0	0	0	5,161	20,799
Miscellaneous	11	2,468	1,983	443	5	7	29
TOTAL T&D EXPENSE - MAINTENANCE		2,786,397	2,238,966	500,623	5,706	8,172	32,931
TOTAL T&D EXPENSE		$ 3,431,023	$ 2,656,011	$ 721,690	$ 7,875	$ 9,036	$ 36,411

Exhibit 14-2 (continued)
COST OF SERVICE FOR THE TEST YEAR ENDED MARCH 31, 2023
ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account	Factor Ref	Cost of Service	Residential	Commercial	Public Authority	Fire Protection Private	Fire Protection Public
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)
CUSTOMER ACCOUNTS							
Supervision - Labor	12	76,463	67,066	7,472	77	1,847	0
Supervision - Other	12	10,649	9,341	1,041	11	257	0
Supervision - Fringe Benefits	12	29,341	25,735	2,867	30	709	0
Meter Reading - Labor	13	338,593	278,049	59,890	653	0	0
Meter Reading - Other	13	86,715	71,209	15,338	167	0	0
Meter Reading - Fringe Benefits	13	130,559	107,214	23,093	252	0	0
Customer Records and Collection - Labor	12	1,329,401	1,166,027	129,918	1,340	32,116	0
Customer Records and Collection - Other	12	770,888	676,151	75,336	777	18,623	0
Customer Records and Collection - Fringe Benefits	12	516,452	452,984	50,471	521	12,477	0
Transportation Costs - Other	12	0	0	0	0	0	0
Uncollectible Accounts	12	(683,545)	(599,542)	(66,801)	(689)	(16,513)	0
Miscellaneous Other	12	13,881	12,175	1,357	14	335	0
TOTAL CUSTOMER ACCOUNTING EXPENSES		2,619,397	2,266,409	299,984	3,153	49,852	0

Exhibit 14-2 (continued)
COST OF SERVICE FOR THE TEST YEAR ENDED MARCH 31, 2023
ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account	Factor Ref	Cost of Service	Residential	Commercial	Public Authority	Fire Protection Private	Fire Protection Public
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)
ADMINISTRATIVE AND GENERAL EXPENSES							
A&G Labor	14	1,907,210	1,415,011	461,242	4,116	12,574	14,266
Fringe Benefits Transferred	16	(3,704,510)	(2,799,531)	(853,481)	(7,548)	(25,500)	(18,450)
Employee Pension Cost	16	623,218	470,972	143,583	1,270	4,290	3,104
Post Retirement Health Care Accrue	16	(523,756)	(395,807)	(120,668)	(1,067)	(3,605)	(2,608)
Employee Group Health & Life	16	2,103,710	1,589,793	484,673	4,286	14,481	10,477
Employee 401k	16	456,431	344,929	105,157	930	3,142	2,273
Other Employee Benefits	16	14,634	11,059	3,372	30	101	73
Other Awards	16	22,785	17,219	5,249	46	157	113
Materials and Supply - A&G and Customer Cares	14	932,132	691,574	225,428	2,012	6,146	6,973
Management Fees - Other	14	4,566,635	3,388,111	1,104,401	9,855	30,108	34,160
Contract Services	14	150,202	111,439	36,325	324	990	1,124
Rental of Equipment	14	8,938	6,632	2,162	19	59	67
Transportation Expense	14	238,006	176,583	57,560	514	1,569	1,780
Insurance - General Liability	14	242,524	179,935	58,652	523	1,599	1,814
Insurance - Workman's Compensation	16	116,207	87,819	26,773	237	800	579
Advertising	14	227,683	168,924	55,063	491	1,501	1,703
Reg Commission Exp (Amortization)	14	401,670	298,010	97,140	867	2,648	3,005
Bad Debt Write-off	16	988,608	747,100	227,765	2,014	6,805	4,924
Miscellaneous Expense	14	(221,568)	(164,387)	(53,584)	(478)	(1,461)	(1,657)
TOTAL A&G EXPENSE		8,550,758	6,345,382	2,066,813	18,441	56,404	63,719
TOTAL OPERATION & MAINTENANCE EXPENSE		$ 22,483,195	$ 16,345,611	$ 5,816,650	$ 52,698	$ 125,792	$ 142,444
TOTAL OPERATION & MAINTENANCE EXPENSE (excluding A&G, purchased water, power, and chemicals)		$ 10,524,398	$ 7,808,338	$ 2,545,235	$ 22,712	$ 69,388	$ 78,726
DIRECT LABOR EXPENSE		$ 7,613,366	$ 5,753,488	$ 1,754,042	$ 15,512	$ 52,407	$ 37,917

Exhibit 14-2 (continued)
COST OF SERVICE FOR THE TEST YEAR ENDED MARCH 31, 2023
ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account	Factor Ref	Cost of Service	Residential	Commercial	Public Authority	Fire Protection Private	Fire Protection Public
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)
DEPRECIATION EXPENSE							
Structures and Improvements - Source of Supply	2	194,554	126,999	67,041	514	0	0
Structures and Improvements - Water Treatment	2	379,025	247,417	130,607	1,001	0	0
Structures and Improvements - Trans. & Distrib.	6	95,597	63,947	25,729	296	1,118	4,507
Structures and Improvements - General Plant	14	174,705	129,618	42,251	377	1,152	1,307
Collecting & Impounding Reservoirs - Source of Supply	1	749	482	265	3	0	0
Lake, River & Other Intakes	2	24,347	15,893	8,390	64	0	0
Wells & Springs	2	141,814	92,572	48,867	375	0	0
Supply Mains	2	39,352	25,688	13,560	104	0	0
Power Generation Equipment	3	153,188	97,876	51,670	396	645	2,601
Power Electric/Diesel Pumping Equipment - Source of Supply	2	760,618	496,510	262,099	2,009	0	0
Power Pumping Equipment - Water Treatment	2	217,301	141,848	74,879	574	0	0
Power Pumping Equipment - Trans. & Distrib.	3	470,931	300,889	158,844	1,218	1,984	7,996
Water Treatment Equipment	2	973,163	635,253	335,340	2,570	0	0
Distribution Reservoirs & Standpipes	5	364,275	259,703	80,952	1,312	4,435	17,872
Trans. & Distrib. Mains & Accessories	3	2,626,679	1,678,249	885,970	6,793	11,068	44,598
Services	9	1,667,829	1,369,605	295,006	3,218	0	0
Meters and Meter Installations	8	1,020,091	666,492	350,250	3,349	0	0
Hydrants	7	273,666	0	0	0	54,410	219,256
Office Furniture and Equipment	14	83,330	61,825	20,153	180	549	623
Computer Equipment	12	90,241	79,151	8,819	91	2,180	0
Transportation Equipment	14	140,248	104,054	33,918	303	925	1,049
Stores Equipment	14	10,297	7,640	2,490	22	68	77
Tools, Shop and Garage Equipment	14	108,875	80,778	26,331	235	718	814
Laboratory Equipment	2	5,747	3,751	1,980	15	0	0
Power Operated Equipment	14	77,063	57,175	18,637	166	508	576
Communications Equipment	14	320,581	237,848	77,530	692	2,114	2,398
Miscellaneous Equipment	14	21,107	15,660	5,105	46	139	158
Other Tangible Property	14	211,717	157,079	51,202	457	1,396	1,584
TOTAL DEPRECIATION EXPENSES		10,647,090	7,154,000	3,077,884	26,380	83,410	305,417

Exhibit 14-2 (continued)
COST OF SERVICE FOR THE TEST YEAR ENDED MARCH 31, 2023
ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account	Factor Ref	Cost of Service	Residential	Commercial	Public Authority	Fire Protection Private	Fire Protection Public
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)
Amortization of Utility Plant Acquisition	17	282,585	185,800	82,375	697	2,708	11,004
TOTAL AMORTIZATION		282,585	185,800	82,375	697	2,708	11,004
TAXES OTHER THAN INCOME							
Real Estate	18	2,145,032	1,412,224	624,412	5,290	20,447	82,659
Payroll Taxes	16	898,783	679,219	207,070	1,831	6,187	4,476
TOTAL TAXES, OTHER THAN INCOME		3,043,815	2,091,443	831,483	7,121	26,634	87,135
INCOME TAXES	18	5,567,006	3,665,149	1,620,539	13,728	53,065	214,525
UTILITY INCOME AVAILABLE FOR RETURN	18	21,801,395	14,353,380	6,346,321	53,763	207,814	840,118
TOTAL COST OF SERVICE		$ 63,825,086	$ 43,795,383	$ 17,775,251	$ 154,386	$ 499,422	$ 1,600,643
LESS: OTHER WATER RESOURCES							
Miscellaneous Service Revenue	19	35,620	24,442	9,920	86	279	893
TOTAL OTHER WATER REVENUES		35,620	24,442	9,920	86	279	893
TOTAL COST OF SERVICE RELATED TO SALES OF WATER		$ 63,789,466	$ 43,770,941	$ 17,765,331	$ 154,300	$ 499,143	$ 1,599,750
Reallocation of Public Fire	20		1,045,221	549,276	5,252	0	(1,599,750)
TOTAL		$ 63,789,466	$ 44,816,162	18,314,608	159,553	499,143	0

Exhibit 14-2 (continued)
COST OF SERVICE FOR THE TEST YEAR ENDED MARCH 31, 2023
ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account	Factor Ref	Cost of Service	Residential	Commercial	Public Authority	Fire Protection Private	Fire Protection Public
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)
RATE BASE							
Organization	17	104,530	68,729	30,471	258	1,002	4,071
Franchise Rights	17	30,079	19,777	8,768	74	288	1,171
Land & Land Rights - Source of Supply	2	2,930,331	1,912,836	1,009,755	7,739	0	0
Water Rights - Source of Supply	2	8,666,083	5,656,972	2,986,223	22,888	0	0
Land & Land Rights - Water Treatment	2	889,034	580,336	306,350	2,348	0	0
Land & Land Rights - Trans. & Distrib.	6	972,360	650,428	261,702	3,014	11,376	45,840
Land & Land Rights - General Plant	14	213,383	158,315	51,605	460	1,407	1,596
Structures and Improvements - Source of Supply	2	6,701,625	4,374,630	2,309,295	17,700	0	0
Structures and Improvements - Water Treatment	2	9,365,985	6,113,848	3,227,400	24,737	0	0
Structures and Improvements - Trans. & Distrib.	6	2,588,550	1,731,526	696,686	8,024	30,283	122,032
Structures and Improvements - General Plant	14	4,705,847	3,491,396	1,138,068	10,155	31,026	35,201
Collecting & Impounding Reservoirs - Source of Supply	1	42,358	27,242	14,972	143	0	0
Lake, River & Other Intakes	2	916,500	598,265	315,814	2,421	0	0
Wells & Springs	2	4,767,393	3,112,018	1,642,783	12,591	0	0
Infiltration Galleries & Tunnels	2	(13,853)	(9,043)	(4,773)	(37)	0	0
Supply Mains	2	2,108,262	1,376,214	726,480	5,568	0	0
Power Generation Equipment	3	1,690,822	1,080,308	570,309	4,373	7,124	28,709
Power Electric/Diesel Pumping Equipment - Source of Supply	2	6,267,772	4,091,423	2,159,795	16,554	0	0
Power Pumping Equipment - Water Treatment	2	2,588,051	1,689,406	891,810	6,835	0	0
Power Pumping Equipment - Trans. & Distrib.	3	6,705,307	4,284,185	2,261,679	17,341	28,253	113,850
Water Treatment Equipment	2	13,826,487	9,025,537	4,764,433	36,518	0	0
Distribution Reservoirs & Standpipes	5	16,648,471	11,869,214	3,699,772	59,966	202,701	816,818
Trans. & Distrib. Mains & Accessories	3	188,104,746	120,184,722	63,447,133	486,474	792,580	3,193,836
Services	9	69,649,980	57,195,875	12,319,712	134,394	0	0
Meters and Meter Installations	8	17,150,501	11,205,542	5,888,649	56,311	0	0
Hydrants	7	13,289,464	0	0	0	2,642,213	10,647,251

Exhibit 14-2 (continued)
COST OF SERVICE FOR THE TEST YEAR ENDED MARCH 31, 2023
ALLOCATED TO CUSTOMER CLASSIFICATIONS

Account	Factor Ref	Cost of Service	Residential	Commercial	Public Authority	Fire Protection Private	Fire Protection Public
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)
Office Furniture and Equipment	14	727,021	539,397	175,824	1,569	4,793	5,438
Computer Equipment	12	(4,458,247)	(3,910,359)	(435,690)	(4,495)	(107,704)	0
Transportation Equipment	14	1,312,956	974,118	317,527	2,833	8,656	9,821
Stores Equipment	14	203,117	150,698	49,122	438	1,339	1,519
Tools, Shop and Garage Equipment	14	1,336,961	991,928	323,332	2,885	8,815	10,001
Laboratory Equipment	2	20,722	13,527	7,141	55	0	0
Power Operated Equipment	14	625,068	463,755	151,167	1,349	4,121	4,676
Communications Equipment	14	3,927,823	2,914,159	949,910	8,476	25,896	29,381
Miscellaneous Equipment	14	243,187	180,427	58,813	525	1,603	1,819
Other Tangible Property	14	2,744,882	2,036,503	663,826	5,923	18,097	20,533
TOTAL UTILITY PLANT IN SERVICE		387,593,558	254,843,853	112,985,862	956,410	3,713,870	15,093,563
TOTAL UTILITY PLANT IN SERVICE (less Ref 17 items)		$ 387,458,950	$ 254,755,347	$112,946,623	$ 956,077	$ 3,712,581	$ 15,088,321
OTHER RATE BASE ITEMS							
Utility Plant Acquisition Adjustment	17	10,771,089	7,082,021	3,139,837	26,578	103,207	419,445
Customer Advances for Construction	17	(3,797,814)	(2,497,073)	(1,107,086)	(9,371)	(36,390)	(147,893)
Contributions in Aid of Construction-Net	17	(112,913,720)	(74,241,088)	(32,915,031)	(278,621)	(1,081,924)	(4,397,055)
Deferred Charges Included in Rate Base	17	4,933,851	3,244,021	1,438,247	12,175	47,276	192,133
Working Capital Allowance	15	3,552,571	2,582,771	919,089	8,327	19,876	22,508
Deferred Income Taxes	17	(5,307,577)	(3,489,747)	(1,547,191)	(13,097)	(50,857)	(206,686)
TOTAL OTHER RATE BASE ELEMENTS		(102,761,600)	(67,319,095)	(30,072,133)	(254,010)	(998,812)	(4,117,550)
TOTAL ORIGINAL COST MEASURE OF VALUE		$ 284,831,959	$ 187,524,758	$ 82,913,729	$ 702,400	$ 2,715,058	$ 10,976,013

Exhibit 14-3
COST OF SERVICE FOR THE TEST YEAR ENDED MARCH 31, 2023
ALLOCATED TO COST FUNCTIONS

Account	Factor Ref	Cost of Service	Base	Max Day	Max Hour	Meters	Services	Billing & Meters	Fire Services
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
OPERATION AND MAINTENANCE EXPENSES									
SOURCE OF SUPPLY EXPENSES									
Operation Supervision and Engineering - Labor	2	68,558	34,399	34,159	0	0	0	0	0
Operation Supervision and Engineering - Other	2	23,939	12,011	11,928	0	0	0	0	0
Operation Supervision and Engineering - Fringe Benefits	2	27,060	13,577	13,483	0	0	0	0	0
Operation Labor	2	57,703	28,953	28,751	0	0	0	0	0
Operation Expenses	2	7,452	3,739	3,713	0	0	0	0	0
Operation Fringe Benefits	2	21,873	10,975	10,898	0	0	0	0	0
Purchased Water	1	316,694	316,694	0	0	0	0	0	0
Miscellaneous	2	1,119	561	558	0	0	0	0	0
Rents	2	3,385	1,699	1,687	0	0	0	0	0
TOTAL SOURCE OF SUPPLY EXPENSE - OPERATION		527,783	422,608	105,175	0	0	0	0	0
Maintenance of Structures and Engineering - Labor	2	10,609	5,323	5,286	0	0	0	0	0
Maintenance of Structures and Engineering - Other	2	49,301	24,737	24,564	0	0	0	0	0
Maintenance of Structures and Engineering - Fringe Benefits	2	3,181	1,596	1,585	0	0	0	0	0
Maintenance of Structures and Engineering - Rivers and Intake	2	2,559	1,284	1,275	0	0	0	0	0
Maintenance of Wells and Springs - Chemicals	1	6,094	6,094	0	0	0	0	0	0
Maintenance of Wells and Springs	2	1,129	566	562	0	0	0	0	0
TOTAL SOURCE OF SUPPLY EXPENSE - MAINTENANCE		72,873	39,600	33,273	0	0	0	0	0
TOTAL SOURCE OF SUPPLY EXPENSES		$ 600,656	$ 462,208	$ 138,448	$ -	$ -	$ -	$ -	$ -

Exhibit 14-3 (continued)
COST OF SERVICE FOR THE TEST YEAR ENDED MARCH 31, 2023
ALLOCATED TO COST FUNCTIONS

Account	Factor Ref	Cost of Service	Base	Max Day	Max Hour	Meters	Services	Billing & Meters	Fire Services
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
PUMPING EXPENSES									
Operation Supervision and Engineering - Labor	3	132,841	65,331	64,695	0	0	0	0	2,815
Operation Supervision and Engineering - Other	3	72,647	35,728	35,380	0	0	0	0	1,540
Operation Supervision and Engineering - Fringe Benefits	3	40,173	19,757	19,565	0	0	0	0	851
Fuel or Power Purchase for Pumping - Labor	3	1,291	635	629	0	0	0	0	27
Fuel or Power Purchase for Pumping - Other	3	0	0	0	0	0	0	0	0
Fuel or Power Purchase for Pumping - Power Costs	1	2,036,784	2,036,784	0	0	0	0	0	0
Fuel or Power Purchase for Pumping - Amort Power Costs	1	534,778	534,778	0	0	0	0	0	0
Fuel or Power Purchase for Pumping - Fringe Benefits	3	0	0	0	0	0	0	0	0
Pumping Expense - Labor	3	1,223,332	601,633	595,774	0	0	0	0	25,926
Pumping Expense - Other	3	177,759	87,422	86,570	0	0	0	0	3,767
Pumping Expense - Fringe Benefits	3	487,000	239,506	237,173	0	0	0	0	10,321
Miscellaneous Expenditures	3	60,830	29,916	29,625	0	0	0	0	1,289
TOTAL PUMPING EXPENSE - OPERATION		4,767,435	3,651,488	1,069,410	0	0	0	0	46,536
Maintenance Supervision and Engineering - Labor	3	2,206	1,085	1,074	0	0	0	0	47
Maintenance Supervision and Engineering - Other	3	306	151	149	0	0	0	0	6
Maintenance Supervision and Engineering - Fringe Benefits	3	583	287	284	0	0	0	0	12
Maintenance of Structures and Improvements - Labor	3	0	0	0	0	0	0	0	0
Maintenance of Structures and Improvements - Other	3	215,808	106,134	105,101	0	0	0	0	4,574
Maintenance of Structures and Improvements - Fringe Benefit	3	0	0	0	0	0	0	0	0
Maintenance of Power Production Equipment - Labor	3	0	0	0	0	0	0	0	0
Maintenance of Power Production Equipment - Other	3	65,176	32,053	31,741	0	0	0	0	1,381
Maintenance of Power Production Equipment - Fringe Benefits	3	0	0	0	0	0	0	0	0
Maintenance of Pumping Equipment - Labor	3	3,631	1,786	1,769	0	0	0	0	77
Maintenance of Pumping Equipment - Other	3	6,893	3,390	3,357	0	0	0	0	146
Maintenance of Pumping Equipment - Fringe Benefits	3	1,669	821	813	0	0	0	0	35
TOTAL PUMPING EXPENSES - MAINTENANCE		296,273	145,706	144,288	0	0	0	0	6,279
TOTAL PUMPING EXPENSES		$ 5,063,708	$ 3,797,195	$ 1,213,698	$ -	$ -	$ -	$ -	$ 52,815

Exhibit 14-3 (continued)
COST OF SERVICE FOR THE TEST YEAR ENDED MARCH 31, 2023
ALLOCATED TO COST FUNCTIONS

Account	Factor Ref	Cost of Service	Base	Max Day	Max Hour	Meters	Services	Billing & Meters	Fire Services
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
WATER TREATMENT									
Operation Supervision and Engineering - Labor	2	789,279	396,020	393,259	0	0	0	0	0
Operation Supervision and Engineering - Other	2	34,541	17,331	17,210	0	0	0	0	0
Operation Supervision and Engineering - Fringe Benefits	2	28,048	14,073	13,975	0	0	0	0	0
Chemicals	1	519,783	519,783	0	0	0	0	0	0
Operation Labor and Expenses - Labor	2	73,295	36,776	36,519	0	0	0	0	0
Operation Labor and Expenses - Other	2	156,821	78,685	78,136	0	0	0	0	0
Operation Labor and Expenses - Lab Testing	2	159,423	79,990	79,433	0	0	0	0	0
Operation Labor and Expenses - Fringe Benefits	2	311,750	156,420	155,330	0	0	0	0	0
Miscellaneous Expenses - Labor	2	0	0	0	0	0	0	0	0
Miscellaneous Expenses - Other	2	30,285	15,196	15,090	0	0	0	0	0
Miscellaneous Expenses - Fringe Benefits	2	0	0	0	0	0	0	0	0
Amortization Miscellaneous	2	0	0	0	0	0	0	0	0
TOTAL WATER TREATMENT EXPENSE - OPERATION		2,103,225	1,314,273	788,952	0	0	0	0	0
Maintenance Supervision and Engineering	2	0	0	0	0	0	0	0	0
Maintenance of Structures and Improvements - Labor	2	0	0	0	0	0	0	0	0
Maintenance of Structures and Improvements - Other	2	61,281	30,748	30,533	0	0	0	0	0
Maintenance of Structures and Improvements - Lab Testing	2	0	0	0	0	0	0	0	0
Maintenance of Structures and Improvements - Fringe Benefit	2	0	0	0	0	0	0	0	0
Maintenance of Water Treatment Equipment - Labor	2	0	0	0	0	0	0	0	0
Maintenance of Water Treatment Equipment - Other	2	53,146	26,666	26,480	0	0	0	0	0
Maintenance of Water Treatment Equipment - Fringe Benefits	2	0	0	0	0	0	0	0	0
TOTAL WATER TREATMENT EXPENSE - MAINTENANCE		114,427	57,414	57,013	0	0	0	0	0
TOTAL WATER TREATMENT EXPENSE		$ 2,217,652	$ 1,371,687	$ 845,965	$ -	$ -	$ -	$ -	$ -

Exhibit 14-3 (continued)
COST OF SERVICE FOR THE TEST YEAR ENDED MARCH 31, 2023
ALLOCATED TO COST FUNCTIONS

Account	Factor Ref	Cost of Service	Base	Max Day	Max Hour	Meters	Services	Billing & Meters	Fire Services
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
TRANSMISSION AND DISTRIBUTION EXPENSES									
Operation Supervision and Engineering - Labor	10	47,635	43,937	954	2,361	62	0	0	321
Operation Supervision and Engineering - Other	10	4,334	3,997	87	215	6	0	0	29
Operation Supervision and Engineering - Fringe Benefits	10	13,319	12,285	267	660	17	0	0	90
Storage Facility Expense	5	10,059	2,409	0	7,034	0	0	0	616
Mains Expense - Labor	6	4,618	1,604	982	1,760	0	0	0	272
Mains Expense - Other	6	42,199	14,660	8,971	16,085	0	0	0	2,483
Mains Expense - Fringe Benefits	6	1,632	567	347	622	0	0	0	96
Meter Expense - Labor	8	426	0	0	0	426	0	0	0
Meter Expense - Other	8	50	0	0	0	50	0	0	0
Meter Expense - Fringe Benefits	8	193	0	0	0	193	0	0	0
Miscellaneous Expense - Purchased Power	1	455,256	455,256	0	0	0	0	0	0
Miscellaneous Expense - Other	10	64,904	59,866	1,300	3,217	84	0	0	437
Miscellaneous Expense - Fringe Benefits	10	0	0	0	0	0	0	0	0
TOTAL T&D EXPENSE - OPERATION		644,626	594,582	12,907	31,956	838	0	0	4,344
Maintenance Supervision and Engineering	11	49,435	1,080	134	2,755	0	44,737	0	729
Maintenance of Structures and Improvements - Fringe Benefit	11	15,020	328	41	837	0	13,593	0	222
Maintenance of Distribution Reservoirs and Standpipes	5	197,877	47,388	0	138,372	0	0	0	12,118
Maintenance of T&D Mains - Labor	6	595	207	126	227	0	0	0	35
Maintenance of T&D Mains - Other	6	33,825	11,751	7,191	12,893	0	0	0	1,990
Maintenance of T&D Mains - Fringe Benefits	6	217	76	46	83	0	0	0	13
Maintenance of Services - Labor	9	1,545,679	0	0	0	0	1,545,679	0	0
Maintenance of Services - Other	9	307,427	0	0	0	0	307,427	0	0
Maintenance of Services - Fringe Benefits	9	607,892	0	0	0	0	607,892	0	0
Maintenance of Hydrants - Other	7	25,960	0	0	0	0	0	0	25,960
Miscellaneous	11	2,468	54	7	138	0	2,233	0	36
TOTAL T&D EXPENSE - MAINTENANCE		2,786,397	60,883	7,545	155,305	0	2,521,562	0	41,103
TOTAL T&D EXPENSE		$ 3,431,023	$ 655,464	$ 20,451	$ 187,260	$ 838	$ 2,521,562	$ -	$ 45,447

Exhibit 14-3 (continued)
COST OF SERVICE FOR THE TEST YEAR ENDED MARCH 31, 2023
ALLOCATED TO COST FUNCTIONS

Account	Factor Ref	Cost of Service	Base	Max Day	Max Hour	Meters	Services	Billing & Meters	Fire Services
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
CUSTOMER ACCOUNTS									
Supervision - Labor	12	76,463	0	0	0	0	0	74,616	1,847
Supervision - Other	12	10,649	0	0	0	0	0	10,392	257
Supervision - Fringe Benefits	12	29,341	0	0	0	0	0	28,632	709
Meter Reading - Labor	13	338,593	0	0	0	0	0	338,593	0
Meter Reading - Other	13	86,715	0	0	0	0	0	86,715	0
Meter Reading - Fringe Benefits	13	130,559	0	0	0	0	0	130,559	0
Customer Records and Collection - Labor	12	1,329,401	0	0	0	0	0	1,297,285	32,116
Customer Records and Collection - Other	12	770,888	0	0	0	0	0	752,265	18,623
Customer Records and Collection - Fringe Benefits	12	516,452	0	0	0	0	0	503,975	12,477
Transportation Costs - Other	12	0	0	0	0	0	0	0	0
Uncollectible Accounts	12	(683,545)	0	0	0	0	0	(667,032)	(16,513)
Miscellaneous Other	12	13,881	0	0	0	0	0	13,545	335
TOTAL CUSTOMER ACCOUNTING EXPENSES		2,619,397	0	0	0	0	0	2,569,546	49,852

Exhibit 14-3 (continued)
COST OF SERVICE FOR THE TEST YEAR ENDED MARCH 31, 2023
ALLOCATED TO COST FUNCTIONS

Account	Factor Ref	Cost of Service	Base	Max Day	Max Hour	Meters	Services	Billing & Meters	Fire Services
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
ADMINISTRATIVE AND GENERAL EXPENSES									
A&G Labor	14	1,907,210	521,639	402,043	33,935	152	456,952	465,648	26,841
Fringe Benefits Transferred	16	(3,704,510)	(846,321)	(761,994)	(18,628)	(311)	(974,440)	(1,058,866)	(43,950)
Employee Pension Cost	16	623,218	142,378	128,192	3,134	52	163,932	178,136	7,394
Post Retirement Health Care Accrue	16	(523,756)	(119,656)	(107,733)	(2,634)	(44)	(137,770)	(149,706)	(6,214)
Employee Group Health & Life	16	2,103,710	480,607	432,720	10,578	177	553,363	601,307	24,958
Employee 401k	16	456,431	104,275	93,885	2,295	38	120,060	130,462	5,415
Other Employee Benefits	16	14,634	3,343	3,010	74	1	3,849	4,183	174
Other Awards	16	22,785	5,205	4,687	115	2	5,993	6,513	270
Materials and Supply - A&G and Customer Cares	14	932,132	254,946	196,495	16,585	74	223,331	227,581	13,118
Management Fees - Other	14	4,566,635	1,249,015	962,655	81,254	364	1,094,129	1,114,950	64,268
Contract Services	14	150,202	41,081	31,663	2,673	12	35,987	36,672	2,114
Rental of Equipment	14	8,938	2,445	1,884	159	1	2,142	2,182	126
Transportation Expense	14	238,006	65,097	50,172	4,235	19	57,024	58,109	3,350
Insurance - General Liability	14	242,524	66,333	51,125	4,315	19	58,107	59,213	3,413
Insurance - Workman's Compensation	16	116,207	26,548	23,903	584	10	30,567	33,216	1,379
Advertising	14	227,683	62,273	47,996	4,051	18	54,551	55,589	3,204
Reg Commission Exp (Amortization)	14	401,670	109,860	84,673	7,147	32	96,237	98,068	5,653
Bad Debt Write-off	16	988,608	225,854	203,350	4,971	83	260,045	282,576	11,729
Miscellaneous Expense	14	(221,568)	(60,601)	(46,707)	(3,942)	(18)	(53,086)	(54,096)	(3,118)
TOTAL A&G EXPENSE		8,550,758	2,334,322	1,802,019	150,901	682	2,050,976	2,091,736	120,123
TOTAL OPERATION & MAINTENANCE EXPENSE		$ 22,483,195	$ 8,620,876	$ 4,020,581	$ 338,162	$ 1,520	$ 4,572,538	$ 4,661,282	$ 268,236
TOTAL OPERATION & MAINTENANCE EXPENSE (excluding A&G, purchased water, power, and chemicals)		$ 10,524,398	$ 2,878,515	$ 2,218,563	$ 187,260	$ 838	$ 2,521,562	$ 2,569,546	$ 148,114
DIRECT LABOR EXPENSE		$ 7,613,366	$ 1,739,326	$ 1,566,020	$ 38,283	$ 640	$ 2,002,632	$ 2,176,142	$ 90,324

Exhibit 14-3 (continued)
COST OF SERVICE FOR THE TEST YEAR ENDED MARCH 31, 2023
ALLOCATED TO COST FUNCTIONS

Account	Factor Ref	Cost of Service	Base	Max Day	Max Hour	Meters	Services	Billing & Meters	Fire Services
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
DEPRECIATION EXPENSE									
Structures and Improvements - Source of Supply	2	194,554	97,617	96,937	0	0	0	0	0
Structures and Improvements - Water Treatment	2	379,025	190,175	188,850	0	0	0	0	0
Structures and Improvements - Trans. & Distrib.	6	95,597	33,210	20,323	36,439	0	0	0	5,625
Structures and Improvements - General Plant	14	174,705	47,783	36,828	3,109	14	41,858	42,654	2,459
Collecting & Impounding Reservoirs - Source of Supply	1	749	749	0	0	0	0	0	0
Lake, River & Other Intakes	2	24,347	12,216	12,131	0	0	0	0	0
Wells & Springs	2	141,814	71,155	70,659	0	0	0	0	0
Supply Mains	2	39,352	19,745	19,607	0	0	0	0	0
Power Generation Equipment	3	153,188	75,338	74,604	0	0	0	0	3,246
Power Electric/Diesel Pumping Equipment - Source of Supply	2	760,618	381,639	378,979	0	0	0	0	0
Power Pumping Equipment - Water Treatment	2	217,301	109,030	108,270	0	0	0	0	0
Power Pumping Equipment - Trans. & Distrib.	3	470,931	231,603	229,348	0	0	0	0	9,980
Water Treatment Equipment	2	973,163	488,283	484,880	0	0	0	0	0
Distribution Reservoirs & Standpipes	5	364,275	87,237	0	254,731	0	0	0	22,307
Trans. & Distrib. Mains & Accessories	3	2,626,679	1,291,796	1,279,217	0	0	0	0	55,666
Services	9	1,667,829	0	0	0	0	1,667,829	0	0
Meters and Meter Installations	8	1,020,091	0	0	0	1,020,091	0	0	0
Hydrants	7	273,666	0	0	0	0	0	0	273,666
Office Furniture and Equipment	14	83,330	22,791	17,566	1,483	7	19,965	20,345	1,173
Computer Equipment	12	90,241	0	0	0	0	0	88,061	2,180
Transportation Equipment	14	140,248	38,359	29,565	2,495	11	33,602	34,242	1,974
Stores Equipment	14	10,297	2,816	2,171	183	1	2,467	2,514	145
Tools, Shop and Garage Equipment	14	108,875	29,778	22,951	1,937	9	26,086	26,582	1,532
Laboratory Equipment	2	5,747	2,883	2,863	0	0	0	0	0
Power Operated Equipment	14	77,063	21,077	16,245	1,371	6	18,464	18,815	1,085
Communications Equipment	14	320,581	87,682	67,579	5,704	26	76,809	78,270	4,512
Miscellaneous Equipment	14	21,107	5,773	4,449	376	2	5,057	5,153	297
Other Tangible Property	14	211,717	57,906	44,630	3,767	17	50,726	51,691	2,980
TOTAL DEPRECIATION EXPENSES		10,647,090	3,406,644	3,208,651	311,595	1,020,182	1,942,863	368,328	388,826

Exhibit 14-3 (continued)
COST OF SERVICE FOR THE TEST YEAR ENDED MARCH 31, 2023
ALLOCATED TO COST FUNCTIONS

Account	Factor Ref	Cost of Service	Base	Max Day	Max Hour	Meters	Services	Billing & Meters	Fire Services
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Amortization of Utility Plant Acquisition	17	282,585	99,125	94,266	9,689	12,509	53,601	(317)	13,712
TOTAL AMORTIZATION		282,585	99,125	94,266	9,689	12,509	53,601	(317)	13,712
TAXES OTHER THAN INCOME									
Real Estate	18	2,145,032	753,307	711,407	73,031	93,772	407,235	3,172	103,106
Payroll Taxes	16	898,783	205,333	184,874	4,519	76	236,417	256,901	10,663
TOTAL TAXES, OTHER THAN INCOME		3,043,815	958,641	896,281	77,551	93,848	643,653	260,073	113,769
INCOME TAXES	18	5,567,006	1,955,060	1,846,317	189,538	243,368	1,056,899	8,233	267,590
UTILITY INCOME AVAILABLE FOR RETURN	18	$21,801,395	7,656,367	7,230,510	742,266	953,071	4,139,006	32,243	1,047,932
TOTAL COST OF SERVICE		$ 63,825,086	$ 22,696,714	$ 17,296,607	$ 1,668,800	$ 2,324,498	$ 12,408,559	$ 5,329,842	$ 2,100,066
LESS: OTHER WATER RESOURCES									
Miscellaneous Service Revenue	19	35,620	12,667	9,653	931	1,297	6,925	2,975	1,172
TOTAL OTHER WATER REVENUES		35,620	12,667	9,653	931	1,297	6,925	2,975	1,172
TOTAL COST OF SERVICE RELATED TO SALES OF WATER		$ 63,789,466	$ 22,684,047	$ 17,286,954	$ 1,667,869	$ 2,323,201	$ 12,401,634	$ 5,326,868	$ 2,098,894
Reallocation of Public Fire	20		$ -	$ -	$ -	$ 1,599,750	$ -	$ -	$ (1,599,750)
TOTAL		$ 63,789,466	$ 22,684,047	$ 17,286,954	$ 1,667,869	$ 3,922,951	$ 12,401,634	$ 5,326,868	$ 499,143

Exhibit 14-3 (continued)
COST OF SERVICE FOR THE TEST YEAR ENDED MARCH 31, 2023
ALLOCATED TO COST FUNCTIONS

Account	Factor Ref	Cost of Service	Base	Max Day	Max Hour	Meters	Services	Billing & Meters	Fire Services
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
RATE BASE									
Organization	17	104,530	36,667	34,869	3,584	4,627	19,827	(117)	5,072
Franchise Rights	17	30,079	10,551	10,034	1,031	1,331	5,705	(34)	1,460
Land & Land Rights - Source of Supply	2	2,930,331	1,470,290	1,460,041	0	0	0	0	0
Water Rights - Source of Supply	2	8,666,083	4,348,197	4,317,886	0	0	0	0	0
Land & Land Rights - Water Treatment	2	889,034	446,072	442,962	0	0	0	0	0
Land & Land Rights - Trans. & Distrib.	6	972,360	337,790	206,715	370,639	0	0	0	57,216
Land & Land Rights - General Plant	14	213,383	58,362	44,982	3,797	17	51,125	52,098	3,003
Structures and Improvements - Source of Supply	2	6,701,625	3,362,533	3,339,093	0	0	0	0	0
Structures and Improvements - Water Treatment	2	9,365,985	4,699,372	4,666,613	0	0	0	0	0
Structures and Improvements - Trans. & Distrib.	6	2,588,550	899,242	550,302	986,691	0	0	0	152,315
Structures and Improvements - General Plant	14	4,705,847	1,287,090	992,001	83,731	375	1,127,483	1,148,939	66,227
Collecting & Impounding Reservoirs - Source of Supply	1	42,358	42,358	0	0	0	0	0	0
Lake, River & Other Intakes	2	916,500	459,853	456,647	0	0	0	0	0
Wells & Springs	2	4,767,393	2,392,034	2,375,359	0	0	0	0	0
Infiltration Galleries & Tunnels	2	(13,853)	(6,951)	(6,902)	0	0	0	0	0
Supply Mains	2	2,108,262	1,057,818	1,050,444	0	0	0	0	0
Power Generation Equipment	3	1,690,822	831,543	823,446	0	0	0	0	35,833
Power Electric/Diesel Pumping Equipment - Source of Supply	2	6,267,772	3,144,848	3,122,925	0	0	0	0	0
Power Pumping Equipment - Water Treatment	2	2,588,051	1,298,552	1,289,499	0	0	0	0	0
Power Pumping Equipment - Trans. & Distrib.	3	6,705,307	3,297,658	3,265,546	0	0	0	0	142,102
Water Treatment Equipment	2	13,826,487	6,937,424	6,889,063	0	0	0	0	0
Distribution Reservoirs & Standpipes	5	16,648,471	3,986,978	0	11,641,974	0	0	0	1,019,519
Trans. & Distrib. Mains & Accessories	3	188,104,746	92,509,589	91,608,741	0	0	0	0	3,986,416
Services	9	69,649,980	0	0	0	0	69,649,980	0	0
Meters and Meter Installations	8	17,150,501	0	0	0	17,150,501	0	0	0
Hydrants	7	13,289,464	0	0	0	0	0	0	13,289,464

Exhibit 14-3 (continued)
COST OF SERVICE FOR THE TEST YEAR ENDED MARCH 31, 2023
ALLOCATED TO COST FUNCTIONS

Account	Factor Ref	Cost of Service	Base	Max Day	Max Hour	Meters	Services	Billing & Meters	Fire Services
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Office Furniture and Equipment	14	727,021	198,847	153,257	12,936	58	174,189	177,503	10,232
Computer Equipment	12	(4,458,247)	0	0	0	0	0	(4,350,543)	(107,704)
Transportation Equipment	14	1,312,956	359,105	276,774	23,361	105	314,574	320,560	18,478
Stores Equipment	14	203,117	55,554	42,817	3,614	16	48,665	49,591	2,859
Tools, Shop and Garage Equipment	14	1,336,961	365,670	281,834	23,789	107	320,325	326,421	18,816
Laboratory Equipment	2	20,722	10,397	10,325	0	0	0	0	0
Power Operated Equipment	14	625,068	170,962	131,766	11,122	50	149,761	152,611	8,797
Communications Equipment	14	3,927,823	1,074,294	827,992	69,888	313	941,075	958,983	55,278
Miscellaneous Equipment	14	243,187	66,514	51,264	4,327	19	58,266	59,374	3,422
Other Tangible Property	14	2,744,882	750,749	578,626	48,840	219	657,652	670,167	38,630
TOTAL UTILITY PLANT IN SERVICE		387,593,558	135,959,962	129,294,921	13,289,323	17,157,738	73,518,627	(434,447)	18,807,434
OTHER RATE BASE ITEMS									
Utility Plant Acquisition Adjustment	17	10,771,089	3,778,280	3,593,060	369,306	476,808	2,043,057	(12,073)	522,652
Customer Advances for Construction	17	(3,797,814)	(1,332,196)	(1,266,889)	(130,215)	(168,119)	(720,368)	4,257	(184,284)
Contributions in Aid of Construction-Net	17	(112,913,720)	(39,607,844)	(37,666,185)	(3,871,444)	(4,998,391)	(21,417,440)	126,563	(5,478,980)
Deferred Charges Included in Rate Base	17	4,933,851	1,730,695	1,645,853	169,166	218,408	935,851	(5,530)	239,408
Working Capital Allowance	15	3,552,571	1,362,185	635,292	53,433	240	722,507	736,529	42,384
Deferred Income Taxes	17	(5,307,577)	(1,861,790)	(1,770,521)	(181,980)	(234,952)	(1,006,740)	5,949	(257,543)
TOTAL OTHER RATE BASE ELEMENTS		(102,761,600)	(35,930,670)	(34,829,390)	(3,591,734)	(4,706,006)	(19,443,132)	855,695	(5,116,362)
TOTAL ORIGINAL COST MEASURE OF VALUE		$ 284,831,959	$ 100,029,292	$ 94,465,531	$ 9,697,589	$ 12,451,732	$ 54,075,495	$ 421,248	$ 13,691,072

Exhibit 14-4
BASIS FOR ALLOCATING DEMAND RELATED COSTS OF FIRE SERVICE
TO PRIVATE AND PUBLIC FIRE PROTECTION CUSTOMER CLASSIFICATIONS

Description	Relative Flow Capacity Factor	Equivalent Hydrant Ratio	Number of Hydrants or Fire Connections	Equivalent Hydrant	Allocation Factor
(1)	(2)	(3)	(4)	(5)	(6)
PRIVATE FIRE PROTECTION					
Fire Lines					
3"	18.0	0.26	903	235	
4"	38.3	0.56	688	385	
6"	111.3	1.62	584	946	
8"	237.2	3.44	186	640	
10"	426.6	6.19	11	68	
12"	689.0	10.00	6	60	
Private Hydrants	68.9	1.00	160	160	
Total Private Fire Protection			2,538	2,494	0.1988
PUBLIC FIRE PROTECTION					
Public Hydrants	68.9	1.00	10,050	10,050	
Total Public Fire Protection			10,050	10,050	0.8012
TOTAL FIRE PROTECTION			12,588	12,544	1.0000

* Demand Factors based on nominal size of connection raised to the 2.63 power.
Source: AWWA M1 Manual, Chapter IV.8.

Exhibit 14-5A

CALCULATION OF BI-MONTHLY CUSTOMER COST FOR 5/8-INCH METER

Cost Function	Cost of Service	Total Units		Cost per 5/8-inch Meter	Cost per 5/8-inch Meter Bi-Monthly
(1)	(2)	(3)		(4)	(1)
Meters	2,323,201	201,378	5/8" Meter Equiv.	11.54	1.92
Services	12,401,634	123,059	3/4" Service Equiv.	100.78	16.80
Billing and Collections	5,326,868	102,518	Customers	51.96	8.66
Subtotal Customer Costs	$ 20,051,702				$ 27.38
Unrecovered Public Fire	1,599,750	201,378	5/8"-inch Equiv.	7.94	1.32
Total Customer Costs and Public Fire	$ 21,651,453				$ 28.70

Exhibit 14-5B
CALCULATION OF VOLUME UNIT CHARGE

Cost Function	Cost of Service	Total Units	Tier Ratio	Cost per CCF	Tier Ratio	Cost per CCF
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Base	22,696,714					
Max Day	17,296,607					
Max Hour	1,668,800					
Total Volume Costs	$41,662,121	18,803,987		$2.2156		$2.2156
Winter Volume		6,723,221	1.00	$1.9214	1.00	$1.6961
Summer Volume - Tier 1		562,325	1.00	$1.9214	1.00	$1.6961
Summer Volume - Tier 2		11,518,441	1.25	$2.4017	1.50	$2.5442

Exhibit 14-5C

CALCULATION OF BI-MONTHLY CUSTOMER COST FOR FIRE SERVICE

Cost Function	Cost of Service	Total Units		Cost per Equiv. Hydrants	Cost per Equiv. Hydrants Bi-Monthly
(1)	(2)	(3)		(4)	(5)
Private Fire Service	499,143	2,494	Equiv. Hydrants	200.14	33.36
Total Private Costs	$499,143				$33.36

EXHIBIT 14-F

FACTORS FOR ALLOCATING COST OF SERVICE TO CUSTOMER CLASSIFICATIONS

FACTOR 1: ALLOCATION OF COSTS THAT VARY WITH THE AMOUNT OF WATER CONSUMED

Factor are based on the pro forma test year average daily consumption for each customer classification.

Customer Classification	Average Daily Consumption CCF/day	Allocation Factor
(1)	(2)	(3)
Residential	33,134	0.6432
Commercial	18,209	0.3535
Public Authority	175	0.0034
Private Fire Service		0.0000
Public Fire Service		0.0000
Total	51,518	1.0000

FACTOR 2: ALLOCATION OF COSTS ASSOCIATED WITH FACILITIES SERVING BASE AND MAXIMUM DAY EXTRA CAPACITY FUNCTION

Factors are based on the weighting of the factors for average daily consumption and the factors derived from maximum day extra capacity demand for each customer class, as follows:

	Average Daily Consumption		Maximum Day Extra Capacity		
Customer Classification	Allocation Factor	Weighted Factor	Allocation Factor	Weighted Factor	Allocation Factor
(1)	(2)	(3)	(4)	(5)	(6)
Residential	0.6432	0.3227	0.6625	0.3301	0.6528
Commercial	0.3535	0.1773	0.3357	0.1672	0.3446
Public Authority	0.0034	0.0017	0.0019	0.0009	0.0026
Private Fire Service	0.0000	0.0000			0.0000
Public Fire Service	0.0000	0.0000			0.0000
Total	1.0000	0.5017	1.0000	0.4983	1.0000

The derivation of the maximum day extra capacity factors in Column 4 and the basis for Column 3 and 5 weightings are presented here:

Customer Classification	Average Daily Consumption CCF/day	Factor	1 Total CCF/day	2 Max Day Extra Capacity	1 Allocation Factor
(1)	(2)	(3)	(4)	(5)	(6)
Residential	33,134	2.05	67,924	34,791	0.6625
Commercial	18,209	1.89	34,416	16,206	0.3357
Public Authority	175	1.11	194	19	0.0019
Private Fire Service			0	0	0.0000
Public Fire Service			0	0	0.0000
Total	51,518		102,534	51,016	1.0000

The weighting of the factors is based on the maximum day ratio of 1.99 for the system based on review of 10-years of maximum day ratios.

	Maximum Day Ratio	Weight
Average Day	1.00	0.5017
Maximum Day Extra Capacity*	0.99	0.4983
	1.99	1.0000

*Ratio of maximum day to average minus 1.0.

FACTOR 3: ALLOCATION OF COSTS ASSOCIATED WITH FACILITIES SERVING BASE, MAXIMUM DAY EXTRA CAPACITY AND FIRE PROTECTION FUNCTIONS

The weighting of the factors is based on the potential demand of general and fire protection service.
The bases for the potential demand of general service are the maximum day ratio of 1.99 and the average daily system send out for test year of 51,518 CCF/day. The system demand for fire protection is consists of three concurrent fires with demands of 4,500 gpm for 4 hours, 4,000 gpm for 4 hours and 1,500 gpm for 2 hours.

	Maximum Day Ratio	Total Max Day ccf/day	Weight
Average Day	1.00	51,518	0.4918
Maximum Day Extra Capacity	0.99	51,016	0.4870
Subtotal	1.99	102,534	0.9788
Fire Protection		2,220	0.0212
Total		104,754	1.0000

The public and private fire protection allocation factors in Column 6 on are based on the relative potential demands.

	Average Daily Consumption		Maximum Day Extra Capacity		Fire Protection		
Customer Classification	Allocation Factor	Weighted Factor	Allocation Factor	Weighted Factor	Allocation Factor	Weighted Factor	Allocation Factor
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Residential	0.6432	0.3163	0.6625	0.3226			0.6389
Commercial	0.3535	0.1738	0.3357	0.1635			0.3373
Public Authority	0.0034	0.0017	0.0019	0.0009			0.0026
Private Fire Service	0.0000	0.0000	0.0000	0.0000	0.1988	0.0042	0.0042
Public Fire Service	0.0000	0.0000	0.0000	0.0000	0.8012	0.0170	0.0170
Total	1.0000	0.4918	1.0000	0.4870	1.0000	0.0212	1.0000

FACTOR 4: ALLOCATION OF COSTS ASSOCIATED WITH FACILITIES SERVING BASE AND MAXIMUM HOUR EXTRA CAPACITY FUNCTIONS

The weighting of the factors is based on the potential demand of general and fire protection service.
The bases for the potential demand of general service are the maximum day ratio of 3.92 and the average daily system send out for test year of 51,518 CCF/day. The system demand for fire protection consists of three concurrent fires with demands of 4,500 gpm, 4,000 gpm, and 1,500 gpm.

	Maximum Hour Ratio	Total Flow ccf/day	Weight
Average Day	1.00	51,518	0.2355
Maximum Hour Extra Capacity*	2.92	147,971	0.6765
Subtotal	3.92	199,488	0.9120
Fire Protection		19,251	0.0880
Total		218,739	1.0000

*Ratio of maximum hour to average minus 1.0.

The maximum hour extra capacity factors in Column 5 are determined as follows:

		Maximum Hour Extra Capacity			
Customer Classification	Average Daily Consumption CCF/Day	Factor	Rate of Flow CCF/Day	Extra Capacity Flow	Allocation Factor
(1)	(2)	(3)	(4)	(5)	(6)
Residential	33,134	4.80	159,042	91,118	0.7993
Commercial	18,209	2.15	39,150	4,734	0.1967
Public Authority	175	4.55	794	600	0.0040
Total	51,518		198,987	96,453	1.0000

FACTOR 4: ALLOCATION OF COSTS ASSOCIATED WITH FACILITIES SERVING BASE AND MAXIMUM HOUR EXTRA CAPACITY FUNCTIONS (CONTINUED)

The public and private protection factors in Column 5 are based on the relative potential demands.

	Average Daily Consumption		Maximum Hour Extra Capacity		Fire Protection		
Customer Classification	Allocation Factor	Weighted Factor	Allocation Factor	Weighted Factor	Allocation Factor	Weighted Factor	Allocation Factor
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Residential	0.6432	0.1515	0.7993	0.5407			0.6922
Commercial	0.3535	0.0832	0.1967	0.1331			0.2163
Public Authority	0.0034	0.0008	0.0040	0.0027			0.0035
Private Fire Service	0.0000	0.0000	0.0000	0.0000	0.1988	0.0175	0.0175
Public Fire Service	0.0000	0.0000	0.0000	0.0000	0.8012	0.0705	0.0705
Total	1.0000	0.2355	1.0000	0.6765	1.0000	0.0880	1.0000

FACTOR 5: ALLOCATION OF COSTS ASSOCIATED WITH STORAGE FACILITIES

The weighting of the factors is based on the ratio of the capacity required for 2, 4-hour demands and a 2-hour demand of fire flow, as related to total storage capacity.

Fire Protection Weight = $\frac{4{,}500 \text{ gpm} \times 60 \text{ min} \times 4 \text{ hrs} + 1{,}500 \text{ gpm} \times 60 \text{ min} \times 2 \text{ hrs} + 4{,}000 \text{ gpm} \times 60 \text{ min} \times 4 \text{ hrs}}{36{,}252{,}000 \text{ Gallons}}$ = 0.0612

General Service Weight = 1.0000 - 0.0612 = 0.9388

The weighting of the average hourly consumption and maximum hour demand for **general services** is based on the maximum hour ratio, as follows:

	Maximum Hour Ratio	Percent	Weight
Average Day	1.00	25.5%	0.2395
Maximum Hour Extra Capacity*	2.92	74.5%	0.6993
	3.92	100.0%	0.9388

*Ratio of maximum day to average minus 1.0.

	Average Daily Consumption		Maximum Hour Extra Capacity		Fire Protection		
Customer Classification	Allocation Factor	Weighted Factor	Allocation Factor	Weighted Factor	Allocation Factor	Weighted Factor	Allocation Factor
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Residential	0.6432	0.1540	0.7993	0.5589			0.7129
Commercial	0.3535	0.0846	0.1967	0.1376			0.2222
Public Authority	0.0034	0.0008	0.0040	0.0028			0.0036
Private Fire Service	0.0000	0.0000	0.0000	0.0000	0.1988	0.0122	0.0122
Public Fire Service	0.0000	0.0000	0.0000	0.0000	0.8012	0.0491	0.0491
Total	1.0000	0.2395	1.0000	0.6993	1.0000	0.0612	1.0000

The public and private fire protection allocation factors in Column 6 are based on the relative potential demands.

FACTOR 6: ALLOCATION OF COSTS ASSOCIATED WITH TRANSMISSION AND DISTRIBUTION MAINS

Factors are based on the weighting of the maximum daily consumption with fire, Factor 3, and the maximum hour.

	Maximum Daily Consumption w/Fire		Maximum Hourly Consumption		
Customer Classification	Allocation Factor	Weighted Factor	Allocation Factor	Weighted Factor	Allocation Factor
(1)	(2)	(3)	(4)	(5)	(6)
Residential	0.6389	0.2789	0.6922	0.3900	0.6689
Commercial	0.3373	0.1472	0.2163	0.1219	0.2691
Public Authority	0.0026	0.0011	0.0035	0.0020	0.0031
Private Fire Service	0.0042	0.0018	0.0175	0.0099	0.0117
Public Fire Service	0.0170	0.0074	0.0705	0.0397	0.0471
Total	1.0000	0.4365	1.0000	0.5635	1.0000

The weighted of the factors is based on the total footage of mains, designated as either transmission mains or distribution mains, as follows:

	Total In-Feet of Mains	Weight
Transmission Mains	29,910,220	0.4365
Distribution Mains	38,608,964	0.5635
Total	68,519,184	1.0000

FACTOR 7: ALLOCATION OF COSTS ASSOCIATED WITH FIRE HYDRANTS

Costs are allocated between Private and Public Fire Hydrants

Customer Classification	Allocation Factor
(1)	(2)
Private Fire Service	0.1988
Public Fire Service	0.8012

FACTOR 8: ALLOCATION OF COSTS ASSOCIATED WITH METERS

Factors are based on the relative cost of meters by size and customer classification, as developed below.

Customer Classification	5/8" Meter Equivalents	Allocation Factor
(1)	(2)	(3)
Residential	131,574	0.6534
Commercial	69,143	0.3434
Public Authority	661	0.0033
	201,378	1.0000

		Residential		Commercial		Public Authority	
Meter Size	5/8" Equivalents	Number of Meters	Weighting	Number of Meters	Weighting	Number of Meters	Weighting
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
5/8"	1.0	25,329	25,329	639	639	6	6
3/4"	1.5	57,227	85,841	2,121	3,181	13	19
1"	1.9	9,224	17,525	2,576	4,894	26	49
1-1/2"	6.0	251	1,506	2,182	13,090	22	130
2"	11.9	115	1,373	2,439	29,020	38	457
3"	51.1		0	260	13,288		0
4"	94.1		0	45	4,216		0
6"	134.0		0	6	815		0
8"	180.0		0		0		0
Total		92,146	131,574	10,267	69,143	105	661

FACTOR 9: ALLOCATION OF COSTS ASSOCIATED WITH SERVICES

Factors are based on the relative cost of services by size and customer classification, as developed below.

Customer Classification	3/4" Service Equivalents	Allocation Factor
(1)	(2)	(3)
Residential	101,055	0.8212
Commercial	21,767	0.1769
Public Authority	237	0.0019
	123,059	1.0000

		Residential		Commercial		Public Authority		Total	
Meter Size	3/4" Service Equivalents	Number of Meters	Weighting	Number of Meters	Weighting	Number of Meters	Weighting	Number of Meters	Weighting
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
5/8"	1.0	25,329	25,329	639	639	6	6	25,974	25,974
3/4"	1.0	57,227	57,227	2,121	2,121	13	13	59,360	59,360
1"	1.9	9,224	17,525	2,576	4,894	26	49	11,825	22,468
1-1/2"	2.5	251	628	2,182	5,454	22	54	2,454	6,136
2"	3.0	115	346	2,439	7,316	38	115	2,592	7,777
3"	3.5		0	260	910		0	260	910
4"	8.5		0	45	381		0	45	381
6"	8.5		0	6	52		0	6	52
8"	8.5		0		0		0	0	0
Total		92,146	101,055	10,267	21,767	105	237	102,518	123,059

FACTOR 10: ALLOCATION OF TRANSMISSION AND DISTRIBUTION OPERATION SUPERVISION AND ENGINEERING AND MISCELLANEOUS EXPENSES

Factors are based on transmission and distribution operation expenses other than those being allocated, as follows:

Customer Classification	Transmission & Distribution Operating Expenses	Allocation Factor
(1)	(2)	(3)
Residential	332,817	0.6470
Commercial	176,419	0.3429
Public Authority	1,731	0.0034
Private Fire Service	689	0.0013
Public Fire Service	2,778	0.0054
	$514,434	1.0000

FACTOR 11: ALLOCATION OF TRANSMISSION AND DISTRIBUTION OPERATION SUPERVISION AND ENGINEERING, STRUCTURES AND IMPROVEMENTS, AND OTHER EXPENSES

Factors are based on transmission and distribution maintenance expenses other than those being allocated, as follows:

Customer Classification	Transmission & Distribution Maintenance Expenses	Allocation Factor
(1)	(2)	(3)
Residential	2,185,190	0.8035
Commercial	488,599	0.1797
Public Authority	5,569	0.0020
Private Fire Service	7,976	0.0029
Public Fire Service	32,140	0.0118
	$2,719,473	1.0000

FACTOR 12: ALLOCATION OF BILLING AND COLLECTION COSTS

Factors are based on the total number of customers.

Customer Classification (1)	Total Customers (2)	Allocation Factor (3)
Residential	92,146	0.8771
Commercial	10,267	0.0977
Public Authority	106	0.0010
Private Fire Service	2,538	0.0242
Public Fire Service	0	0.0000
	105,057	1.0000

FACTOR 13: ALLOCATION OF METER READING COSTS

Factors are based on the total equivalent meters.

Customer Classification (1)	Total Equiv. Meters (2)	Allocation Factor (3)
Residential	101,055	0.8212
Commercial	21,767	0.1769
Public Authority	237	0.0019
	123,059	1.0000

FACTOR 14: ALLOCATION OF ADMINISTRATIVE AND GENERAL EXPENSES

Factors are based on the allocation of all other operation and maintenance expenses excluding G&A, purchased water, power and chemicals.

Customer Classification (1)	Operation & Maintenance Expense (2)	Allocation Factor (3)
Residential	7,808,338	0.7419
Commercial	2,545,235	0.2418
Public Authority	22,712	0.0022
Private Fire Service	69,388	0.0066
Public Fire Service	78,726	0.0075
	$10,524,398	1.0000

FACTOR 15: ALLOCATION OF CASH WORKING CAPITAL

Factors are based on the allocation of all other operation and maintenance expenses including purchased water, power and chemicals.

Customer Classification	Operation & Maintenance Expense	Allocation Factor
(1)	(2)	(3)
Residential	16,345,611	0.7270
Commercial	5,816,650	0.2587
Public Authority	52,698	0.0023
Private Fire Service	125,792	0.0056
Public Fire Service	142,444	0.0063
	$22,483,195	1.0000

FACTOR 16: ALLOCATION OF LABOR RELATED TAXES AND BENEFITS

Factors are based on the allocation of direct labor expense.

Customer Classification	Direct Labor Expense	Allocation Factor
(1)	(2)	(3)
Residential	5,753,488	0.7557
Commercial	1,754,042	0.2304
Public Authority	15,512	0.0020
Private Fire Service	52,407	0.0069
Public Fire Service	37,917	0.0050
	$7,613,366	1.0000

FACTOR 17: ALLOCATION OF ORGANIZATION, FRANCHISES AND CONSENTS, MISCELLANEOUS INTANGIBLE PLANT AND OTHER RATE BASE ELEMENTS

Factors are based on the allocation of the original cost less depreciation other than those items being allocation, as follows:

Customer Classification (1)	Original Cost Less Depreciation (2)	Allocation Factor (3)
Residential	254,755,347	0.6575
Commercial	112,946,623	0.2915
Public Authority	956,077	0.0025
Private Fire Service	3,712,581	0.0096
Public Fire Service	15,088,321	0.0389
	$387,458,950	1.0000

FACTOR 18: ALLOCATION OF INCOME TAXES AND INCOME AVAILABLE FOR RETURN

Factors are based on the allocation of the original cost measure of value rate base as hown below.

Customer Classification (1)	Original Cost Measure of Value (2)	Allocation Factor (3)
Residential	187,524,758	0.6584
Commercial	82,913,729	0.2911
Public Authority	702,400	0.0025
Private Fire Service	2,715,058	0.0095
Public Fire Service	10,976,013	0.0385
	$284,831,959	1.0000

FACTOR 19: ALLOCATION OF REGULATORY COMMISSION EXPENSES, ASSESSMENTS, AND OTHER WATER REVENUE

Factors are based on the allocation of the total cost of service, excluding those items being allocated.

Customer Classification (1)	Total Cost of Service (2)	Allocation Factor (3)
Residential	43,795,383	0.6862
Commercial	17,775,251	0.2785
Public Authority	154,386	0.0024
Private Fire Service	499,422	0.0078
Public Fire Service	1,600,643	0.0251
	63,825,086	1.0000

FACTOR 20: ALLOCATION OF PUBLIC FIRE

Factors are based on the relative cost of meters by size and customer classification

Customer Classification	5/8" Dollar Equivalents	Allocation Factor
(1)	(2)	(3)
Residential	131,574	0.6534
Commercial	69,143	0.3434
Public Authority	661	0.0033
Private Fire Service	0	0.0000
Total	201,378	1.0000

SUMMARY OF AVERAGE DAILY SEND OUT AND MAXIMUM DAILY USAGES FOR THE YEARS OF 2012-2021

Year	Average Daily Send Out MGD	Maximum Daily Use	
		MGD	Ratio to Average
(1)	(2)		
2012	40.495	84.000	2.07
2013	42.126	82.000	1.95
2014	41.652	84.000	2.02
2015	43.128	85.467	1.98
2016	42.927	81.662	1.90
2017	41.637	83.729	2.01
2018	43.512	86.680	1.99
2019	41.103	82.539	2.01
2020	41.699	83.528	2.00
2021	44.376	88.506	1.99
Average			1.99

Source: A.1 Accounts and water sales volume by customer class for the past 10 years.xlsx
and Black & Veatch Customer Class Load Study