

Ventura County Waterworks
District No. 8

Water Cost of Service and Rate Study

Report / October 25, 2019

October 25, 2019

Michael Kang
Principal Engineer
Ventura County Waterworks District No. 8
2929 Tapo Canyon Road
Simi Valley, CA 93063

Subject: Water Cost of Service and Rate Study

Dear Mr. Kang,

Raftelis Financial Consultants, Inc. (Raftelis) is pleased to provide this Water Cost of Service and Rate Study (Study Report) for Ventura County Waterworks District No. 8 (Waterworks) to address current financial challenges Waterworks is facing and to establish water rates that are equitable and in compliance with Proposition 218.

The major objectives completed with the Study include:

- Developing a ten-year financial plan to ensure financial sufficiency, meet operations and maintenance (O&M) costs including the cost of purchasing and distributing water, fund the long-term capital improvement plan (CIP), and ensure prudent reserves.
- Conducting a cost of service analysis.
- Designing fair and equitable water rates that achieve the Waterworks' policy objectives including financial sustainability, affordability of service, and conservation, and compliance with Proposition 218.

The Study Report summarizes the key findings and recommendations related to the development of the financial plans and details the development of the updated cost of service allocations and proposed water rates.

It has been a pleasure working with you, and we thank you and the Waterworks staff for the support provided during this study.

Sincerely,

A handwritten signature in black ink, appearing to read 'Sanjay Gaur'.

Sanjay Gaur
Vice President

A handwritten signature in black ink, appearing to read 'Kevin Kostiuk'.

Kevin Kostiuk
Senior Consultant

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1. Executive Summary

1.1. Background of the Study

The Ventura County Waterworks District No. 8 (Waterworks) serves approximately 24,000 connections across roughly 60 percent of the City of Simi Valley. Waterworks provides potable and recycled water through two separate systems. The potable water system relies on water imported via Calleguas Municipal Water District (CMWD) and a fractional amount of local groundwater produced by two wells in Tapo Canyon. The potable distribution system includes 43 storage tanks, 22 pump stations across several elevations, and 357 miles of distribution pipeline. The City of Simi Valley's Water Quality Control Plant produces and distributes recycled water to the Simi Valley Landfill and an industrial complex. Though a special district, Waterworks is managed by City of Simi Valley staff with the City Council serving as Waterworks Board of Directors.

Waterworks' existing rate structure was developed and completed in 2015, and the current rates are effective as of January 2, 2019. The rate structure for Waterworks' water service consists of a fixed, bimonthly service charge and a variable volumetric component. Service charges for residential customers are uniform and differentiated by dwelling unit type, whereas non-residential and recycled water service charges vary by the size of the meter serving the property. The variable volumetric component is calculated based on the number of billing units of water delivered to a property, multiplied by rates that vary by customer class. One billing unit is one hundred cubic feet (CCF) which equals 748 gallons of water.

In 2015, the Waterworks District Board (Board) adopted a five-year program of increases for fiscal year (FY) 2015-16 through FY 2019-20, as well as an amended rate structure, changing from tiered commodity rates to a uniform commodity rate for residential customers. Rates are implemented on a calendar year basis (mid-FY), effective each year on January 1. Waterworks contracted with Raftelis in 2019 to conduct a Water Rate Study (Study) to include a ten-year Financial Plan, cost of service (COS) analysis, and rate design. As a result of this Study, Raftelis proposes five additional years of revenue and rate adjustments for adoption by the Waterworks. The Study presents the financial plan, cost of service analysis, and water rate derivation for implementation in January 2021, as well as customer bill impacts and a comparison of water service charges relative to neighboring agencies.

This Executive Summary compiles the proposed financial plan and proposed charges, and contains a description of the rate study process, legal requirements, and rate-setting methodology. Waterworks' desired Study outcomes were to establish fair and equitable rates that:

- » Proportionately allocate the costs of providing service in accordance with California Constitution Article XIII D, Section 6 (commonly referred to as Proposition 218);
- » Meet Waterworks' financial needs in terms of operational expenses, capital investment to maintain the water system, and cash reserves;
- » Maintain affordable charges for customers and include an optional component to incentivize conservation;
- » Provide revenue stability and financial sufficiency in times of water supply shortage, mandatory conservation, or reduced water demand; and
- » Are easy for customers to understand and easy for Waterworks staff to implement and update in the future.

1.2. Objectives of the Study

The major tasks of the Study include:

1. Developing a ten-year financial plan to ensure financial sufficiency, meet operations and maintenance (O&M) costs including the cost of purchasing and distributing water, fund the long-term capital improvement plan (CIP), and ensure prudent reserves.
2. Conducting a cost-of-service analysis.
3. Designing fair and equitable water rates that achieve the Waterworks' policy objectives including financial sustainability, affordability of service, conservation, and compliance with Proposition 218.

This Study was prepared using the principles established by the American Water Works Association's (AWWA) "Principles of Water Rates, Fees, and Charges: Manual of Water Supply Practices M1, 6th edition" (M1 Manual). The M1 Manual's general principles of rate structure design and the objectives of the Study are described below.

According to the M1 Manual, the first step in the ratemaking process is to ascertain the adequate and appropriate level of funding for a given utility, which is referred to as determining the "revenue requirement." This analysis considers the short-term and long-term service objectives of the utility over a given planning horizon, including capital facilities, system operations and maintenance, and financial reserve policies to determine the adequacy of a utility's existing rates to recover its costs. Factors that may affect these projections include the number of customers served, water-use trends, nonrecurring sales, weather, water availability, conservation, use restrictions, inflation, interest rates, capital finance needs, and changes in operating and economic conditions, among others.

After determination of the revenue requirement, the next step is the cost of service analysis. Utilizing an agency's approved budget, financial reports, system assets database, operating data, engineering data, and capital improvement plans, a rate study generally categorizes (i.e., functionalizes) the system costs (e.g., treatment, storage, pumping, etc.), including O&M and asset costs, among major operating functions.

After the assets and the costs of operating those assets are properly categorized by function, these "functionalized costs" are allocated first to cost-causation components, and then to the various customer classes (e.g., single-family residential, multi-family residential, commercial, and irrigation) by determining the characteristics of those classes and the contribution of each to incurred costs such as supply costs, base delivery costs, peaking costs, customer costs, conservation costs, and other service characteristics.

Rate design is the final step of the M1 Manual's rate-making process and uses the revenue requirement and cost of service analysis to determine appropriate rates for each customer class. Rates utilize "rate components" that build up to final commodity charges and rates for fixed charges, for the various customer classes and meter sizes serving customers.

1.3. Legal Requirements and Rate Setting Methodology

1.3.1. CALIFORNIA CONSTITUTION – ARTICLE XIII D, SECTION 6 (PROPOSITION 218)

Proposition 218 was enacted by voters in 1996 to ensure, in part, that fees and charges imposed for ongoing delivery of a service to a property (property-related fees and charges) are proportional to and do not exceed the cost of providing service. Water service fees and charges are property-related fees and charges subject to the provisions of California Constitution Article XIII D, Section 6. The principal requirements, as they relate to public water service fees and charges are as follows:

1. Revenues derived from the fee or charge shall not exceed the costs required to provide the property-related service.
2. Revenues derived by the fee or charge shall not be used for any purpose other than that for which the fee or charge was imposed.
3. The amount of the fee or charge imposed upon any parcel shall not exceed the proportional cost of service attributable to the parcel.
4. No fee or charge may be imposed for a service unless that service is actually used or immediately available to the owner of property.
5. A written notice of the proposed fee or charge shall be mailed to the record owner of each parcel not less than 45 days prior to a public hearing, when the agency considers all written protests against the charge.

As stated in AWWA’s M1 Manual, “water rates and charges should be recovered from classes of customers in proportion to the cost of serving those customers.” Raftelis follows industry standard rate setting methodologies set forth by the AWWA M1 Manual to ensure this Study meets Proposition 218 requirements and creates rates that do not exceed the proportionate cost of providing water services on a parcel basis.

1.3.2. CALIFORNIA CONSTITUTION – ARTICLE X, SECTION 2

Article X, Section 2 of the California Constitution states the following:

“It is hereby declared that because of the conditions prevailing in this State the general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare.”

Article X, Section 2 of the State Constitution establishes the need to preserve the State’s water supplies and to discourage the waste or unreasonable use of water by encouraging conservation. By definition, public agencies are constitutionally mandated to maximize the beneficial use of water, prevent waste, and encourage conservation.

In addition, Section 106 of the California Water Code declares that the highest priority use of water is for domestic purposes, with irrigation secondary. To meet the objectives of Article X, Section 2, Water Code Section 375 et seq., a water purveyor may utilize its water rate design to incentivize the efficient use of water. Rate classes must be based on the proportionate costs incurred to provide water to customer classes and on a parcel basis within each customer class to achieve compliance with Proposition 218.

Waterworks is charged with mandates by the State of California to achieve reduced per capita water use. Recurring drought conditions underscore that California’s water resources are finite and must be managed responsibly for sustainable future water supplies. Considering recurring drought, statutory conservation requirements (e.g. SBx7-7),

service connection growth, groundwater conditions, regulatory and environmental issues, and dependence on imported water supplies, water conservation becomes a low-cost, practical means of ensuring adequate future supplies.

1.3.3. COST-BASED RATE-SETTING METHODOLOGY

As stated in the AWWA M1 Manual, “the costs of water rates and charges should be recovered from classes of customers in proportion to the cost of serving those customers.” To develop water rates that comply with Proposition 218 and industry standards while meeting other emerging goals and objectives of Waterworks, there are four major steps discussed below and previously acknowledged in Section 1.2.

1.3.3.1. Calculate the Revenue Requirement

The rate-making process starts by determining the base year (rate setting year) revenue requirement, which for this Study is FY 2021 which runs from July 1, 2020 through June 30, 2021. The revenue requirement should sufficiently fund the utility’s O&M expenses, capital expenditures, and reserve funding. Waterworks has no debt service.

1.3.3.2. Cost of Service Analysis

The annual cost of providing water service is distributed among customer classes commensurate with their service requirements. A cost of service (COS) analysis broadly involves the following steps:

1. **Functionalize costs.** Examples of functions are supply, treatment, transmission, distribution, storage, meter servicing, and customer billing and collection. Capital costs are allocated on the basis of the existing assets such as wells, reservoirs, pump stations, pipelines, meters, etc.
2. **Allocate cost of service to cost components.** Cost components include capacity-related costs (peaking costs), water supply costs, base delivery costs, customer costs, conservation, public fire protection, meter service, and customer servicing and billing costs.
3. **Distribute the cost components.** Calculated unit costs and respective units of service distribute the cost components to customer classes in proportion to their demands and burdens on the water system, as described in the M1 Manual.

A COS analysis considers both the average quantity of water consumed (base costs) and the peak rate at which it is consumed (peaking or capacity costs as identified by maximum day and maximum hour demands¹). Peaking are costs that are incurred during peak times of consumption. There are additional costs associated with designing, constructing, operating, maintaining and ultimately repairing and replacing facilities to meet peak demands. These peak demand costs need to be allocated to those customers whose water usage patterns generate additional costs for the utility. In other words, not all customer classes and not all customers share the same responsibility for peaking related costs.

1.3.3.3. Rate Design and Calculations

Rates do more than simply recover costs. Within the legal framework and industry standards, properly designed rates should support and optimize a blend of utility objectives, such as conservation, affordability for essential needs, revenue stability, and water resource management, among other objectives. Rates act as a public information tool in communicating these objectives to customers.

¹ System capacity is the system’s ability to supply water to all delivery points at the time of demand. Coincidental peaking factors are calculated for each customer class at the time of greatest system demand, known as peak demand. Both the operating costs and capital asset related costs incurred to accommodate the peak flows are generally allocated to each customer class based upon the class’s relative demands during the peak month, day, and hour event.

1.3.3.4. Rate Adoption

Rate adoption is the last step of the rate-making process. Raftelis documents the Rate Study results in this Study Report which reflects the basis upon which the rates were calculated, the rationale and justifications behind the proposed charges, any changes to rate structures, and their anticipated financial impacts to ratepayers.

1.4. Results and Recommendations

Table 2-1 shows the proposed revenue adjustments for Waterworks which are used to calculate the proposed rates. Although Table 1-1 shows anticipated revenue adjustments for FYs 2021 through 2025, Waterworks may choose to review and confirm the revenue adjustments and proposed rates after adoption of the five-year plan². The first revenue adjustment is proposed for implementation in January 2021. All subsequent revenue adjustments will take effect in January of each fiscal year, through January 2025. The assumptions used in calculating the revenue adjustments are described in more detail in Section 4.

Table 1-1: Proposed Annual Revenue Adjustments

Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Date Effective	January 1, 2021	January 1, 2022	January 1, 2023	January 1, 2024	January 1, 2025
Revenue Adjustment	3.5%	3.5%	3.5%	3.5%	3.5%

1.4.1. FACTORS AFFECTING REVENUE REQUIREMENTS

The following factors impact Waterworks' revenue requirements, and thus its rates.

- » **Inflation.** Waterworks faces annual increases in operating costs from general inflation, energy inflation, imported water supply cost increases, and construction cost inflation, among others. These inflationary pressures are between 3% and 5% per year. Due to inflationary pressures operating expenses are projected to increase from approximately \$42 million in FY 2020 to \$53.1 million in FY 2025.
- » **Capital Investment.** Waterworks has a substantial capital improvement program (CIP) over the next two years, with annual routine repair and replacement (R&R) projects in the years beyond. The six-year CIP from FY 2020 through FY 2025 is \$31.1 million or approximately \$5.2 million per year. The CIP is proposed to be paid for exclusively with rate revenues and existing cash reserves.
- » **Adopted Reserves Policy.** The Rate Study proposes a new financial reserves policy to ensure that Waterworks has sufficient cash on hand to meet operating cash flow requirements; award contracts and fund capital projects in a timely manner; and reduce risk from fluctuating water sales revenues. The reserve target in the current fiscal year is approximately \$17 million and consists of a 90-day operating reserve, one-year of average CIP, and 5 percent of current water sales revenues. The proposed reserve policy is explained in greater detail in **Section 3**.
- » **Reduced Water Demand.** Water use remains well below pre-drought levels due to behavioral changes, landscape modifications, and continuing passive conservation from improved fixture efficiencies. Most of these changes translate into permanent reductions in water use and therefore demand is expected to remain at or near current levels over the planning horizon.

² The Board maintains the right to implement rates that are *lower* than adopted. If it is determined that a rate *higher* than has been adopted is required, the Board will have to adopt new rates and Waterworks will be required to re-notice customers in accordance with Proposition 218.

Given the reasons stated above, Waterworks requires a 3.5 percent increase in revenue each year from FY 2021 through FY 2025. The increase will generate approximately \$20.2 million in total additional revenue between FY 2021 and FY 2025. This increase is exclusive of water supply cost increases from Waterworks purveyor Calleguas Municipal Water District. Increases in wholesale water supply costs will be passed-through to customers automatically in each fiscal year, in accordance with AB 3030.

1.4.2. PROPOSED BIMONTHLY FIXED CHARGES

Table 1-2 shows the current and proposed rates for the bimonthly service charge by customer class and meter size for the Study period. The rates for the current and proposed bimonthly fixed charges are calculated on the basis of the size of the meter serving a non-residential property and the class of customer serving a residential property. Residential service charges are per dwelling unit. Recycled water service charges are proposed to be harmonized with non-residential service charges. Fire service charges are calculated on the basis of the diameter of fire line serving a property. The proposed calendar year (CY) 2021 rates represent the new cost of service rates, inclusive of the 3.5 percent revenue adjustment. Subsequent CY rates are adjusted by the revenue adjustment percentage found in **Table 2-1**. All rates are rounded up to the nearest whole penny.

Table 1-2: Current and Proposed Fixed Service Charges

Bimonthly Service Charges	Current CY 2019	Adopted CY 2020	Proposed CY 2021	Proposed CY 2022	Proposed CY 2023	Proposed CY 2024	Proposed CY 2025
Residential (per dwelling unit)							
Single Family	\$61.00	\$61.00	\$68.00	\$70.38	\$72.85	\$75.40	\$78.04
Multi Family	\$42.70	\$48.85	\$42.06	\$43.54	\$45.07	\$46.65	\$48.29
Commercial/Non-Residential							
3/4-inch	\$85.20	\$93.95	\$68.00	\$70.38	\$72.85	\$75.40	\$78.04
1-inch	\$132.40	\$144.00	\$109.73	\$113.58	\$117.56	\$121.68	\$125.94
1.5-inch	\$250.45	\$269.20	\$214.08	\$221.58	\$229.34	\$237.37	\$245.68
2-inch	\$392.10	\$419.40	\$339.29	\$351.17	\$363.47	\$376.20	\$389.37
3-inch	\$840.60	\$895.15	\$735.80	\$761.56	\$788.22	\$815.81	\$844.37
4-inch	\$1,501.60	\$1,596.20	\$1,320.13	\$1,366.34	\$1,414.17	\$1,463.67	\$1,514.90
6-inch	\$3,319.35	\$3,524.10	\$2,927.03	\$3,029.48	\$3,135.52	\$3,245.27	\$3,358.86
Recycled Water							
3/4-inch	\$37.40	\$37.40	\$68.00	\$70.38	\$72.85	\$75.40	\$78.04
1-inch	\$74.80	\$74.80	\$109.73	\$113.58	\$117.56	\$121.68	\$125.94
1.5-inch	\$149.60	\$149.60	\$214.08	\$221.58	\$229.34	\$237.37	\$245.68
2-inch	\$261.79	\$261.79	\$339.29	\$351.17	\$363.47	\$376.20	\$389.37
3-inch	\$560.99	\$560.99	\$735.80	\$761.56	\$788.22	\$815.81	\$844.37
4-inch	\$1,121.97	\$1,121.97	\$1,320.13	\$1,366.34	\$1,414.17	\$1,463.67	\$1,514.90
6-inch	\$2,243.94	\$2,243.94	\$2,927.03	\$3,029.48	\$3,135.52	\$3,245.27	\$3,358.86
Auto Fire Sprinkler							
2-inch or less	\$25.18	\$25.18	\$11.47	\$11.88	\$12.30	\$12.74	\$13.19
3-inch	\$35.90	\$35.90	\$23.05	\$23.86	\$24.70	\$25.57	\$26.47
4-inch	\$48.35	\$48.35	\$43.02	\$44.53	\$46.09	\$47.71	\$49.38
6-inch	\$72.34	\$72.34	\$114.71	\$118.73	\$122.89	\$127.20	\$131.66
8-inch	\$96.23	\$96.23	\$238.36	\$246.71	\$255.35	\$264.29	\$273.55
10-inch	\$120.25	\$120.25	\$424.35	\$439.21	\$454.59	\$470.51	\$486.98

1.4.3. PROPOSED COMMODITY RATES

Table 1-3 shows the proposed rates for each customer class, which are uniform regardless of the quantity of water used. The proposed calendar year (CY) 2021 rates represent the new cost of service rates, inclusive of the 3.5 percent revenue adjustment. Subsequent CY rates are adjusted by the revenue adjustment percentages found in Table 1-1. The rates for the current and proposed commodity charges are calculated on the basis of the amount of water delivered in one hundred cubic feet (CCF). All rates are rounded up to the nearest whole penny.

Table 1-3: Current and Proposed Uniform Commodity Charges

Commodity Charge per CCF	Current CY 2019	Adopted* CY 2020	Proposed CY 2021	Proposed CY 2022	Proposed CY 2023	Proposed CY 2024	Proposed CY 2025
Single Family Residential	\$3.86	\$3.85	\$4.04	\$4.19	\$4.34	\$4.50	\$4.66
Commercial/ Multi-Family/ Other	\$3.89	\$4.00	\$3.83	\$3.97	\$4.11	\$4.26	\$4.41
Landscape/Schools/etc.	\$4.09	\$4.20	\$4.51	\$4.67	\$4.84	\$5.01	\$5.19
Lift Charge (per CCF per Lift)	\$0.12	\$0.13	\$0.13	\$0.14	\$0.15	\$0.16	\$0.17
Recycled Water	\$2.60	\$2.60	\$3.10	\$3.21	\$3.33	\$3.45	\$3.58

**Adopted CY 2020 Rates include estimated pass-through of \$0.09 per CCF; proposed rates do not account for any future pass-through*

2. General Assumptions

2.1. Inflation

The Study period is FY 2021 to 2025, with proposed revenue adjustments and rates presented for the same time period. Various types of assumptions and inputs are incorporated into the Study based on discussions with and/or direction from Waterworks staff. These include the projected number of accounts, water demand over time, and inflation factors.

These escalation factors used, and explained below, show projected increases in various cost categories and non-operating revenues each year across the Study period. The same factors are applied to all years beginning FY 2021. FY 2020 values represent Waterworks' adopted budget. Raftelis worked with Waterworks staff to escalate individual budget line items according to appropriate escalation factors. Inflationary factors are presented in **Table 2-1**.

A general inflation rate of three percent is based on the long-term change in the United States Department of Labor, Bureau of Labor Statistics, Consumer Price Index (CPI). Waterworks general expenses, salaries, and benefits are projected to trend at the general inflation rate. Capital cost inflation is estimated at four percent per year based on the long-term historical construction cost index (CCI) from Engineering News-Record (ENR). Utilities expenses reflect the prices of electricity for system-wide distribution pumping, elevation pumping, and other Waterworks uses of energy. The imported water supply purchases escalation rate of five percent per year and recycled water purchases escalation rate of three percent per year are determined based on input from Waterworks staff and historical increases in purchased water costs from Calleguas Municipal Water District (CMWD). In order to project non-operating revenues, the Study assumes that all miscellaneous revenues will increase at one percent per year through FY 2025. Interest earned on reserves are based on the FY 2018 weighted average rate of return for the City of Simi Valley as provided by Waterworks staff.

Table 2-1: Inflationary and Other Assumptions

Description	Value
Annual Inflation: Expenses	
General Expenses	3.00%
Capital Expenses	4.00%
Salary Expenses	3.00%
Benefits Expenses	3.00%
Utilities Expenses	5.00%
Imported Water Purchases	5.00%
Recycled Water Purchases	3.00%
Annual Inflation: Revenues	
Miscellaneous Revenues	1.00%
Reserve Interest Earnings	
Interest Rate	1.34%

2.2. Projected Water Demand and Connection Growth

To estimate future water demand, two primary factors are used – account growth from new connections and water demand relative to FY 2019 (July 1, 2018 to June 30, 2019), the baseline consumption year within the rate model. It is estimated that the total number of accounts for all customer classes will grow by 0.29 percent each year from FY 2020 through FY 2025.

The demand for potable water in FY 2019 was nine percent lower than in FY 2018. Further passive conservation and demonstrated modest post-drought rebounds in demand in the region, temper future demand projections. For planning purposes, the depressed demand is assumed to remain across the study, through FY 2025. Recycled water demand was steady from FY 2018 to FY 2019. Recycled water demand is expected to be stable across the study, through FY 2025.

Reflecting elevated water use during the summer months, water purchases July-December are 58.5 percent of the annual water purchase demand and January-June purchases are 41.5 percent. These factors were used to project the fiscal year revenues based on purchased water rates which adjust in January of each fiscal year. These water account and usage growth assumptions are shown in **Table 2-2**

Table 2-2: Water Account and Usage Assumptions

Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Annual Water Connection Growth (all Customer Classes)	N/A	0.29%	0.29%	0.29%	0.29%	0.29%	0.29%
Potable Water Demand Factor	91%	100%	100%	100%	100%	100%	100%
Recycled Water Demand Factor	100%	100%	100%	100%	100%	100%	100%
Percent of Annual Water Purchases (July-December)	58.5%	58.5%	58.5%	58.5%	58.5%	58.5%	58.5%
Percent of Annual Water Purchases (January-June)	41.5%	41.5%	41.5%	41.5%	41.5%	41.5%	41.5%

3. Financial Reserve Policies

Reserve policies provide a basis for Waterworks to cope with fiscal emergencies such as revenue shortfalls, asset failure, and natural disasters, among others. They also provide guidelines for sound financial management, with an overall long-range perspective to maintain financial solvency and mitigate financial risks associated with revenue instability, volatile capital costs, and emergencies.

Table 3-1 details the reserve type, recommended policy, and target level in FY 2020 for Waterworks. Raftelis recommends that the Operating Fund have an Operating Reserve equal to 90 days of annual operating expenses, or approximately \$10.59 million. This reserve provides cash flow in case of revenue shortfalls and for working capital. Considerations for billing frequency, seasonal fluctuations in expenditures, and seasonal fluctuations in demand, among others, determine the recommended reserve target.

Appropriate Capital Repair and Replacement (R&R) Reserve levels consider long-term capital improvement program (CIP) expenditures, projects to be debt financed versus rate or grant funded, and system age, among other factors. Generally, an amount equal to one to three years of average CIP, or a multiple of annual system replacement cost depreciation, is appropriate. The main factor to consider when determining the target for a capital reserve is the intended use of the reserve. When the purpose of the capital reserve is to mitigate rate spikes by smoothing out revenue needs associated with routine capital R&R, contributions to the reserve may be made based on the estimated average annual routine R&R capital need. Based on the current year of capital R&R and the five-year forward-looking CIP, Raftelis recommends one year of average CIP for the capital reserve, or \$4.92 million.

A Rate Stabilization Reserve is established for unforeseen emergencies, interruptions, or other challenges impacting revenues (e.g., a reoccurring drought). An amount equal to a percentage of annual volumetric rate revenue is set aside to be utilized during revenue shortfalls, to smooth out rate impacts, or to forego implementation of temporary shortage charges. Each utility is unique and rate stabilization reserves are influenced by several variables, including water supply reliability, source cost exposure, and revenues from fixed versus variable sources, as well as other system factors. Waterworks collects approximately 26 percent of its rate revenue from fixed charges with the remaining 74 percent from variable water sales which are subject to seasonal and annual fluctuation. While Waterworks has significant avoidable costs (when the utility does not sell water it does not purchase water from CMWD) there are fixed costs that are incurred regardless of water sales. Given historically low per capita demand post-drought, and the share of avoidable costs relative to total operating costs, Raftelis recommends a rate stabilization reserve equal to five percent of commodity charge revenues, or approximately \$1.45 million in current dollars. **Table 3-1** shows the total target for all reserves is approximately \$16.96 million in FY 2020.

Table 3-1: Proposed Financial Reserves Policies

Reserve	Policy	FY 2020 Target
Operating Reserve	90 days of annual O&M expenses	\$10,585,025
Capital R&R Reserve	One year of annual average CIP expenditures	\$4,919,813
Rate Stabilization Reserve	5 percent of annual Commodity Charge revenues	\$1,452,129
Total Reserves		\$16,956,967

4. Long-Term Financial Plan

This section describes Waterworks' customer account and water use data, as well as the corresponding financial plan. To develop the financial plan, Raftelis projects annual revenues and expenses; models reserve balances; incorporates capital expenditures, debt service, and inflationary pressures; and calculates debt service coverage ratios to estimate the amount of any additional rate revenue required in each year of the Study. This section includes a discussion of O&M expenses, the CIP, reserve funding, projected revenue under existing rates and the revenue adjustments required to ensure the financial sustainability and solvency of the utility.

4.1. Revenue Requirements

A review of a utility's revenue requirements is a key first step in the rate study process. The review involves an analysis of annual rate revenues from existing rates, O&M expenses, capital expenditures, and reserve requirements.

4.1.1. REVENUES FROM CURRENT RATES

The current rates, last updated in January 2019, were originally developed in the 2015 Rate Study by Carollo Engineers. Waterworks' rate structure consists of the following components – a fixed charge component (bimonthly service charge) and a variable volumetric charge component (commodity charge) for potable water; a fixed charge component and a variable volumetric charge component for recycled water; and for certain customers a bimonthly charge for private fire service. The bimonthly fixed service charge is determined on the basis of the size of the water meter serving a property or customer class and increases with meter size for non-residential customers. As described in more detail in **Section 5**, as larger meter sizes generally consume more water on average and tend to have higher rates of peaking, the costs to provide service to these customers are higher. A single-family residential (SFR) connection has a bimonthly fixed service charge of \$61.00. The rates for the current fixed service charge are shown in **Table 4-1**.

The bimonthly fixed service charge for recycled water is also determined on the basis of the size of the water meter serving a property and increases with meter size. The current rates for the bimonthly recycled water charge are shown in **Table 4-1**. The rates for recycled water service are discussed in more detail in **Section 7.4**. Waterworks also imposes a fixed bimonthly fire service charge on properties that are required as a condition of extending or initiating water service to install a private fire suppression system, or where the customer or property owner has installed a private fireline for the purpose of fire service protection. The rates for the bimonthly fire service charge are established on the basis of the diameter of the fireline serving a property and are calculated to recover the costs associated with fire flow capacity in the water distribution system. The current rates for the bimonthly fire service charge for private firelines are shown in **Table 4-1**. The rates for the Private Fire Protection Charges are discussed in more detail in **Section 5.9** and **Section 7.3**.

Table 4-1: Current and Adopted Fixed Service Charges

Bimonthly Service Charges	Current CY 2019	Adopted CY 2020
Residential (per dwelling unit)		
Single Family	\$61.00	\$61.00
Multi Family	\$42.70	\$48.85
Commercial/Non-Residential		
3/4-inch	\$85.20	\$93.95
1-inch	\$132.40	\$144.00
1.5-inch	\$250.45	\$269.20
2-inch	\$392.10	\$419.40
3-inch	\$840.60	\$895.15
4-inch	\$1,501.60	\$1,596.20
6-inch	\$3,319.35	\$3,524.10
Recycled Water		
3/4-inch	\$37.40	\$37.40
1-inch	\$74.80	\$74.80
1.5-inch	\$149.60	\$149.60
2-inch	\$261.79	\$261.79
3-inch	\$560.99	\$560.99
4-inch	\$1,121.97	\$1,121.97
6-inch	\$2,243.94	\$2,243.94
Auto Fire Sprinkler		
2-inch or less	\$25.18	\$25.18
3-inch	\$35.90	\$35.90
4-inch	\$48.35	\$48.35
6-inch	\$72.34	\$72.34
8-inch	\$96.23	\$96.23
10-inch	\$120.25	\$120.25

The volumetric component of a customer’s water bill is calculated based on the number of units of water delivered to a customer’s property, measured in CCF³ (also referred to as one “billing unit” or BU), multiplied by the rates that vary by customer class. The current rates are shown in **Table 4-2**. The rates in **Table 4-2**, multiplied by the amount of use, determine the volumetric component of a customer’s bill.

³CCF stands for hundred cubic feet, a common measure of water volume in North America. One hundred cubic feet equals 748 gallons of water.

Table 4-2: Current and Adopted Commodity Charges

Commodity Charge per CCF	Current CY 2019	Adopted* CY 2020
Single Family*	\$3.86	\$3.85
Commercial/Multi-Family/Other*	\$3.89	\$4.00
Landscape/Schools/etc.*	\$4.09	\$4.20
Lift Charge (per CCF per Lift)	\$0.12	\$0.13
Well Water	\$1.54	\$1.54
Recycled Water	\$2.60	\$2.60

**Current CY 2019 rates include \$0.61 cumulative pass-through of increased Calleguas costs since 2015; Adopted CY 2020 Rates include estimated cumulative pass-through of \$0.70 per CCF since 2015.*

Table 4-3 shows the projected number of water connections, recycled water connections, and fireline connections by meter size, by fiscal year. The number of connections is escalated each year based on the growth assumptions identified in Table 2-2.

Table 4-3: Projected Fixed Service Charge Units of Service (Water Meters/Dwelling Units)

Number of Water Meters/Dwelling Units	Actual FY 2019	Projected FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023	Projected FY 2024	Projected FY 2025
Residential							
Single Family	23,530	23,598	23,667	23,735	23,804	23,873	23,942
Multi Family (Dwelling Units)	7,119	7,140	7,160	7,181	7,202	7,223	7,244
Total Residential	30,649	30,738	30,827	30,916	31,006	31,096	31,186
Commercial							
3/4-inch	259	260	261	261	262	263	264
1-inch	352	353	354	355	356	357	358
1.5-inch	303	304	305	306	307	307	308
2-inch	513	514	516	517	519	520	522
3-inch	43	43	43	43	44	44	44
4-inch	25	25	25	25	25	25	25
6-inch	9	9	9	9	9	9	9
Total Commercial	1,504	1,508	1,513	1,517	1,522	1,526	1,530
Recycled Water							
3/4-inch	0	0	0	0	0	0	0
1-inch	0	0	0	0	0	0	0
1.5-inch	0	0	0	0	0	0	0
2-inch	1	1	1	1	1	1	1
3-inch	1	1	1	1	1	1	1
4-inch	0	0	0	0	0	0	0
6-inch	0	0	0	0	0	0	0

Total Recycled Water	2						
Auto Fire Sprinkler							
2-inch or less	14	14	14	14	14	14	14
3-inch	5	5	5	5	5	5	5
4-inch	108	108	109	109	109	110	110
6-inch	108	108	109	109	109	110	110
8-inch	108	108	109	109	109	110	110
10-inch	2	2	2	2	2	2	2
Total Auto Fire Sprinkler	345	346	347	348	349	350	351

Water demand projections through FY 2025 are shown in **Table 4-4**. The water demand and revenue growth assumptions are identified in **Table 2-2**. Water sales are expected to increase modestly from FY 2019 through FY 2025 due to new connection growth and consistent per capita water demand.

Table 4-4: Projected Water Usage by Customer Class

Water Usage (CCF)	Actual	Projected						
	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Single Family Residential	4,814,310	4,393,727	4,406,469	4,419,248	4,432,063	4,444,916	4,457,807	4,470,734
Commercial/ Multi-Family/Other								
Commercial	471,654	430,450	431,698	432,950	434,206	435,465	436,728	437,994
Industrial	26,035	23,761	23,829	23,899	23,968	24,037	24,107	24,177
Multi-Family Residential	495,672	452,370	453,681	454,997	456,317	457,640	458,967	460,298
Total Commercial/ Multi-Family/ Other	993,361	906,580	909,209	911,846	914,490	917,142	919,802	922,469
Landscape/ Schools/etc.								
Landscape	2,018,619	1,842,270	1,847,613	1,852,971	1,858,345	1,863,734	1,869,139	1,874,559
Schools and Institutional	194,595	177,595	178,110	178,627	179,145	179,664	180,185	180,708
Total Landscape/ Schools/ etc.	2,213,214	2,019,865	2,025,723	2,031,597	2,037,489	2,043,398	2,049,324	2,055,267
Well Water	50	46	46	46	46	46	46	46
Recycled Water	36,640	36,746	36,853	36,960	37,067	37,174	37,282	37,390
TOTAL WATER USAGE (CCF)	8,057,575	7,356,964	7,378,299	7,399,696	7,421,156	7,442,677	7,464,261	7,485,907
Total Water Usage in Acre-Feet	18,498	16,889	16,938	16,987	17,037	17,086	17,136	17,185

Table 4-5 shows the rate revenue generated in each Study year with projected demand and the current rates. Note that revenues for FY 2019 and FY 2020 use existing and adopted rates, respectively from Table 4-1 and Table 4-2. Revenues in FY 2021 and beyond project off of adopted FY 2020 rates. The overall adequacy of water revenues is measured by comparing the projected annual revenue required from rates with projected revenues from the existing rates.

Table 4-5: Projected Status Quo Rate Revenues

Rate Revenues - Fund 761 & 763	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Potable Water Charges							
Fixed Service Charges	\$12,633,137	\$13,540,818	\$13,810,246	\$13,850,295	\$13,890,461	\$13,930,744	\$13,971,143
Commodity Charges	\$28,739,166	\$28,946,763	\$29,194,266	\$29,278,930	\$29,363,839	\$29,448,994	\$29,534,396
Subtotal - Potable Water Charges	\$41,372,303	\$42,487,581	\$43,004,512	\$43,129,225	\$43,254,300	\$43,379,738	\$43,505,539
Recycled Water Charges							
Fixed Service Charges	\$4,937	\$4,944	\$4,958	\$4,973	\$4,987	\$5,001	\$5,016
Commodity Charges	\$95,540	\$95,817	\$96,095	\$96,374	\$96,653	\$96,934	\$97,215
Subtotal - Recycled Water Charges	\$100,477	\$100,761	\$101,053	\$101,346	\$101,640	\$101,935	\$102,231
Other Charges							
Lift Charges	\$664,378	\$724,244	\$755,398	\$757,589	\$759,786	\$761,989	\$764,199
Residential Construction Charges	\$9,652	\$9,652	\$9,652	\$9,652	\$9,652	\$9,652	\$9,652
Subtotal - Other Charges	\$674,031	\$733,897	\$765,051	\$767,242	\$769,439	\$771,642	\$773,852
TOTAL RATE REVENUES	\$42,146,810	\$43,322,239	\$43,870,617	\$43,997,813	\$44,125,379	\$44,253,315	\$44,381,621

The utility also derives revenues from non-rate sources. These revenues consist of other operating, miscellaneous, and non-operating revenues and are summarized in **Table 4-6**.

Table 4-6: Projected Non-Rate Revenues

Non-Rate Revenues	Estimated FY 2019	Budgeted FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023	Projected FY 2024	Projected FY 2025
Fund 761 & 763: Waterworks Funds							
34001 Interest on Investments	\$224,800	\$224,800	\$102,302	\$78,592	\$88,032	\$110,978	\$146,807
34101 Rents & Leases	\$470,000	\$470,000	N/A	N/A	N/A	N/A	N/A
36002 State Assistance	\$3,000	\$3,000	\$3,030	\$3,060	\$3,091	\$3,122	\$3,153
37003 Returned Check (NSF)	\$5,500	\$6,000	\$6,060	\$6,121	\$6,182	\$6,244	\$6,306
37401 Engineering Fees	\$75,000	\$75,000	\$75,750	\$76,508	\$77,273	\$78,045	\$78,826
37405 Inspection Services	\$5,200	\$5,200	\$5,252	\$5,305	\$5,358	\$5,411	\$5,465
37452 Sales to Waterworks	\$1,750,000	\$1,900,000	\$1,919,000	\$1,938,190	\$1,957,572	\$1,977,148	\$1,996,919
37453 Water Standby Charge	\$5,000	\$5,000	\$5,050	\$5,101	\$5,152	\$5,203	\$5,255
37454 Sale of Meters	\$22,000	\$22,000	\$22,220	\$22,442	\$22,667	\$22,893	\$23,122
37461 Door Hanger Charge	\$98,000	\$98,000	\$98,980	\$99,970	\$100,969	\$101,979	\$102,999
37499 Other Public Works	\$5,500	\$6,000	\$6,060	\$6,121	\$6,182	\$6,244	\$6,306
38001 Sale of Surplus Property	\$3,000	\$3,000	\$3,030	\$3,060	\$3,091	\$3,122	\$3,153
38004 Damage Recovery	\$8,000	\$8,000	\$8,080	\$8,161	\$8,242	\$8,325	\$8,408
Subtotal - Fund 761 & 763	\$2,675,000	\$2,826,000	\$2,254,814	\$2,252,630	\$2,283,810	\$2,328,714	\$2,386,719
Fund 762: Waterworks Capital Fund							
34001 Interest on Investment	\$300,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000
37479 Capital Improvement Charges	\$5,000	\$5,000	\$89,951	\$90,320	\$94,198	\$98,007	\$101,742
Subtotal - Fund 762	\$305,000	\$505,000	\$589,951	\$590,320	\$594,198	\$598,007	\$601,742
TOTAL NON-RATE REVENUES	\$2,980,000	\$3,331,000	\$2,844,765	\$2,842,950	\$2,878,008	\$2,926,720	\$2,988,461

4.1.2. OPERATING AND MAINTENANCE EXPENSES

Table 4-7 shows the projected quantity, rates, and total calculated costs of water purchases from CMWD to meet Waterworks’ potable water demand. Lines 1-7 show water volume calculations which assumes system water loss of 5.6 percent and a small increase in annual demand reflecting new connection growth. The rest of the table details Calleguas’ fixed and variable charges. This information builds to the total projected water purchase costs in Line 31.

Table 4-7: Projected Water Purchases

Line #	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
1	Calleguas Water Purchases							
2	Potable Water Demand (CCF)	7,320,172	7,341,401	7,362,691	7,384,043	7,405,456	7,426,932	7,448,470
3	Potable Water Demand (AF)	16,805	16,854	16,902	16,951	17,001	17,050	17,099
4	System Water Loss	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%
5	Required Potable Water Supply (AF)	17,809	17,860	17,912	17,964	18,016	18,069	18,121
6	Less Available Groundwater (AF)	200	200	200	200	200	200	200
7	Total Imported Water from Calleguas	17,609	17,660	17,712	17,764	17,816	17,869	17,921
8								
9	Calleguas Fixed Charges							
10	Combined MWD & CMWD Capacity Charge							
11	<i>July-December</i>	\$757,439	\$711,987	\$687,462	\$721,835	\$757,927	\$795,823	\$835,614
12	<i>January-June</i>	\$711,987	\$687,462	\$721,835	\$757,927	\$795,823	\$835,614	\$877,395
13	Total Combined MWD & CMWD Capacity Charge	\$1,469,426	\$1,399,449	\$1,409,297	\$1,479,762	\$1,553,750	\$1,631,438	\$1,713,009
14								
15	MWD RTS Charge							
16	<i>July-December</i>	\$658,367	\$657,460	\$648,874	\$681,317	\$715,383	\$751,152	\$788,710
17	<i>January-June</i>	\$657,460	\$648,874	\$681,317	\$715,383	\$751,152	\$788,710	\$828,145
18	Total MWD RTS Charge	\$1,315,827	\$1,306,334	\$1,330,191	\$1,396,700	\$1,466,535	\$1,539,862	\$1,616,855
19								
20	Calleguas Variable Charges							
21	<i>July-December Tier 1 Rate (\$/AF)</i>	\$1,375	\$1,423	\$1,472	\$1,546	\$1,623	\$1,704	\$1,789
22	<i>July -December Purchases (AF)</i>	10,301	10,331	10,362	10,392	10,423	10,453	10,484
23	July-December Tier 1 Charges	\$14,164,091	\$14,701,539	\$15,252,378	\$16,061,965	\$16,914,522	\$17,812,331	\$18,757,793
24								
25	<i>January-June Tier 1 Rate (\$/AF)</i>	\$1,423	\$1,472	\$1,546	\$1,623	\$1,704	\$1,789	\$1,879
26	<i>January-June Purchases (AF)</i>	7,308	7,329	7,351	7,372	7,394	7,415	7,437
27	January-June Tier 1 Charges	\$10,398,798	\$10,788,422	\$11,361,066	\$11,964,104	\$12,599,150	\$13,267,903	\$13,972,151
28								
29	Total Tier 1 Charges	\$24,562,888	\$25,489,961	\$26,613,444	\$28,026,069	\$29,513,673	\$31,080,234	\$32,729,944
30								
31	TOTAL PROJECTED WATER PURCHASE COSTS	\$27,348,141	\$28,195,743	\$29,352,932	\$30,902,531	\$32,533,958	\$34,251,534	\$36,059,809
32								
33	Water Purchase Costs based on FY 2021 Calleguas Rates	N/A	N/A	\$29,352,932	\$29,430,982	\$29,509,259	\$29,587,763	\$29,666,494
34	Cumulative Pass Through Costs (FY 2021 Base Year)	N/A	N/A	\$0	\$1,471,549	\$3,024,699	\$4,663,771	\$6,393,315

Total projected O&M expenses are shown in **Table 4-8**. These expenses are summarized by department. Expenses are projected from Waterworks' adopted FY 2020 budget. Expenses beyond FY 2019 use Waterworks estimated costs where known or rely on FY 2020 budgeted values increased using the inflationary assumptions from **Table 2-1**.

Table 4-8: Projected O&M Expenses

O&M Expenses	Estimated FY 2019	Budgeted FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023	Projected FY 2024	Projected FY 2025
Fund 761 & 763: Waterworks Funds							
41010 Regular Salaries	\$2,391,600	\$3,302,669	\$3,401,749	\$3,503,802	\$3,608,916	\$3,717,183	\$3,828,699
41020 Temporary Salaries	\$16,000	\$25,000	\$25,750	\$26,523	\$27,318	\$28,138	\$28,982
41040 Overtime	\$75,600	\$75,600	\$77,868	\$80,204	\$82,610	\$85,088	\$87,641
41200 Deferred Comp - 401k	\$15,000	\$28,660	\$29,520	\$30,405	\$31,318	\$32,257	\$33,225
41210 Deferred Comp - 457	\$34,600	\$35,300	\$36,359	\$37,450	\$38,573	\$39,730	\$40,922
41300 Vision Care	\$10,100	\$11,679	\$12,029	\$12,390	\$12,762	\$13,145	\$13,539
41350 Disability	\$8,000	\$11,091	\$11,424	\$11,766	\$12,119	\$12,483	\$12,858
41400 Group Insurance/Dental	\$58,100	\$77,244	\$79,561	\$81,948	\$84,407	\$86,939	\$89,547
41415 Flex Benefits	\$659,600	\$857,200	\$882,916	\$909,403	\$936,686	\$964,786	\$993,730
41420 CalPERS Health Admin	\$100	\$700	\$721	\$743	\$765	\$788	\$811
41450 Life Insurance	\$8,600	\$8,560	\$8,817	\$9,081	\$9,354	\$9,634	\$9,923
41500 Group Insurance/	\$37,800	\$49,200	\$50,676	\$52,196	\$53,762	\$55,375	\$57,036
41550 Section 125 Admin	\$100	\$300	\$309	\$318	\$328	\$338	\$348
41600 Retirement (PERS)	\$650,000	\$948,848	\$977,313	\$1,006,633	\$1,036,832	\$1,067,937	\$1,099,975
41620 Retirement (HRA)	\$3,500	\$17,600	\$18,128	\$18,672	\$19,232	\$19,809	\$20,403
41650 Medicare Tax	\$36,100	\$58,961	\$60,730	\$62,552	\$64,428	\$66,361	\$68,352
41660 FICA	\$1,000	\$1,000	\$1,030	\$1,061	\$1,093	\$1,126	\$1,159
41700 Workers' Compensation	\$79,000	\$161,447	\$166,290	\$171,279	\$176,417	\$181,710	\$187,161
41800 Leave Accrual	\$116,800	\$97,100	\$100,013	\$103,013	\$106,104	\$109,287	\$112,566
41900 Salary Savings	\$0	(\$248,347)	(\$255,797)	(\$263,471)	(\$271,375)	(\$279,517)	(\$287,902)
42100 Utilities	\$770,000	\$770,000	\$808,500	\$848,925	\$891,371	\$935,940	\$982,737
42150 Communications	\$25,700	\$37,700	\$38,831	\$39,996	\$41,196	\$42,432	\$43,705
42200 Computer - Non Capital	\$18,400	\$0	\$0	\$0	\$0	\$0	\$0
42230 Office Supplies	\$10,000	\$15,500	\$15,965	\$16,444	\$16,937	\$17,445	\$17,969
42235 Furnishings & Equipment	\$7,000	\$9,700	\$9,991	\$10,291	\$10,599	\$10,917	\$11,245
42310 Rentals	\$2,000	\$2,000	\$2,060	\$2,122	\$2,185	\$2,251	\$2,319
42410 Uniform/Clothing	\$13,500	\$13,500	\$13,905	\$14,322	\$14,752	\$15,194	\$15,650
42440 Memberships and Dues	\$17,000	\$17,600	\$18,128	\$18,672	\$19,232	\$19,809	\$20,403
42450 Subscriptions and Books	\$1,400	\$1,500	\$1,545	\$1,591	\$1,639	\$1,688	\$1,739

42520 Meters	\$425,100	\$425,100	\$437,853	\$450,989	\$464,518	\$478,454	\$492,807
42540 Water Purchases	\$27,348,141	\$28,195,743	\$29,352,932	\$30,902,531	\$32,533,958	\$34,251,534	\$36,059,809
42541 Recycled Water	\$73,000	\$75,000	\$77,474	\$80,030	\$82,670	\$85,397	\$88,214
42550 Small Tools/Equip	\$18,500	\$18,500	\$19,055	\$19,627	\$20,215	\$20,822	\$21,447
42560 Operating Supplies	\$156,500	\$156,500	\$161,195	\$166,031	\$171,012	\$176,142	\$181,426
42720 Travel	\$17,000	\$21,800	\$22,454	\$23,128	\$23,821	\$24,536	\$25,272
42730 Training	\$16,700	\$19,100	\$19,673	\$20,263	\$20,871	\$21,497	\$22,142
42790 Mileage	\$500	\$500	\$515	\$530	\$546	\$563	\$580
44010 Professional/Special Services	\$476,100	\$447,300	\$460,719	\$474,541	\$488,777	\$503,440	\$518,543
44012 Outside Legal	\$2,500	\$2,500	\$2,575	\$2,652	\$2,732	\$2,814	\$2,898
44310 Maintenance of Equip	\$338,700	\$338,700	\$348,861	\$359,327	\$370,107	\$381,210	\$392,646
44410 Maintenance Buildings	\$15,000	\$15,000	\$15,450	\$15,914	\$16,391	\$16,883	\$17,389
44490 Other Contract Services	\$747,600	\$530,500	\$546,415	\$562,807	\$579,692	\$597,082	\$614,995
44491 FIS Operations	\$32,600	\$32,600	\$33,578	\$34,585	\$35,623	\$36,692	\$37,792
44492 GIS Operations	\$34,200	\$38,000	\$39,140	\$40,314	\$41,524	\$42,769	\$44,052
44590 Other Insurance	\$204,600	\$206,646	\$212,845	\$219,231	\$225,808	\$232,582	\$239,559
46100 Reimb to General Fund	\$2,429,200	\$2,513,600	\$2,589,008	\$2,666,678	\$2,746,679	\$2,829,079	\$2,913,951
46600 Reimb to Streets	\$60,000	\$60,000	\$61,800	\$63,654	\$65,564	\$67,531	\$69,556
46655 Reimb to Public Fac Imprv	\$45,000	\$0	\$0	\$0	\$0	\$0	\$0
47030 Vehicles	\$0	\$205,000	\$211,150	\$217,485	\$224,009	\$230,729	\$237,651
48500 Maintenance Contracts	\$0	\$2,230,000	\$2,296,900	\$2,365,807	\$2,436,781	\$2,509,885	\$2,585,181
49297 Transfer to Retiree Benefits	\$31,300	\$68,900	\$70,967	\$73,096	\$75,289	\$77,548	\$79,874
49648 Transfer to CERF	\$67,500	\$67,500	\$69,525	\$71,611	\$73,759	\$75,972	\$78,251
49655 Transfer to Public Facility Imprv.	\$0	\$5,000	\$5,200	\$5,408	\$5,624	\$5,849	\$6,083
49656 Transfer to FIS Capital	\$47,500	\$0	\$0	\$0	\$0	\$0	\$0
Additional PERS Pre-payment	\$0	\$0	\$685,297	\$766,572	\$829,514	\$866,769	\$908,730
Subtotal - Fund 761 & 763	\$37,653,841	\$42,060,801	\$44,334,913	\$46,411,141	\$48,565,042	\$50,794,051	\$53,133,592
Fund 762: Waterworks Capital Fund							
46100 Reimb to the General Fund	\$280,900	\$279,300	\$287,679	\$296,309	\$305,199	\$314,355	\$323,785
Subtotal - Fund 762	\$280,900	\$279,300	\$287,679	\$296,309	\$305,199	\$314,355	\$323,785
TOTAL O&M EXPENSES	\$37,934,741	\$42,340,101	\$44,622,592	\$46,707,450	\$48,870,241	\$51,108,405	\$53,457,377

4.1.3. PROJECTED CAPITAL IMPROVEMENT PLAN

Waterworks has programmed approximately \$31.1 million in capital expenditures, exclusive of capitalized expenses, over the next six years (FY 2020-2025). These capital expenditures are shown in **Table 4-9**. The CIP costs in **Table 4-9** account for estimated construction cost inflation. A significant portion of Waterworks’ projected capital expenditures are attributed to the following project types: water main replacements, treatment facility upgrades, storage tank recoats, and capacity upgrades (detailed below). FY 2020 capital costs rely on the summarized totals from Waterworks’ approved budget document.

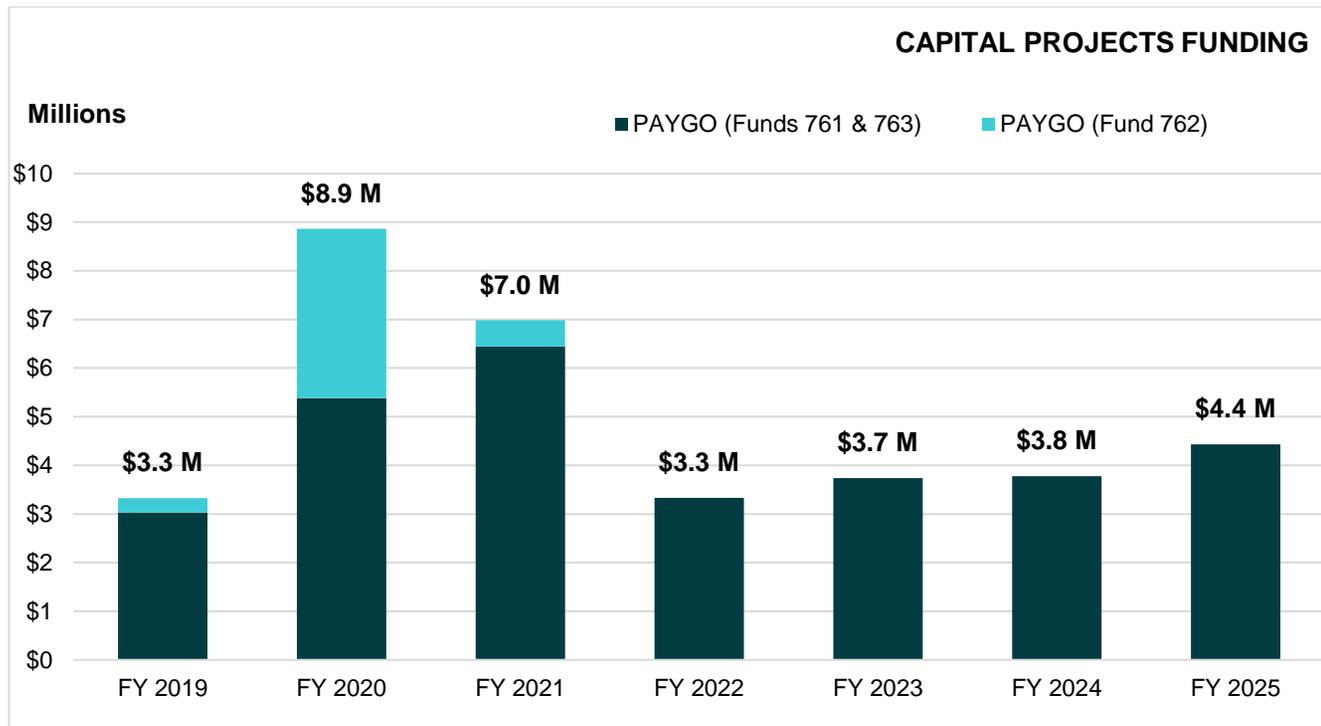
Table 4-9: Planned CIP Expenditures

Line #	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
1	Fund 761 & 763 CIP Projects							
2	Oak Knolls Pump Station Upgrade	\$0	\$405,600	\$0	\$0	\$0	\$0	\$0
3	New Well in Gillibrand Basin – Design	\$0	\$8,492	\$0	\$0	\$0	\$0	\$0
4	Financial Plan Update - Current Rate Study	\$10,422	\$0	\$0	\$0	\$0	\$0	\$0
5	FY17/18 Tank Recoat & Repair Program	\$320,000	\$0	\$0	\$0	\$0	\$0	\$0
6	FY18/19 Tank Recoat & Repair Program	\$396,750	\$0	\$0	\$0	\$0	\$0	\$0
7	Interior Tank Recoating	\$304,529	\$0	\$0	\$0	\$0	\$0	\$0
8	Water main replacement program	\$1,016,222	\$0	\$0	\$0	\$0	\$0	\$0
9	Knolls Zone Water Facilities - Crown Hill Tank	\$0	\$2,456,452	\$0	\$0	\$0	\$0	\$0
10	Water Storage Mixing Systems	\$182,313	\$0	\$0	\$0	\$0	\$0	\$0
11	Small Tank Replacement	\$0	\$378,582	\$0	\$0	\$0	\$0	\$0
12	Waterline Relocation/Box Canyon	\$0	\$301,646	\$0	\$0	\$0	\$0	\$0
13	Walnut Ave Pump Station – Design	\$0	\$62,400	\$0	\$0	\$0	\$0	\$0
14	Seismic Evaluation of Water Tanks	\$0	\$260,000	\$0	\$0	\$0	\$0	\$0
15	Seismic Rehabilitation Projects	\$0	\$0	\$108,160	\$112,486	\$116,986	\$121,665	\$126,532
16	Tank Dive Inspections and Cleaning	\$0	\$41,600	\$64,896	\$44,995	\$58,493	\$48,666	\$63,266
17	Walnut Tank No.1 Repair and Recoating	\$0	\$395,200	\$0	\$0	\$0	\$0	\$0
18	Marr Ranch Tank No. 1 Rafters Repair	\$0	\$0	\$194,688	\$0	\$0	\$0	\$0
19	Walnut Tank No.2 Recoating	\$0	\$0	\$356,928	\$0	\$0	\$0	\$0
20	Hilltop Tank Rafters Repair	\$0	\$0	\$227,136	\$0	\$0	\$0	\$0
21	Flanagan Tank Repair and Recoating	\$0	\$0	\$0	\$489,316	\$0	\$0	\$0
22	Stearns Tanks No 1 and 2 Upgrades	\$0	\$0	\$0	\$371,205	\$0	\$0	\$0
23	Stow Street Tanks No. 1, 2, 3, 4 Tank Repair and Recoating	\$0	\$0	\$0	\$0	\$818,901	\$0	\$0
24	Mellow Lane Tank Repair and Recoating	\$0	\$0	\$0	\$0	\$0	\$158,165	\$0

25	Lilac Tank Repairs	\$0	\$0	\$0	\$0	\$0	\$310,246	\$0
26	Tank Exterior Painting	\$0	\$0	\$162,240	\$168,730	\$175,479	\$182,498	\$189,798
27	Tank Recoating and Rehabilitation	\$0	\$0	\$0	\$0	\$0	\$0	\$759,191
28	Capacity Study	\$0	\$260,000	\$0	\$0	\$0	\$0	\$0
29	Capacity Study Recommended Upgrades	\$0	\$0	\$270,400	\$281,216	\$292,465	\$304,163	\$316,330
30	High Risk Pipeline Preliminary Study, Design and Construction	\$0	\$104,000	\$757,120	\$0	\$0	\$0	\$0
31	Waterline Replacement (Ehlers, Larson, My)	\$0	\$312,000	\$0	\$0	\$0	\$0	\$0
32	Waterline Replacement (Dennis, Rollins, Wells, Peppertree)	\$0	\$0	\$676,000	\$0	\$0	\$0	\$0
33	Waterline Replacement (Black Canyon, Gaston, Rei, Studio West)	\$0	\$0	\$0	\$703,040	\$0	\$0	\$0
34	Waterline Replacement (Casa Grande and Redwood)	\$0	\$0	\$0	\$416,200	\$0	\$0	\$0
35	Waterline Replacement (Gaston, Crown Hill, El Camino Real)	\$0	\$0	\$0	\$348,708	\$0	\$0	\$0
36	Waterline Replacement (Hilltop and Oak Knolls)	\$0	\$0	\$0	\$0	\$549,834	\$0	\$0
37	Waterline Replacement (Del Robles, Foothill, End, El Camino Real)	\$0	\$0	\$0	\$0	\$555,683	\$0	\$0
38	Waterline Replacement (Studio, LosNogales(Pvt), Strip Mall, Leota)	\$0	\$0	\$0	\$0	\$760,408	\$0	\$0
39	Waterline Replacement at Lilac Tank	\$0	\$0	\$0	\$0	\$0	\$294,430	\$0
40	Waterline Replacement at Folly Sims	\$0	\$0	\$0	\$0	\$0	\$710,525	\$0
41	Waterline Replacement (LA Ave)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
42	Waterline Replacement Rehabilitation	\$0	\$0	\$0	\$0	\$0	\$1,216,653	\$2,530,638
43	Service Line Replacement	\$0	\$0	\$108,160	\$112,486	\$116,986	\$121,665	\$126,532
44	Station No. 2 Pump Station Rehabilitation	\$0	\$291,200	\$0	\$0	\$0	\$0	\$0
45	Station No. 1 Pump Station Rehabilitation	\$0	\$0	\$270,400	\$0	\$0	\$0	\$0
46	Pump Station Rehabilitation	\$0	\$0	\$0	\$281,216	\$292,465	\$304,163	\$316,330
47	Simi Groundwater Basin Development	\$800,000	\$104,000	\$3,244,800	\$0	\$0	\$0	\$0
48	Subtotal - Fund 761 & 763	\$3,030,236	\$5,381,172	\$6,440,928	\$3,329,597	\$3,737,698	\$3,772,841	\$4,428,617
49								
50	Fund 762 CIP Projects							
51	New Gillibrand Well No. 32	\$232,800	\$1,404,000	\$0	\$0	\$0	\$0	\$0
52	Purchase Recycled Water Facilities from Calleguas MWD	\$0	\$2,080,000	\$0	\$0	\$0	\$0	\$0
53	Walnut Street Pump Station Construction	\$60,000	\$0	\$540,800	\$0	\$0	\$0	\$0
54	Subtotal - Fund 762	\$292,800	\$3,484,000	\$540,800	\$0	\$0	\$0	\$0
55								
56	TOTAL CIP EXPENDITURES	\$3,323,036	\$8,865,172	\$6,981,728	\$3,329,597	\$3,737,698	\$3,772,841	\$4,428,617

Figure 4-1 highlights the planned CIP expenditures by funding source. Waterworks anticipates using PAYGO funding from Funds 761, 762, and 763 for FY 2019-2021, with subsequent years funded exclusively from Funds 761 and 763. Note that Funds 761 and 763 represent Waterworks’ operating fund, while Fund 762 is Waterworks’ growth-related capital fund.

Figure 4-1: Planned CIP Expenditures by Funding Source



4.2. Existing Financial Plan – No Revenue Adjustments

Table 4-10 displays Waterworks’ proforma from current rates over the Study period. The proforma incorporates revenues and expenses to show the overall position of the utility. All projections shown in the table are based upon Waterworks’ current rate structure and do not include rate adjustments. The proforma incorporates data shown in the preceding tables of this section. Under the “status-quo” no revenue adjustment-scenario revenues generated from rates and other miscellaneous revenues are inadequate to fund operations, planned capital improvement projects, and achieve reserve targets over the Study period. The utility ends the Study period with only 36 days of operating cash on hand.

Table 4-10: Status Quo Financial Plan - Pro Forma (Funds 761, 762, & 763 Combined)

Line #	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
1	Revenues							
2	Rate Revenue Under Existing Rates	\$42,146,810	\$43,322,239	\$43,870,617	\$43,997,813	\$44,125,379	\$44,253,315	\$44,381,621
3	Proposed Revenue Adjustments	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	Calleguas Pass-through Revenues*	\$0	\$0	\$1,082,430	\$2,557,055	\$4,113,289	\$5,755,455	\$7,488,101
5	Capital Improvement Charges	\$300,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000
6	Interest Earnings	\$229,800	\$229,800	\$194,360	\$164,776	\$150,366	\$126,747	\$101,742
7	Other Revenues	\$2,450,200	\$2,601,200	\$2,152,512	\$2,174,037	\$2,195,777	\$2,217,735	\$2,239,913
8	Total Revenues	\$45,126,810	\$46,653,239	\$47,799,919	\$49,393,682	\$51,084,812	\$52,853,252	\$54,711,377
9								
10	O&M Expenses							
11	Salaries & Benefits	\$4,201,600	\$5,519,812	\$5,685,406	\$5,855,969	\$6,031,648	\$6,212,597	\$6,398,975
12	Water Purchases	\$27,348,141	\$28,195,743	\$28,270,501	\$28,345,476	\$28,420,668	\$28,496,079	\$28,571,708
13	Calleguas Pass-through Costs*	\$0	\$0	\$1,082,430	\$2,557,055	\$4,113,289	\$5,755,455	\$7,488,101
14	Reimbursement to General Fund	\$2,710,100	\$2,792,900	\$2,876,687	\$2,962,988	\$3,051,877	\$3,143,434	\$3,237,737
15	Other O&M	\$3,674,900	\$5,831,646	\$6,707,567	\$6,985,963	\$7,252,758	\$7,500,841	\$7,760,856
16	Total O&M Expenses	\$37,934,741	\$42,340,101	\$44,622,592	\$46,707,450	\$48,870,241	\$51,108,405	\$53,457,377
17								
18	Net Income	\$7,192,070	\$4,313,138	\$3,177,327	\$2,686,231	\$2,214,572	\$1,744,846	\$1,254,000
19								
20	Capital Expenditures							
21	Debt Funded	\$0	\$0	\$0	\$0	\$0	\$0	\$0
22	Cash Funded	\$3,323,036	\$8,865,172	\$6,981,728	\$3,329,597	\$3,737,698	\$3,772,841	\$4,428,617
23	Total Capital Expenditures	\$3,323,036	\$8,865,172	\$6,981,728	\$3,329,597	\$3,737,698	\$3,772,841	\$4,428,617
24								
25	Net Cash Change	\$3,869,034	(\$4,552,034)	(\$3,804,401)	(\$643,366)	(\$1,523,126)	(\$2,027,994)	(\$3,174,616)
26								
27	Beginning Balance	\$17,195,875	\$21,064,909	\$16,512,874	\$12,708,473	\$12,065,107	\$10,541,980	\$8,513,986
28								
29	Ending Balance	\$21,064,909	\$16,512,874	\$12,708,473	\$12,065,107	\$10,541,980	\$8,513,986	\$5,339,370
30	Target Reserve Balance	\$15,845,233	\$16,956,967	\$17,539,979	\$18,065,441	\$18,610,398	\$19,174,210	\$19,765,738

**The proposed financial plan includes pass through costs beginning in FY 2022, as newly proposed Commodity Charge rates in FY 2021 will account for projected increases in Calleguas rates between FY 2020 and FY 2021.*

4.3. Proposed Financial Plan

The proposed financial plan calls for adoption of 3.5 percent revenue adjustments in each year from FY 2021 through FY 2025. **Table 4-11** shows the proposed revenue adjustment plan. Although **Table 4-11** shows anticipated revenue adjustments for FY 2021 through 2025, the Waterworks Board may choose to review and confirm the required revenue adjustments on a more frequent basis.⁴ The rates presented in **Section 7** are based on the proposed financial plan below.

The proposed revenue adjustments help to ensure adequate revenue to fund operating expenses, achieve the adopted reserve policy target, and fund the long-term capital program. Revenue adjustments represent the average increase in rates for the utility as a whole. Actual percentage increases (or decreases) in rates are dependent upon the cost of service analysis and are unique to each customer class and meter size. Revenue adjustments are implemented in the middle of the fiscal year, meaning that for FY 2021 the utility will have six months (July-December) in which FY 2020 rates are in effect and six months (January-June) in which FY 2021 rates are in effect.

Table 4-11: Proposed Annual Revenue Adjustments

Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Date Effective	January 1, 2021	January 1, 2022	January 1, 2023	January 1, 2024	January 1, 2025
Revenue Adjustment	3.5%	3.5%	3.5%	3.5%	3.5%

Table 4-12 shows the proforma for the utility with additional revenues from the revenue adjustments from the proposed financial plan. These revenue adjustments allow Waterworks to fund all operating expenses, capital expenditures, and achieve reserve targets during the Study period.

The proposed financial plan proforma estimates rate revenues and expenses on a cash flow basis. The cost of service analysis in **Section 5** uses the annualized FY 2021 revenue requirement, inclusive of the proposed revenue adjustment in that year, to determine unit costs of service and the rate components for fixed and variable charges. The FY 2021 “rate-setting year” revenue requirement is discussed in detail in **Section 5**.

⁴ The Waterworks Board of Directors maintains the right to implement rates that are *lower* than adopted. If it is determined that a rate *higher* than those adopted are required, the Board will have to adopt new rates and Waterworks will be required to re-notice customers to comply with Proposition 218.

Table 4-12: Proposed Financial Plan - Pro Forma (Funds 761, 762, & 763 Combined)

Line #	Description	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
1	Revenues							
2	Rate Revenue Under Existing Rates	\$42,146,810	\$43,322,239	\$43,870,617	\$43,997,813	\$44,125,379	\$44,253,315	\$44,381,621
3	Proposed Revenue Adjustments	\$0	\$0	\$767,736	\$2,336,834	\$3,970,024	\$5,669,754	\$7,438,566
4	Calleguas Pass-through Revenues*	\$0	\$0	\$0	\$1,471,549	\$3,024,699	\$4,663,771	\$6,393,315
5	Capital Improvement Charges	\$300,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000
6	Interest Earnings	\$229,800	\$229,800	\$192,253	\$168,913	\$182,230	\$208,985	\$248,549
7	Other Revenues	\$2,450,200	\$2,601,200	\$2,152,512	\$2,174,037	\$2,195,777	\$2,217,735	\$2,239,913
8	Total Revenues	\$45,126,810	\$46,653,239	\$47,483,117	\$50,649,146	\$53,998,110	\$57,513,560	\$61,201,964
9								
10	O&M Expenses							
11	Salaries & Benefits	\$4,201,600	\$5,519,812	\$5,685,406	\$5,855,969	\$6,031,648	\$6,212,597	\$6,398,975
12	Water Purchases	\$27,348,141	\$28,195,743	\$29,352,932	\$29,430,982	\$29,509,259	\$29,587,763	\$29,666,494
13	Calleguas Pass-through Costs*	\$0	\$0	\$0	\$1,471,549	\$3,024,699	\$4,663,771	\$6,393,315
14	Reimbursement to General Fund	\$2,710,100	\$2,792,900	\$2,876,687	\$2,962,988	\$3,051,877	\$3,143,434	\$3,237,737
15	Other O&M	\$3,674,900	\$5,831,646	\$6,707,567	\$6,985,963	\$7,252,758	\$7,500,841	\$7,760,856
16	Total O&M Expenses	\$37,934,741	\$42,340,101	\$44,622,592	\$46,707,450	\$48,870,241	\$51,108,405	\$53,457,377
17								
18	Net Income	\$7,192,070	\$4,313,138	\$2,860,525	\$3,941,696	\$5,127,869	\$6,405,155	\$7,744,587
19								
20	Capital Expenditures							
21	Debt Funded	\$0	\$0	\$0	\$0	\$0	\$0	\$0
22	Cash Funded	\$3,323,036	\$8,865,172	\$6,981,728	\$3,329,597	\$3,737,698	\$3,772,841	\$4,428,617
23	Total Capital Expenditures	\$3,323,036	\$8,865,172	\$6,981,728	\$3,329,597	\$3,737,698	\$3,772,841	\$4,428,617
24								
25	Net Cash Change	\$3,869,034	(\$4,552,034)	(\$4,121,203)	\$612,098	\$1,390,171	\$2,632,314	\$3,315,970
27	Beginning Balance	\$17,195,875	\$21,064,909	\$16,512,874	\$12,391,671	\$13,003,769	\$14,393,940	\$17,026,254
29	Ending Balance	\$21,064,909	\$16,512,874	\$12,391,671	\$13,003,769	\$14,393,940	\$17,026,254	\$20,342,224
30	Target Reserve Balance	\$15,845,233	\$16,956,967	\$17,565,608	\$18,143,450	\$18,742,928	\$19,363,482	\$20,014,057

**The proposed financial plan includes pass through costs beginning in FY 2022, as newly proposed Commodity Charge rates in FY 2021 will account for projected increases in Calleguas rates between FY 2020 and FY 2021.*

Figure 4-2 and **Figure 4-3** display the proposed financial plan in a graphical format through FY 2025. **Figure 4-2** shows the proposed operating plan, with purchased water costs, operations and maintenance expenses, and funds for reserves to enact the capital plan shown as stacked bars. Waterworks has no existing or proposed debt service. The red dashed line shows revenues without adjustments (current revenues), while the black dashed line shows projected revenues with the 3.5 percent annual revenue adjustments included (projected revenues). **Figure 4-3** shows the combined ending fund balance for Funds 761, 762, and 763, with the target ending balance shown as the red dashed line under the proposed revenue.

Figure 4-2: Proposed Operating Financial Plan - Pro Forma (Funds 761 & 763)

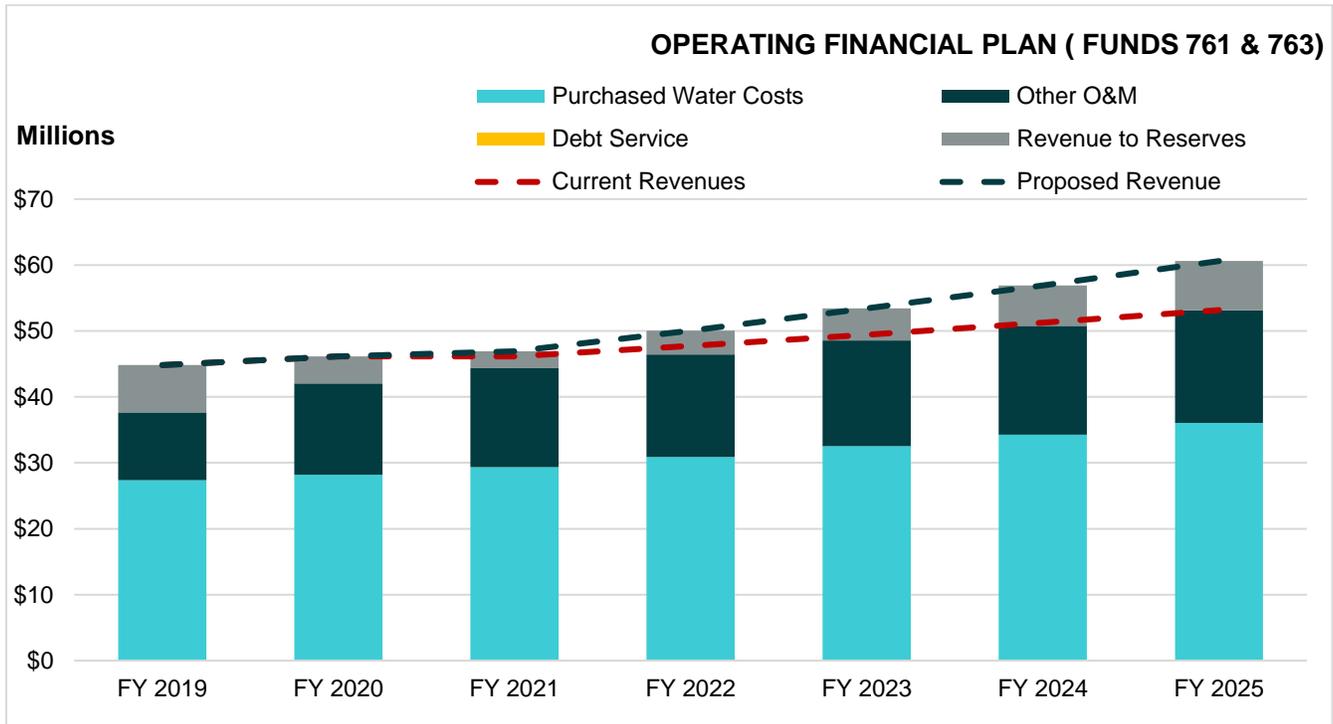
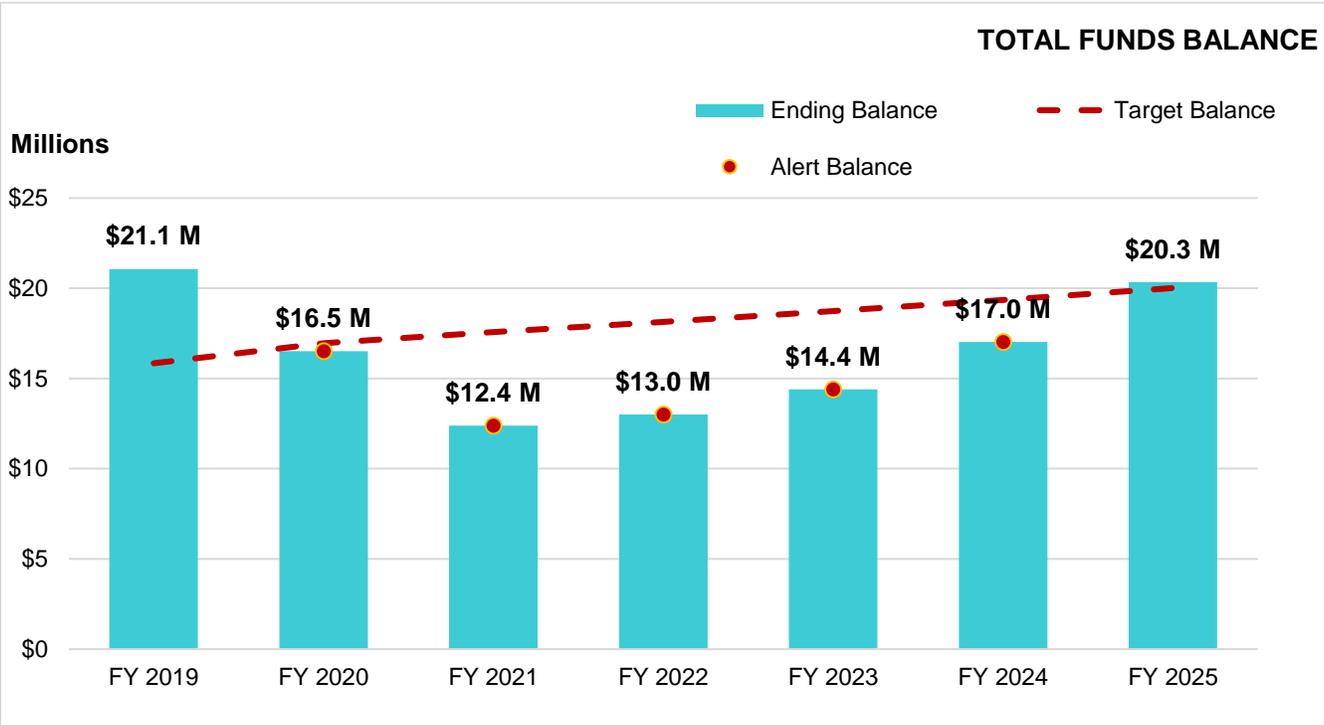


Figure 4-3: Projected Ending Balances Under Proposed Financial Plan (Funds 761, 762, & 763 Combined)



5. Cost of Service Analysis

5.1. Methodology

The principles and methodology of a COS analysis were described in **Section 1.3.3** and are detailed in this section. The annual cost of providing water service is distributed among customer classes commensurate with their service requirements. A COS analysis involves the following steps:

1. Functionalizing costs. Examples of functions are supply, treatment, transmission, distribution, storage, meter servicing, and customer billing and collection.
2. Allocating functionalized costs to cost components. Cost components include variable supply, base delivery, maximum day, maximum hour, conservation, public fire protection, meter service, and customer servicing and billing costs.
3. Developing unit costs for each cost component using appropriate units of service for each component.
4. Distributing the cost components. Distribute using unit costs to customer classes in proportion to their demands and burdens on the water system. This is described in the M1 Manual published by AWWA.

A COS analysis considers both the average quantity of water consumed (base costs) and the peak rate at which it is consumed (peaking or capacity costs as identified by maximum day and maximum hour demands). Peaking costs are costs that are incurred during peak times of consumption. There are additional costs associated with designing, constructing, operating, maintaining, repairing, and replacing facilities to meet peak demands. These peak demand costs need to be allocated to those customers whose water usage patterns generate additional costs for the utility. In other words, not all customer classes and not all customers share the same responsibility for peaking related costs.

The functionalization of costs allows for better allocation to the **cost causation components** (plainly, cost components). Organizing the costs in terms of end function allows direct correlation between the cost component and the rate, coupling the cost incurred by the utility to the demand and burden that the customer places on the utility's system and water resources. The costs incurred are generally responsive to the specific service requirements or cost drivers imposed on the system and its water resources by its customers. The **functions** (i.e., cost categories) for the Waterworks cost of service analysis include:

1. Water Supply
2. Storage
3. Transmission and Distribution (T&D)
4. Treatment
5. Meters
6. Customer Billing
7. Conservation
8. Recycled Water
9. Elevation Pumping
10. General

The functionalized costs are then allocated to the **cost causation components**, which become the rate components in **Section 7**⁵. The cost components include:

⁵ This Study uses the Base-Extra Capacity methodology set forth in the M1 Manual for functionalizing and allocating costs.

1. **Supply** costs are related to the purchase of water from Calleguas Water District. As explained in previous sections, Waterworks relies on purchased water as the sole source of potable water supply.
2. **Base**, also known as delivery costs, vary with the total quantity of water used within the water system under average daily conditions. These costs may include treatment, transmission and distribution facilities, storage costs, and capital costs associated with serving customers at a constant, or average, rate of use. Base costs are, therefore, spread over all units of water uniformly.
3. **Peaking** costs are divided into maximum day and maximum hour demand. The maximum day demand is the maximum amount of water used in a single day in a year. The maximum hour demand is the maximum usage in an hour on the maximum usage day. Different facilities, such as distribution and storage facilities and infrastructure, and the capital and O&M costs associated with those facilities, are designed to meet the peak demands placed on the system by customers. Therefore, extra capacity costs include the O&M and capital costs associated with meeting peak customer demand in excess of the average rate of use, or base use, requirements.
4. **Fire Protection** are costs of providing public and private fire protection service. They include both direct and indirect capital and maintenance costs for fire hydrants and private fire connections, as well as indirect costs for source of supply, treatment, transmission and distribution, and storage of water as these facilities must be sized larger to meet fire flow demand.
5. **Meter Service** costs include maintenance and capital costs related to meters and associated services.
6. **Customer** costs are those directly associated with serving customers, irrespective of the amount of water used, and generally include meter reading, bill generation, accounting, customer service, and collection expenses.
7. **Conservation** costs include those incurred for funding, administering, and executing water conservation and efficiency related programs and services.
8. **Recycled Water** costs are those directly allocable to the recycled water system and its customer base
9. **Elevation Pumping** are direct costs of energy incurred to move potable water through pressure zones to serve customers at higher elevations
10. **General** and administrative costs are incurred in operating and maintaining the water system not otherwise recovered in the other functionalized cost components. These costs are distributed to the other cost components in proportion to the cost responsibility of the others.

This method of functionalizing costs is consistent with the AWWA M1 Manual and is widely used in the water industry to perform cost of service analyses.

5.2. Revenue Requirement

Table 5-2 shows the FY 2021 revenue requirement of \$45,406,088. The total represents all O&M and capital revenue requirements. O&M expenses include costs directly related to the supply, treatment, and distribution of water, as well as routine maintenance of system facilities. To arrive at the rate revenue requirement, revenue offsets (non-rate revenues) and adjustments for annual net cash balances which fund R&R capital and Waterworks reserves are subtracted from the total revenue requirements. The result is the total revenue required from rates. This total is the amount that bimonthly meter service charges, commodity charges, elevation lift (pumping) charges, private fire service charges, and recycled water charges are designed to collect.

Table 5-1: FY 2021 Revenue Required from Rates

Description	Operating	Capital	Total
Revenue Requirements			
O&M Expenses	\$44,334,913	\$0	\$44,334,913
Existing Debt Service	\$0	\$0	\$0
Proposed Debt Service	\$0	\$0	\$0
Fund 761 & 763 PAYGO CIP	\$0	\$6,440,928	\$6,440,928
Total Revenue Requirements	\$44,334,913	\$6,440,928	\$50,775,841
Less Revenue Offsets			
Pass-through Revenues	\$0	\$0	\$0
Interest Earnings	\$102,302	\$0	\$102,302
Other Fund 761 & 763 Revenues	\$2,152,512	\$0	\$2,152,512
Total Less Revenue Offsets	\$2,254,814	\$0	\$2,254,814
Less Adjustments			
Cash Balance	\$0	\$3,882,675	\$3,882,675
Mid-Year Increase	\$0	(\$767,736)	(\$767,736)
Total Less Adjustments	\$0	\$3,114,939	\$3,114,939
Total Revenue to be Recovered from Rates	\$42,080,099	\$3,325,989	\$45,406,088

5.3. O&M Expense Functionalization

Table 5-2 shows the functionalization of Waterworks' O&M expenses for the rate setting year FY 2021. Functionalizing O&M expenses allows Raftelis to follow principles of rate setting where O&M expenses are allocated to cost causation components. The totals by function and percent are presented in Table 5-2.

Table 5-2: Functionalization of FY 2021 O&M Expenses

Cost Function	FY 2021 O&M Expenses	Percent of Total
Supply	\$25,670,459	57.9%
Storage	\$695,936	1.6%
Transmission/Distribution	\$7,087,723	16.0%
Treatment	\$2,502,262	5.6%
Meters	\$1,452,874	3.3%
Customer/Billing	\$621,401	1.4%
Conservation	\$334,529	0.8%
Recycled Water	\$85,999	0.2%
Elevation Pumping	\$743,792	1.7%
General	\$5,139,937	11.6%
Total	\$44,334,913	100.0%

5.4. Allocation of Functionalized Expenses to Cost Components

After functionalizing expenses, the next step is to allocate the functionalized expenses to cost components. To do so, we must identify system-wide peaking factors. The system-wide factors for max day and max hour reflect a four-year average for 2006-2009 per Waterworks' most recent Water Master Plan. Max day and max hour factors are shown in **Table 5-3**. Base, or average daily demand is represented by the factor 1.00.

Table 5-3: System Peaking

System Peaking Factor	Ratio to Base
Base	1.00
Maximum Day	1.85
Maximum Hour	3.70

Calculated water system peaking factors from **Table 5-3** are shown in column B of **Table 5-4**. The system-wide peaking factors are used to derive the cost causation component allocation bases (i.e., percentages) shown in columns C, D, and E of **Table 5-4**. Line 1 "Base" represents the average day demand throughout the year and is, therefore, a factor of 1.00. Line 2 "Maximum Day" is the ratio of maximum day demand (shown in **Table 5-3**) to base demand or 1.85. The incremental responsibility due to max day is therefore 0.459 $(1.85-1.00)/1.85$ or 45.9 percent. Similarly, Line 3, "Maximum Hour" is the ratio of maximum hour demand, on the maximum day, to base demand. The max hour factor is 3.70. 1.00 out of 3.70 of the max hour factor is attributable to base demand $(1.00/3.70)$ or 27.0 percent and 0.459 out of 3.70 or 23.0 percent is attributable to max day. The remainder represents the incremental amount attributable to max hour (50.0 percent). These factors indicate how much additional capacity is required to meet demand above average daily use. As demand and capacity increase, so must the sizing of facilities and pipelines, which incur greater costs to construct, operate, maintain, and replace. To understand the interpretation of the percentages shown in columns C through E "Base" is established as the average daily demand during the year.

These allocation bases are used to assign certain functionalized costs to the cost causation components including reservoir, transmission, treatment, and distribution functions.

Table 5-4: System-Wide Peaking Factors

	System Wide Peaking Factors	Ratio to Base	Base	Max Day	Max Hour	Total
Line #	A	B	C	D	E	F
1	Base	1.00	100.0%	0.0%	0.0%	100.0%
2	Maximum Day	1.85	54.1%	45.9%	0.0%	100.0%
3	Maximum Hour	3.70	27.0%	23.0%	50.0%	100.0%

Table 5-5 shows the allocation basis for O&M costs. The top row of **Table 5-5** shows the cost causation components and the leftmost column shows the cost functions. Supply, pumping, and conservation functionalized costs are allocated 100 percent to the corresponding cost causation component. For example, Supply costs are allocated 100 percent to the Supply cost causation component. Storage costs use the max day allocation from **Table 5-4** with a modification of the allocation to account for fire protection capacity. Similarly transmission and distribution costs use a modification of the max hour allocation to account for fire protection capacity (distribution pipelines are

constructed to meet maximum hour demand plus fire flow). Treatment related costs are allocated using the max day allocation.

Table 5-5: Allocation of Functionalized O&M Expenses to Cost Causation Components

Cost Function	FY 2021 O&M Expenses	Supply	Base	Max Day	Max Hour	Fire Protection	Meters	Customer	Conservation	Recycled Water	Elevation Pumping	General
Supply	\$25,670,459	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Storage	\$695,936	0.0%	45.9%	39.1%	0.0%	15.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Transmission/ Distribution	\$7,087,723	0.0%	34.5%	29.3%	21.3%	15.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Treatment	\$2,502,262	0.0%	54.1%	45.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Meters	\$1,452,874	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Customer/ Billing	\$621,401	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
Conservation	\$334,529	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Recycled Water	\$85,999	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Elevation Pumping	\$743,792	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%
General	\$5,139,937	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Total O&M Allocation (\$)	\$44,334,913	\$25,670,459	\$4,114,720	\$3,497,512	\$1,506,141	\$1,167,549	\$1,452,874	\$621,401	\$334,529	\$85,999	\$743,792	\$5,139,937
O&M Allocation (%)		57.9%	9.3%	7.9%	3.4%	2.6%	3.3%	1.4%	0.8%	0.2%	1.7%	11.6%

5.5. Asset Functionalization

Table 5-6 presents the functionalization of Waterworks’ system asset base. Each asset category from the master asset schedule is assigned to one of the cost functions. The column furthest right in Table 5-6 shows the total asset valuation by category. Values shown represent replacement cost less depreciation.

Table 5-6: Functionalization of System Assets

Cost Function	Asset Value (RCLD)	Percent of Total
Supply	\$1,535,270	1.80%
Storage	\$2,663,233	3.11%
Transmission/Distribution	\$77,547,334	90.67%
Treatment	\$23,312	0.03%
Meters	\$34,842	0.04%
Customer/Billing	\$215,211	0.25%
Elevation Pumping	\$134,533	0.16%
General	\$3,375,657	3.95%
Total	\$85,529,393	100.0%

5.6. Allocation of Functionalized Assets to Cost Components

Similar to the O&M cost allocation, Waterworks’ functionalized capitalized assets are allocated to the same cost components. Capital costs are allocated based on the asset base of the system in recognition that assets need to be refurbished and replaced over time. Correspondingly, capital expenses over time should correlate to the asset base. This ensures that the allocations to the cost causation components, and ultimately the rates, remain relatively stable over time. **Table 5-7** shows the functionalized assets allocated to the cost components in both dollar and percentage terms. Distribution of functional components to cost components use the same allocation bases as in **Table 5-5** with consideration of fire protection costs.

Table 5-7: Allocation of Functionalized Asset Value to Cost Causation Components

Cost Function	Asset Value (RCLD)	Supply	Base	Max Day	Max Hour	Fire Protection	Meters	Customer	Elevation Pumping	General
Supply	\$1,535,270	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Storage	\$2,663,233	0.0%	45.9%	39.1%	0.0%	15.0%	0.0%	0.0%	0.0%	0.0%
Transmission/Distribution	\$77,547,334	0.0%	34.5%	29.3%	21.3%	15.0%	0.0%	0.0%	0.0%	0.0%
Treatment	\$23,312	0.0%	54.1%	45.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Meters	\$34,842	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Customer/Billing	\$215,211	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Elevation Pumping	\$134,533	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%

General	\$3,375,657	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Total O&M Allocation (\$)	\$85,529,393	\$1,535,270	\$27,958,641	\$23,764,845	\$16,478,808	\$12,031,585	\$34,842	\$215,211	\$134,533	\$3,375,657	
Capital Allocation (%)		1.80%	32.69%	27.79%	19.27%	14.07%	0.04%	0.25%	0.16%	3.95%	

5.7. Preliminary Cost Allocation of Revenue Requirement

Table 5-8 shows the revenue requirement, by cost component, before adjustments for public fire protection and capacity costs (discussed further in the next sub-section). The operating expenses come directly from the allocation in **Table 5-5**. The capital expense allocation is calculated by multiplying the capital revenue requirement from **Table 5-1** and the percentage allocations at the bottom of **Table 5-7**. General costs are distributed to all cost causation components, other than supply and elevation pumping, on a pro rata basis.

Table 5-8: Preliminary Revenue Requirement by Cost Causation Component

Preliminary Cost of Service	Supply	Base	Max Day	Max Hour	Fire Protection	Meters	Customer	Conser- vation	Recycled Water	Elevation Pumping	General	Revenue Offsets	Total
Operating Expenses	\$25,670,459	\$4,114,720	\$3,497,512	\$1,506,141	\$1,167,549	\$1,452,874	\$621,401	\$334,529	\$85,999	\$743,792	\$5,139,937	N/A	\$44,334,913
Capital Expenses	\$59,702	\$1,087,230	\$924,146	\$640,813	\$467,873	\$1,355	\$8,369	\$0	\$0	\$5,232	\$131,269	N/A	\$3,325,989
Revenue Offsets*	(\$1,919,000)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	(\$335,814)	(\$2,254,814)
Total Cost of Service	\$23,811,162	\$5,201,950	\$4,421,657	\$2,146,954	\$1,635,422	\$1,454,229	\$629,770	\$334,529	\$85,999	\$749,024	\$5,271,206	(\$335,814)	\$45,406,088
Allocation of General Cost	N/A	\$1,723,424	\$1,464,910	\$711,293	\$541,821	\$481,791	\$208,645	\$110,831	\$28,492	N/A	(\$5,271,206)	N/A	\$0
Allocated Cost of Service	\$23,811,162	\$6,925,373	\$5,886,567	\$2,858,247	\$2,177,243	\$1,936,020	\$838,415	\$445,360	\$114,491	\$749,024	\$0	(\$335,814)	\$45,406,088

*\$1,919,000 of revenue offsets from "37452 Sales to Waterworks" allocated to Supply cost causation component to offset Calleguas water purchase costs for wholesale water customers

5.8. Revenue Recovery by Cost Components

The cost components are recovered from customers through fixed monthly service charges and variable volumetric commodity charges. **Table 5-9** shows the total revenue requirement, calculated in **Table 5-1**, to be collected through rates in the second column from the left (and transposed from the bottom of **Table 5-8**). Base costs and 25 percent each of max day and max hour capacity costs are recovered through the fixed charge components (meter column). Monthly service charge components include the two fixed charge components, meter and customer, as well as the private fire protection costs. Variable components include supply, 75 percent of max day and max hour costs, conservation costs, elevation pumping, and non-rate revenue offsets. Recycled water is also a variable component recovered through recycled water sales.

Table 5-9: Cost Recovery, Cost Component (Percentage)

Cost Causation Components	FY 2021 Revenue Requirement	Supply	Base	Max Day	Max Hour	Fire Protection	Meters	Customer	Conservation	Recycled Water	Elevation Pumping	Revenue Offsets
Supply	\$23,811,162	100.0%										
Base	\$6,925,373		0.0%				100.0%					
Max Day	\$5,886,567			75.0%			25.0%					
Max Hour	\$2,858,247				75.0%		25.0%					
Fire Protection	\$2,177,243					100.0%						
Meters	\$1,936,020						100.0%					
Customer	\$838,415							100.0%				
Conservation	\$445,360								100.0%			
Recycled Water	\$114,491									100.0%		
Elevation Pumping	\$749,024										100.0%	
Revenue Offsets	(\$335,814)											100.0%
Total Allocated Costs	\$45,406,088	\$23,811,162	\$0	\$4,414,925	\$2,143,685	\$2,177,243	\$11,047,597	\$838,415	\$445,360	\$114,491	\$749,024	(\$335,814)

5.9. Allocation of Fire Protection Costs – Public vs. Private

Water systems provide two types of fire protection: public fire protection for firefighting, which is generally visible as hydrants on a street, and private fire protection which provides fire flow to building and other structure sprinkler systems for fire suppression within private improvements. To determine the share of total fire costs responsible to each, Raftelis performs an analysis of the public hydrants and private firelines. **Table 5-10** shows the steps of allocating costs between public and private fire service. Each fire connection size has a fire flow demand factor similar to a hydraulic capacity factor of a water meter. The diameter of the connection is raised to the 2.63 power to determine the fire flow demand factor⁶. The count of connections of a specific size is multiplied by the fire flow demand factor to derive total equivalent fire connections. Total fire costs of \$2,177,243 are allocated based on the percentage share of total equivalent fire connections between public and private. The analysis estimates that 88.3 percent of fire costs relate to public fire and will be included and recovered on the monthly fixed charges. The remaining 11.7 percent is attributable to private fire service and will be recovered through private fire service charges.

Table 5-10: Allocation of Fire Protection Costs

Connection Size	Demand Factor (Diameter [inches] ^2.63)	Unit Counts	Equivalent Connections (Demand Factor)	Percent Allocation	Fire Protection Costs
Public Hydrants					
2.5-inch	11.1	0	0		
4-inch	38.3	0	0		
6-inch	111.3	2,874	319,908		
10-inch	426.6	0	0		
Total		2,874	319,908	88.3%	\$1,923,515
Private Fire Lines					
2-inch	6.2	14	87		
3-inch	18.0	5	90		
4-inch	38.3	109	4,163		
6-inch	111.3	109	12,091		
8-inch	237.2	109	25,767		
Total		345	42,199	11.7%	\$253,729
Total Fire Connections		3,219	362,106	100.0%	\$2,177,243

5.10. Final Cost Allocation of Revenue Requirement

The total revenue recoverable from each cost causation component through water rates is shown in **Table 5-11** using the revenue requirement from **Table 5-1**, the O&M and asset allocations in **Table 5-5** and **Table 5-7**, the cost recovery adjustment in **Table 5-9**, and the fire cost analysis in **Table 5-10**. Since public fire protection costs are a function of system capacity, they are reallocated to the meter component, along with a portion of the max day and max hour peaking costs (capacity components), and base costs.

⁶ Hazen-Williams equation and AWWA M1 Manual

Table 5-11: Revenue Requirement by Cost Causation Component

Preliminary Cost of Service	Supply	Base	Max Day	Max Hour	Fire Protection	Meters	Customer	Conser- vation	Recycled Water	Elevation Pumping	General	Revenue Offsets	Total
Operating Expenses	\$25,670,459	\$4,114,720	\$3,497,512	\$1,506,141	\$1,167,549	\$1,452,874	\$621,401	\$334,529	\$85,999	\$743,792	\$5,139,937	N/A	\$44,334,913
Capital Expenses	\$59,702	\$1,087,230	\$924,146	\$640,813	\$467,873	\$1,355	\$8,369	\$0	\$0	\$5,232	\$131,269	N/A	\$3,325,989
Revenue Offsets*	(\$1,919,000)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	(\$335,814)	(\$2,254,814)
Total Cost of Service	\$23,811,162	\$5,201,950	\$4,421,657	\$2,146,954	\$1,635,422	\$1,454,229	\$629,770	\$334,529	\$85,999	\$749,024	\$5,271,206	(\$335,814)	\$45,406,088
Allocation of General Cost	N/A	\$1,723,424	\$1,464,910	\$711,293	\$541,821	\$481,791	\$208,645	\$110,831	\$28,492	N/A	(\$5,271,206)	N/A	\$0
Allocated Cost of Service	\$23,811,162	\$6,925,373	\$5,886,567	\$2,858,247	\$2,177,243	\$1,936,020	\$838,415	\$445,360	\$114,491	\$749,024	\$0	(\$335,814)	\$45,406,088
Reallocation of Base & Peaking Components	\$0	(\$6,925,373)	(\$1,471,642)	(\$714,562)	\$0	\$9,111,577	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Reallocation of Public Fire	N/A	N/A	N/A	N/A	(\$1,923,515)	\$1,923,515	N/A	N/A	N/A	N/A	N/A	\$0	\$0
ADJUSTED COST OF SERVICE	\$23,811,162	\$0	\$4,414,925	\$2,143,685	\$253,729	\$12,971,111	\$838,415	\$445,360	\$114,491	\$749,024	N/A	(\$335,814)	\$45,406,088

5.11. Unit Costs Derivation

The end goal of a cost of service analysis is to proportionately distribute the cost components to each user class. To do so, unit costs for each component must be calculated which starts by assessing the total water demanded (or equivalent service units) for each cost component. Projected water use (base units of service) for FY 2021 is shown in **Table 5-12**. Daily use is calculated as annual use divided by 365 days. For example, Commercial/Multi-Family/Other is estimated to use 911,846 CCF annually, or 2,498 CCF daily. Demand is detailed by proposed rate class.

Table 5-12: Projected FY 2021 Water Usage and Peaking Units

Customer Classes (Potable Water Service)	FY 2021 Water Usage (CCF)	Average Daily Usage (CCF)	Max Month Factor	Max Day Demand (CCF/Day)	Max Day Requirements (CCF/Day)	Max Hour Factor	Max Hour Demand (CCF/Day)	Max Hour Requirements (CCF/Day)
Single Family Residential	4,419,248	12,108	1.38	16,699	4,592	2.76	33,399	16,699
Commercial/Multi-Family/Other	911,846	2,498	1.24	3,097	599	2.48	6,194	3,097
Landscape/Schools/etc.	2,031,597	5,566	1.68	9,329	3,763	3.35	18,658	9,329
Total	7,399,696	20,273		29,125	8,953		58,250	29,125
Other								
Recycled Water Usage	36,960							
Lift Charge Units (CCFs per Lift)	5,810,757							

Table 5-13 shows the total equivalent meters (discussed in detail in Section 7.2.1), total equivalent fireline connections (discussed in Section 7.3) and annual number of bills issued (discussed in Section 7.2.2). These totals are used as the denominator in developing unit costs for the rate components of the monthly fixed service charges and private fire service charges.

Table 5-13: Projected FY 2021 Equivalent Meters/Firelines and Customer Bills

Description	Number of Meters/ Dwelling Units	AWWA Capacity Ratio	Annual Equivalent Meters/ Firelines	Number of Accounts	Number of Annual Bills
Residential	A	B	C = A X B	D	E = D X 6 Bills per Year
Single Family	23,667	1.50	213,000	23,667	142,000
Multi Family (# of units billed)	7,160	1.00	42,962	427	2,562
Total Residential	30,827		255,962	24,094	144,562
Commercial					
3/4-inch	261	1.50	2,345	261	1,563
1-inch	354	2.50	5,311	354	2,124
1.5-inch	305	5.00	9,143	305	1,829
2-inch	516	8.00	24,767	516	3,096
3-inch	43	17.50	4,541	43	259
4-inch	25	31.50	4,752	25	151
6-inch	9	70.00	3,802	9	54
Total Commercial	1,513		54,661	1,513	9,076
Recycled Water					
	0	0.00	0	0	0
3/4-inch	0	1.50	0	0	0
1-inch	0	2.50	0	0	0
1.5-inch	0	5.00	0	0	0
2-inch	1	8.00	48	1	6
3-inch	1	17.50	106	1	6
4-inch	0	31.50	0	0	0
6-inch	0	70.00	0	0	0
Total Recycled Water	2		154	2	12
Auto Fire Sprinkler					
	0	0.00	0	0	0
2-inch or less	14	1.00	84	14	84
3-inch	5	2.90	88	5	30
4-inch	109	6.19	4,035	109	652
6-inch	109	17.98	11,720	109	652
8-inch	109	38.32	24,975	109	652
10-inch	2	68.91	832	2	12
Total Auto Fire Sprinkler	347		41,733	347	2,082
Total Equivalent Meters (Annualized)			310,777		
Total Equivalent Fire Lines (Annualized)			41,733		
Total Annual Bills					155,733

Utilizing the final cost of service from **Table 5-11** as the numerator and **Table 5-12** and **Table 5-13** as the denominators allows us to derive unit costs of service in **Table 5-14**. The total cost of service is divided by the respective units of service to calculate the unit cost of each cost component. For example, the unit cost for the fire protection component is determined by dividing the total costs (\$253,729) by total annual equivalent fire lines (41,733) to derive a cost per equivalent fireline of \$6.08. Meter costs are divided by total meter equivalencies from **Table 5-13** to determine a cost per equivalent meter and annual customer costs are divided by the estimated number of annual monthly bills, also from **Table 5-13**. The process is continued for all cost causation components yielding a unit cost for each. The unit costs are used to distribute the cost components to the meter classes and commodity classes.

Table 5-14: Unit Cost Development by Cost Causation Component

Cost Causation Component	Cost of Service	Unit of Measure	Units of Service	Unit Cost
Supply	\$23,811,162	Annual Potable Usage (CCF)	7,362,691	\$3.234
Base	\$0	Annual Potable Usage (CCF)	7,362,737	\$0.000
Max Day	\$4,414,925	Max Day Requirements (CCF/Day)	8,953	\$493.099
Max Hour	\$2,143,685	Max Hour Requirements (CCF/Day)	29,125	\$73.602
Fire Protection	\$253,729	Annual Equivalent Firelines	41,733	\$6.080
Meters	\$12,971,111	Annual Equivalent Meters	310,777	\$41.738
Customer	\$838,415	Annual Bills	155,733	\$5.384
Conservation	\$445,360	Annual Potable Usage (CCF)	7,362,737	\$0.060
Recycled Water	\$114,491	Annual Recycled Usage (CCF)	36,960	\$3.098
Elevation Pumping	\$749,024	Annual Lift Charge Units (CCFs per Lift)	5,810,757	\$0.129
Revenue Offsets	(\$335,814)	Annual Potable Usage (CCF)	7,362,737	(\$0.046)

5.12. Distribution of Cost Components to Customer Classes

The final step in a cost of service analysis is to distribute the cost components to the customer classes using the unit costs derived in **Table 5-14**. This is the end goal of a cost of service analysis and yields the cost to serve each class. **Table 5-15** shows the derivation of the cost to serve each class. The supply component, 75 percent of capacity, conservation, recycled water, elevation pumping, and revenue offset components are collected through the commodity (volumetric) charges (\$/CCF). Fire protection, meters, base delivery, and customer cost components are collected through Waterworks' bimonthly fixed service charge (\$/month) and private fire service charge (\$/month).

To derive the cost to serve each class, the unit costs from **Table 5-14** are multiplied by the respective units of service for each class (**Table 4-3**). For example, the supply costs for the Single Family Residential (SFR) class are calculated by multiplying the supply unit cost of \$3.234 (rounded here to three decimals) by the annual SFR use (4,419,248 CCF) to arrive at a total of \$14,291,979. Similar calculations for each of the remaining user classes and cost components yield the total cost to serve each user class shown in the furthest right column of **Table 5-15**. Note that the total cost of service is equal to the revenue requirement in **Table 5-1** as intended. With the cost to serve each user class calculated we can proceed to derive rates to collect the cost to serve each commodity class and meter class.

Table 5-15: Cost of Service by Customer Class and Charge

Customer Class/ Charge	Supply	Max Day	Max Hour	Fire Protection	Meters	Customer	Conser- vation	Recycled Water	Elevation Pumping	Revenue Offsets	Total (\$)
Single Family Residential	\$14,291,979	\$2,264,272	\$1,229,121				\$267,313			(\$201,561)	\$17,851,123
Commercial/ Multi-Family/Other	\$2,948,936	\$295,175	\$227,934				\$55,156			(\$41,589)	\$3,485,612
Agriculture	\$0	\$0	\$0				\$0			\$0	\$0
Landscape/Schools/etc.	\$6,570,247	\$1,855,478	\$686,631				\$122,888			(\$92,661)	\$9,142,583
Well Water							\$3			(\$2)	\$1
Recycled Water								\$114,491			\$114,491
Meters					\$12,971,111	\$827,206					\$13,798,317
Private Fire Lines				\$253,729		\$11,209					\$264,938
Lift Charges									\$749,024		\$749,024
Total	\$23,811,162	\$4,414,925	\$2,143,685	\$253,729	\$12,971,111	\$838,415	\$445,360	\$114,491	\$749,024	(\$335,814)	\$45,406,088

6. Rate Structure Definitions and Proposed Revisions

The rate structure for Waterworks' water service consists of a fixed, bimonthly service charge and a variable volumetric component. Waterworks' existing rate structure was developed and completed in 2015, and the current rates are effective as of January 2, 2019. Waterworks has also adopted rates with the existing rate structure for CY 2020, which will be implemented in January 2020. The description of the current rate structure and rates and the proposed revisions to the rate structures are described here.

6.1. Existing Rate Structure and Rates

Waterworks' water service charges have two components for most customers – a fixed bimonthly service charge based on meter size and customer class and a volumetric charge based on water use by customer class during the billing period. Waterworks has in place a uniform rate structure for all customer classes.

Service charges for residential customers are uniform and differentiated by dwelling unit type, whereas non-residential and recycled water service charges vary by the size of the meter serving the property. Current calendar year (CY) 2019 and adopted CY 2020 fixed service charges for all meter sizes and customer classes are shown in **Table 6-1**. The variable volumetric component is calculated based on the number of billing units of water delivered to a property, multiplied by rates that vary by customer class. Existing 2019 rates and adopted 2020 rates are shown in **Table 6-2**.

Table 6-1: Current and Adopted Fixed Service Charges

Bimonthly Service Charges	Current CY 2019	Adopted CY 2020
Residential (per dwelling unit)		
Single Family	\$61.00	\$61.00
Multi Family	\$42.70	\$48.85
Commercial/Non-Residential		
3/4-inch	\$85.20	\$93.95
1-inch	\$132.40	\$144.00
1.5-inch	\$250.45	\$269.20
2-inch	\$392.10	\$419.40
3-inch	\$840.60	\$895.15
4-inch	\$1,501.60	\$1,596.20
6-inch	\$3,319.35	\$3,524.10
Recycled Water		
3/4-inch	\$37.40	\$37.40
1-inch	\$74.80	\$74.80
1.5-inch	\$149.60	\$149.60
2-inch	\$261.79	\$261.79
3-inch	\$560.99	\$560.99
4-inch	\$1,121.97	\$1,121.97
6-inch	\$2,243.94	\$2,243.94
Auto Fire Sprinkler		
2-inch or less	\$25.18	\$25.18
3-inch	\$35.90	\$35.90
4-inch	\$48.35	\$48.35
6-inch	\$72.34	\$72.34
8-inch	\$96.23	\$96.23
10-inch	\$120.25	\$120.25

Table 6-2: Current and Adopted Commodity Charges

Commodity Charge per CCF	Current CY 2019	Adopted* CY 2020
Single Family Residential*	\$3.86	\$3.85
Commercial/Multi-Family/Other*	\$3.89	\$4.00
Landscape/Schools/etc.*	\$4.09	\$4.20
Lift Charge (per CCF per Lift)	\$0.12	\$0.13
Well Water	\$1.54	\$1.54
Recycled Water	\$2.60	\$2.60
*Current CY 2019 rates include \$0.61 cumulative pass-through of increased Calleguas costs since 2015; Adopted CY 2020 Rates include estimated cumulative pass-through of \$0.70 per CCF		

6.2. Proposed Rate Structure Changes

Raftelis identified several recommended changes over the course of the Study. Raftelis worked with Waterworks staff to refine proposed revisions to the rate structures. Raftelis recommends changes to the Residential fixed charges. Additionally, Raftelis recommends harmonizing the fixed charges for Residential, Commercial, and Recycled Water users. The proposed changes and rationale are detailed in the following subsections.

6.2.1. FIXED SERVICE CHARGES STRUCTURE

The existing structure differentiates service charges by service type and customer class and/or meter size. As the service charges recover capacity-based costs of the system it is appropriate to recover the costs based on the capacity of the meter, irrespective of service type. We therefore recommend harmonizing the fixed service charges across all users. This means that Residential, Commercial/Non-residential, and Recycled Water customers will pay the same charge at each meter size. Multi-family residential accounts will continue to pay service charges per dwelling unit with each dwelling unit assumed to be able to be served by a 5/8" meter since there are no irrigation demands and these water users have lower fixture counts than most SFR customers who predominantly have 3/4" meters.

The effect of these changes is to simplify the rate structure so that Waterworks has one fixed service charge schedule instead of three. Additionally, the treatment of all users by meter size and potential capacity rather than class or service generates greater equity among and between the classes.

7. Rate Design and Derivation

7.1. Existing Rate Structure and Rates

As explained in **Section 1** of this Study, the rate structure for Waterworks' water service charges has two major components: a fixed bimonthly service charge component and a variable volumetric commodity charge component. The potable water rates for the bimonthly service charges for residential customers are uniform based on dwelling unit type. The potable water rates for non-residential customers are determined based on the size of the water meter serving a property. There are separate bimonthly service charges for recycled water customers based on the size of the water meter serving a property. Additionally, there are auto fire sprinkler charges for customers with a private fireline or fire suppression system; this bimonthly service charge is also based on the size of the fireline. Larger meter sizes generally consume more water on average, and tend to have higher rates of peaking, therefore the costs to provide service to these customers are higher. Current service charges and adopted CY 2020 service charges for all meter sizes and customer classes are shown in **Table 7-1**.

Table 7-1: Current and Adopted Fixed Service Charges

Bimonthly Service Charges	Current CY 2019	Adopted CY 2020
Residential (per dwelling unit)		
Single Family	\$61.00	\$61.00
Multi Family	\$42.70	\$48.85
Commercial/Non-Residential		
3/4-inch	\$85.20	\$93.95
1-inch	\$132.40	\$144.00
1.5-inch	\$250.45	\$269.20
2-inch	\$392.10	\$419.40
3-inch	\$840.60	\$895.15
4-inch	\$1,501.60	\$1,596.20
6-inch	\$3,319.35	\$3,524.10
Recycled Water		
3/4-inch	\$37.40	\$37.40
1-inch	\$74.80	\$74.80
1.5-inch	\$149.60	\$149.60
2-inch	\$261.79	\$261.79
3-inch	\$560.99	\$560.99
4-inch	\$1,121.97	\$1,121.97
6-inch	\$2,243.94	\$2,243.94
Auto Fire Sprinkler		
2-inch or less	\$25.18	\$25.18
3-inch	\$35.90	\$35.90
4-inch	\$48.35	\$48.35
6-inch	\$72.34	\$72.34
8-inch	\$96.23	\$96.23
10-inch	\$120.25	\$120.25

The rates for the current Commodity Charges are calculated on the basis of the amount of water delivered in CCF. The existing 2019 rates and adopted 2020 rates for each customer class are shown in **Table 7-2**. Single Family Residential refers to stand alone houses with a single dwelling unit. Multi-Family refers to residential housing with two or more dwelling units, such as duplexes, triplexes, some condominiums, and apartment complexes. Commercial and Other are non-residential accounts such as offices, warehouses, government buildings, and manufacturing facilities. The Lift Charge is charged to customers that require water delivered to higher elevations. Well Water customers receive raw, untreated water from Waterworks’ wells in Tapo Canyon. Recycled Water customers are those that receive recycled water from the City of Simi Valley’s Water Quality Control Plant.

Table 7-2: Current and Adopted Commodity Charges

Commodity Charge per CCF	Current CY 2019	Adopted* CY 2020
Single Family Residential*	\$3.86	\$3.85
Commercial/Multi-Family/Other*	\$3.89	\$4.00
Landscape/Schools/etc.*	\$4.09	\$4.20
Lift Charge (per CCF per Lift)	\$0.12	\$0.13
Well Water	\$1.54	\$1.54
Recycled Water	\$2.60	\$2.60
*Current CY 2019 rates include \$0.61 cumulative pass-through of increased Calleguas costs since 2015; Adopted CY 2020 Rates include estimated cumulative pass-through of \$0.70 per CCF		

7.2. Proposed Bimonthly Fixed Service Charges

Utilities invest in, and continuously maintain, facilities to provide capacity to meet all levels of water consumption, including peak demand plus fire protection. These costs must be recovered regardless of the amount of water used during a given period. Thus, peaking costs, along with base delivery costs and fixed costs to meet average demand, are generally considered fixed water system costs. To balance between affordability and revenue stability, it is common practice that a portion of the base costs and/or peaking costs are recovered in the service charge, along with customer-related costs and meter-related costs. For Waterworks, 25 percent of peaking costs are recovered from the fixed charges and the remaining 75 percent from the variable commodity charges. 100 percent of base delivery costs are recovered by the service charges.

There are two components that comprise the fixed service charges: meter servicing costs and customer service costs. The fixed charge recognizes that even when a customer does not use water in a billing period, Waterworks incurs fixed costs to operate and maintain the system for each connection at all times.

7.2.1. METER SERVICES COMPONENT

The meter services component collects meter servicing-related costs, public fire protection costs, base delivery costs, and a portion of peaking costs. Larger meters are more expensive to maintain and replace, and have the potential to demand more capacity, or, said differently, exert greater peaking characteristics compared to smaller meters. The potential capacity demanded (peaking) is proportional to the maximum flow through each meter size. For example, the flow rate capacity through a 4” meter is 31.5 times that of a 5/8” meter and therefore the meter capacity component of the fixed charge is 31.5 times that of the 5/8” meter.

Allocating base costs to the meter based service charges is a common way to provide greater revenue stability, especially in light of declining water sales revenues from permanent conservation or other water shortage circumstances.

In order to create parity across the various meter sizes, each meter size is assigned a factor relative to a 5/8" meter, which has a value of 1.00. This establishes the "base" meter size. A given meter size's ratio of meter servicing costs relative to the base (that of a 5/8" meter) determines the *meter equivalency*. Summation of all meter equivalencies for a given size yields total equivalent meters (see **Table 5-13**). The meters cost component per annual equivalent meters is calculated by dividing the cost of service for the meters by the total equivalent meters (see **Table 5-14**). For this study, Raftelis utilizes standard AWWA hydraulic capacity ratios for each meter size as provided in the "M22 Manual: Sizing Water Service Lines and Meters". **Table 7-3** shows the meters component per annual equivalent meter (A) as well as the AWWA capacity ratio (B). The meters component (C) is calculated by multiplying A and B.

7.2.2. BILLING AND CUSTOMER SERVICE COMPONENT

The customer service component recovers costs associated with meter reading, customer billing and collection, as well as answering customer service calls. These costs are uniform for all meter sizes as it costs the same to correspond with and bill a small meter as it does a large meter.

The customer service component is calculated by dividing the total billing and customer service costs by the total annual bills prepared by Waterworks (see **Table 5-14**). The total customer costs in FY 2021 is \$838,415 with an estimated 155,733 bills. The calculated customer component is therefore \$5.38. The Multi-Family customer component is determined by multiplying the \$5.38 unit cost by the ratio of MFR accounts to MFR units, as multiple MFR units often comprise a single account. The customer service and billing costs associated with serving a single MFR unit are therefore considerably less than serving an account from another customer class. This calculation is described in more detail in Section 5.

Table 7-3 shows the derivation of the proposed bimonthly service charges based on the meters component and customer component. The total proposed 2021 bimonthly charge is the sum of the meters cost component and the customer cost component, rounded up to the nearest whole penny. Within the table, the adopted 2020 bimonthly charge is compared to the proposed 2021 bimonthly charge. The calculation of this proposed 2020 bimonthly service charge shows an increase to single family residential customers as well as increased charges for the recycled water customers. The proposed charges will decrease for multi-family customers and commercial/non-residential customers. These changes result from several variables including: application of AWWA capacity ratios treating MFR customers as a 5/8" base and SFR customers as a 3/4" (their actual connection size); breakout of a customer component to account for customer service related costs; harmonizing the charges based on meter size rather than customer class; and the fact that existing service charges for some customers were leveled off in calendar year 2019 and for adopted rates in year 2020.

Table 7-3: Derivation of Proposed CY 2021 Bimonthly Service Charges

Bimonthly Service Charges	Meters Component per Annual Equivalent Meter	AWWA Capacity Ratio	Meters Component	Customer Component	Proposed CY 2021 Bimonthly Charge	Adopted CY 2020 Charge	Difference
	A	B	C = A X B	D	E = C + D	F	G = E - F
Residential							
Single Family	\$41.74	1.50	\$62.61	\$5.38	\$68.00	\$61.00	\$7.00
Multi Family	\$41.74	1.00	\$41.74	\$0.32	\$42.06	\$48.85	(\$6.79)
Commercial/ Non-Residential							
3/4-inch	\$41.74	1.50	\$62.61	\$5.38	\$68.00	\$93.95	(\$25.95)
1-inch	\$41.74	2.50	\$104.34	\$5.38	\$109.73	\$144.00	(\$34.27)
1.5-inch	\$41.74	5.00	\$208.69	\$5.38	\$214.08	\$269.20	(\$55.12)
2-inch	\$41.74	8.00	\$333.90	\$5.38	\$339.29	\$419.40	(\$80.11)
3-inch	\$41.74	17.50	\$730.41	\$5.38	\$735.80	\$895.15	(\$159.35)
4-inch	\$41.74	31.50	\$1,314.74	\$5.38	\$1,320.13	\$1,596.20	(\$276.07)
6-inch	\$41.74	70.00	\$2,921.64	\$5.38	\$2,927.03	\$3,524.10	(\$597.07)
Recycled Water							
3/4-inch	\$41.74	1.50	\$62.61	\$5.38	\$68.00	\$37.40	\$30.60
1-inch	\$41.74	2.50	\$104.34	\$5.38	\$109.73	\$74.80	\$34.93
1.5-inch	\$41.74	5.00	\$208.69	\$5.38	\$214.08	\$149.60	\$64.48
2-inch	\$41.74	8.00	\$333.90	\$5.38	\$339.29	\$261.79	\$77.50
3-inch	\$41.74	17.50	\$730.41	\$5.38	\$735.80	\$560.99	\$174.81
4-inch	\$41.74	31.50	\$1,314.74	\$5.38	\$1,320.13	\$1,121.97	\$198.16
6-inch	\$41.74	70.00	\$2,921.64	\$5.38	\$2,927.03	\$2,243.94	\$683.09

7.3. Proposed Private Fire Service Charges

Waterworks also charges a fixed bimonthly auto fire sprinkler service charge on properties that are required as a condition of extending or initiating water service to install a private fire suppression system, or where the customer or property owner has installed a private fireline for the purpose of fire service protection. The rates for the bimonthly fire service charge are established based on the diameter of the fireline serving a property and are calculated to recover the costs associated with fire service capacity in the water distribution system. The fire service charge has two components: the fire protection component and the customer component.

Total fire protection costs are allocated to private and public fire protection in proportion to the potential demand of each. The total private fire costs are determined to be \$253,729 (see **Table 5-10**). This becomes the numerator for the service cost component to determine the cost per fireline equivalency. The fireline equivalencies calculation is shown in detail in **Section 5.11**. Similar to rates for the potable and recycled water charges, private firelines use the count of total firelines and the ratio between the various fireline sizes to determine total equivalent units. The total annual equivalent firelines is 41,733 (see **Table 5-13**). Dividing the total private fireline costs, \$253,729 (see **Table 5-14**) by

the total annual equivalent lines gives the annual cost per equivalent meter of \$6.08 (rounded to the nearest whole penny).

Table 7-4 shows the derivation of the bimonthly rates for the Auto Fire Sprinkler Charge. The cost per equivalent fireline (\$6.08) is multiplied by the respective fireline ratio to obtain the fireline service component. The same customer service component as the potable and recycled water charge is added to the fireline service component to yield the total charge. The proposed rates for the bimonthly Auto Fire Sprinkler Charge and comparison to the adopted 2020 bimonthly Auto Fire Sprinkler Charge are shown in **Table 7-4**. The proposed charges decrease for smaller fireline sizes and increase for larger fireline sizes due to the updated fire analysis and cost allocation presented in Section 5.9.

Table 7-4: Derivation of Proposed CY 2021 Bimonthly Auto Fire Sprinkler Charges

Bimonthly Auto Fire Sprinkler Charges	Fire Protection Component per Annual Equivalent Fireline	AWWA Capacity Ratio	Fire Service Component	Customer Component	Proposed CY 2021 Bimonthly Charge	Adopted CY 2020 Charge	Difference
	A	B	C = A X B	D	E = C + D	F	G = E - F
2-inch or less	\$6.08	1.00	\$6.08	\$5.38	\$11.47	\$25.18	(\$13.71)
3-inch	\$6.08	2.90	\$17.66	\$5.38	\$23.05	\$35.90	(\$12.85)
4-inch	\$6.08	6.19	\$37.64	\$5.38	\$43.02	\$48.35	(\$5.33)
6-inch	\$6.08	17.98	\$109.32	\$5.38	\$114.71	\$72.34	\$42.37
8-inch	\$6.08	38.32	\$232.97	\$5.38	\$238.36	\$96.23	\$142.13
10-inch	\$6.08	68.91	\$418.96	\$5.38	\$424.35	\$120.25	\$304.10

7.4. Proposed Commodity Charges

7.4.1. UNIT COST COMPONENTS DEFINITIONS

The rates for the Commodity Charges for each customer class are derived by the summation of the unit rates (\$/CCF) for:

4. Supply Costs (Base Fixed Cost Component)
5. Peaking Costs (Peaking Costs Component)
6. Conservation Costs (Conservation Component)
7. Revenue Offsets (Revenue Offsets Component)

Supply are the operating and capital costs associated with purchasing water and transmitting and distributing through the potable system; As Waterworks only has one source of water supply for potable customers the supply component is the same (uniform) for all classes.

Peaking, or extra-capacity, costs represent costs incurred to meet customer peak demands in excess of base use (or average daily demand). Total extra capacity costs are comprised of maximum day and maximum hour demands. The peaking costs are distributed to each class using peaking factors derived from Waterworks customer use data.

Conservation costs cover water conservation and efficiency programs and efforts. Allocation of conservation costs to user classes helps provide a price signal for conservation, consistent with Article X Section 2 of the State of

California Constitution, and proportionately allocates, on a parcel basis, such costs to those customers whose greater demand creates the need for conservation and efficiency programs and efforts.

Revenue Offsets are the non-rate revenues available to Waterworks to reduce the commodity rates for each class to promote affordability and reduce rate impacts. Revenue offsets consist of interest earnings, rental and lease income, and miscellaneous income. These funds allow flexibility in the rate design process to achieve policy objectives while maintaining cost of service principles.

7.4.1.1. Supply Unit Cost

Supply costs are the costs to supply and deliver water. By dividing estimated annual usage by total supply costs, we identify the cost to provide water delivery under the same conditions. The calculated supply unit cost is \$3.234 (see **Table 5-14**).

7.4.1.2. Peaking Unit Costs

As described in **Section 5**, the customer class peaking unit factors were calculated to the max day demand (CCF) and max hour demand (CCF). The factors are calculated by dividing the maximum period of use by the average period of use. Projected demand in each customer class is multiplied by the respective peaking factor to derive total weighted units (peaking units). The unit cost is then distributed through the customer classes using the peaking factor to determine the unit rate for each customer class. **Table 7-5** provides customer class peaking unit costs both for max day cost and max hour cost. The peaking costs shown are derived by analyzing Waterworks’ water usage while utilizing the current customer class definitions. The max day/max hour requirements are multiplied by the max day/max hour unit costs and divided by the overall projected usage.

Table 7-5: Development of Peaking Unit Costs by Customer Class

Customer Class	Projected FY 2021 Usage (CCF)	Max Day Requirements (CCF/Day)	Max Day Unit Cost per CCF/Day	Max Day Unit Cost per CCF	Max Hour Requirements (CCF/Day)	Max Hour Unit Cost per CCF/Day	Max Hour Unit Cost per CCF
	A	B	C	$D = B \times C / A$	E	F	$G = E \times F / A$
Single Family Residential	4,419,248	4,592	\$493.10	\$0.512	16,699	\$73.60	\$0.278
Commercial/Multi-Family/Other	911,846	599	\$493.10	\$0.324	3,097	\$73.60	\$0.250
Landscape/Schools/etc.	2,031,597	3,763	\$493.10	\$0.913	9,329	\$73.60	\$0.338

7.4.1.3. Conservation Unit Cost

Conservation components are determined in a similar manner as peaking components to determine the conservation units, allocation percentages and, therefore, unit rates. Conservation factors are evenly allocated to all customer classes. **Table 5-14** shows the calculation for the unit cost which is \$0.060.

Waterworks’ water conservation programs offer a variety of solutions to reduce water use for all customers served by Waterworks. Water conservation offsets the demand for potable water and therefore is a low cost source of water supply available to all water utilities. It is therefore in the best interest of rate payers for Waterworks to offer and implement an assortment of water conservation programs. These programs ensure reliable future water supply for all rate payers and the community. They also reduce the likelihood of fines for non-compliance with state conservation mandates.

7.4.1.4. Revenue Offset Unit Cost

Revenue offset components are determined similarly to the peaking and conservation components. The revenue offsets are applied equally to all customer classes. **Table 5-14** shows the calculation for the revenue offset unit cost which is \$0.046.

7.4.1.5. Potable Water Final Commodity Charge Rates Derivation

To determine the rates for the potable water Commodity Charges, the components described above are added together. The resulting summation constitutes the final rates. The cost of service rates are shown in bold in **Table 7-6**. All rates are rounded up to the nearest whole penny.

Table 7-6: Derivation of Proposed CY 2021 Potable Commodity Charges

Customer Class	Supply	Max Day	Max Hour	Conser- vation	Revenue Offsets	Proposed CY 2021 Rate	Adopted CY 2020 Rate	Difference (\$)
	A	B	C	D	E	F = A+B+C+D+E	G	H = F-G
Single Family Residential	\$3.234	\$0.512	\$0.278	\$0.060	(\$0.046)	\$4.04	\$3.85	\$0.19
Commercial/ Multi-Family/ Other	\$3.234	\$0.324	\$0.250	\$0.060	(\$0.046)	\$3.83	\$4.00	(\$0.17)
Landscape/ Schools/etc.	\$3.234	\$0.913	\$0.338	\$0.060	(\$0.046)	\$4.51	\$4.20	\$0.31

7.4.1.6. Other Commodity Charges Derivation

Table 7-7 shows the derivation of the commodity charges for Recycled Water and Lift Charges. The cost component for recycled water and for elevation pumping are each calculated by determining the revenue requirement related to the component and dividing it by the units of service. For recycled water, the units of service are in CCF while for elevation pumping, they are in CCF per lift. The proposed 2021 rates and the adopted 2020 rates for these charges are compared in **Table 7-7**. The proposed lift charge rate is the same as the current adopted charge and the proposed recycled water commodity charge rate is increased by \$0.50. Rates are rounded up to the nearest whole penny.

Table 7-7: Derivation of Other Charges

Description	Associated Cost Causation Component	FY 2021 Revenue Requirement	Units of Service	Proposed CY 2021 Rate	Adopted CY 2020 Rate	Difference (\$)
A	B	C	D	E = C / D	F	G = E-F
Recycled Water Commodity Charge per CCF	Recycled Water	\$114,491	36,960 CCF	\$3.10	\$2.60	\$0.50
Lift Charge per CCF/Lift	Elevation Pumping	\$749,024	5,810,757 CCF/Lift	\$0.13	\$0.13	\$0.00

7.5. All Proposed Charges

Table 7-8 shows proposed rates for the five-year schedule of the Bimonthly Service Charges for the Study period. The rates for the Bimonthly Service Charges are increased uniformly by a percentage increase in subsequent years – that is, relative to existing rates – equal to the proposed revenue adjustment in each year from the selected financial plan. All rates are rounded up to the nearest whole penny. The Bimonthly Service Charges are separated by customer class and are uniform for each residential building type while they are based on meter size for the commercial/non-residential potable water customers, recycled water customers, and for auto fire sprinkler customers.

Table 7-8: Current and Proposed Fixed Service Charges

Bimonthly Service Charges	Current CY 2019	Adopted CY 2020	Proposed CY 2021	Proposed CY 2022	Proposed CY 2023	Proposed CY 2024	Proposed CY 2025
Residential							
Single Family	\$61.00	\$61.00	\$68.00	\$70.38	\$72.85	\$75.40	\$78.04
Multi Family	\$42.70	\$48.85	\$42.06	\$43.54	\$45.07	\$46.65	\$48.29
Commercial/Non-Residential							
3/4-inch	\$85.20	\$93.95	\$68.00	\$70.38	\$72.85	\$75.40	\$78.04
1-inch	\$132.40	\$144.00	\$109.73	\$113.58	\$117.56	\$121.68	\$125.94
1.5-inch	\$250.45	\$269.20	\$214.08	\$221.58	\$229.34	\$237.37	\$245.68
2-inch	\$392.10	\$419.40	\$339.29	\$351.17	\$363.47	\$376.20	\$389.37
3-inch	\$840.60	\$895.15	\$735.80	\$761.56	\$788.22	\$815.81	\$844.37
4-inch	\$1,501.60	\$1,596.20	\$1,320.13	\$1,366.34	\$1,414.17	\$1,463.67	\$1,514.90
6-inch	\$3,319.35	\$3,524.10	\$2,927.03	\$3,029.48	\$3,135.52	\$3,245.27	\$3,358.86
Recycled Water							
3/4-inch	\$37.40	\$37.40	\$68.00	\$70.38	\$72.85	\$75.40	\$78.04
1-inch	\$74.80	\$74.80	\$109.73	\$113.58	\$117.56	\$121.68	\$125.94
1.5-inch	\$149.60	\$149.60	\$214.08	\$221.58	\$229.34	\$237.37	\$245.68
2-inch	\$261.79	\$261.79	\$339.29	\$351.17	\$363.47	\$376.20	\$389.37
3-inch	\$560.99	\$560.99	\$735.80	\$761.56	\$788.22	\$815.81	\$844.37
4-inch	\$1,121.97	\$1,121.97	\$1,320.13	\$1,366.34	\$1,414.17	\$1,463.67	\$1,514.90
6-inch	\$2,243.94	\$2,243.94	\$2,927.03	\$3,029.48	\$3,135.52	\$3,245.27	\$3,358.86
Auto Fire Sprinkler							
2-inch or less	\$25.18	\$25.18	\$11.47	\$11.88	\$12.30	\$12.74	\$13.19
3-inch	\$35.90	\$35.90	\$23.05	\$23.86	\$24.70	\$25.57	\$26.47
4-inch	\$48.35	\$48.35	\$43.02	\$44.53	\$46.09	\$47.71	\$49.38
6-inch	\$72.34	\$72.34	\$114.71	\$118.73	\$122.89	\$127.20	\$131.66
8-inch	\$96.23	\$96.23	\$238.36	\$246.71	\$255.35	\$264.29	\$273.55
10-inch	\$120.25	\$120.25	\$424.35	\$439.21	\$454.59	\$470.51	\$486.98

Table 7-9 shows proposed rates for the water Commodity Charges for the Study period. The Commodity Charges are increased “across the board” in subsequent years – that is, relative to existing rates – by the proposed revenue adjustments from the selected financial plan. All rates are rounded up to the nearest whole penny. It is important to note that proposed rates for the Commodity Charges do not include pass through water supply costs in FY 2022-2025. Those costs and rates are determined at the time they are incurred.

Table 7-9: Current and Proposed Commodity Charges

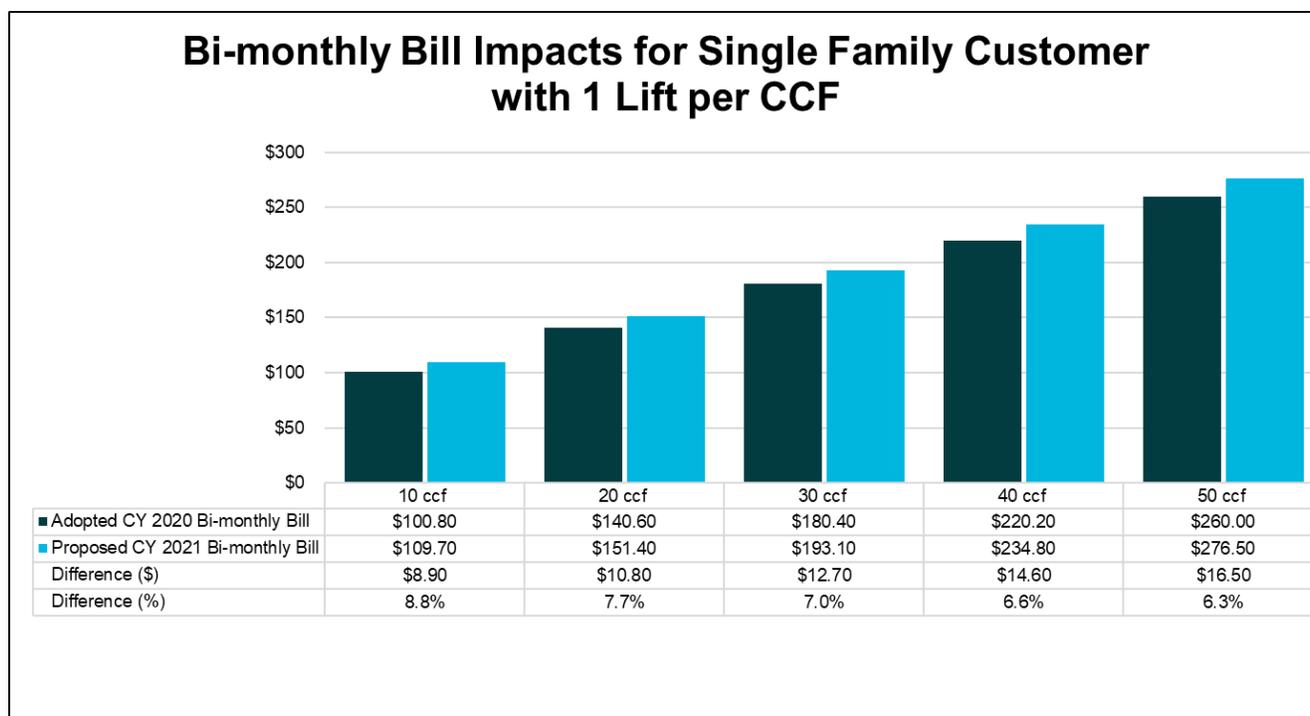
Commodity Charge per CCF	Current CY 2019	Adopted CY 2020	Proposed CY 2021	Proposed CY 2022	Proposed CY 2023	Proposed CY 2024	Proposed CY 2025
Single Family Residential	\$3.86	\$3.85	\$4.04	\$4.19	\$4.34	\$4.50	\$4.66
Commercial/Multi-Family/Other	\$3.89	\$4.00	\$3.83	\$3.97	\$4.11	\$4.26	\$4.41
Landscape/Schools/etc.	\$4.09	\$4.20	\$4.51	\$4.67	\$4.84	\$5.01	\$5.19
Lift Charge (per CCF per Lift)	\$0.12	\$0.13	\$0.13	\$0.14	\$0.15	\$0.16	\$0.17
Recycled Water	\$2.60	\$2.60	\$3.10	\$3.21	\$3.33	\$3.45	\$3.58

*Adopted CY 2020 Rates include estimated pass-through of \$0.09 per CCF; proposed rates do not account for any future pass-through.

7.6. Customer Impacts

The rate model calculates water customer impacts for all classes and meter sizes. Customer impacts from the proposed new rates can be seen below in **Figure 7-1**. The model calculates each bill at the adopted rates and at the proposed rates and determines the percentage and dollar change. A SFR customer who uses 20 CCF will experience a \$10.80 increase in their bimonthly bill. This is due to an increase in the fixed service charge and the commodity charge for SFR customers. Note that the impacts shown are for FY 2021, the cost of service analysis year.

Figure 7-1: Sample Bimonthly Bill Impacts for Single Family Residential Customers



7.7. Single Family Residential Water Bill Comparison

As part of the Study, Waterworks requested a water bill comparison to understand where the utility’s current and proposed rates stand against neighboring agencies. The bills compare a hypothetical customer with a 3/4" meter with average SFR water use for Waterworks during three seasonal periods: winter low (26 CCF per bimonthly period), fall/spring (32 CCF per bimonthly period), and the summer peak (42 CCF per bimonthly period). As shown in **Figure 7-2** through **Figure 7-4**, current Waterworks bills from existing rates fall in the middle of the survey’s

spectrum, with Waterworks' proposed 2021 rates higher. It is important to note that these comparison rates are at this point in time. Other agencies will likely increase their rates over the two-year proposed rate horizon.

Figure 7-2: Bimonthly Bill Comparisons for Neighboring Water Services – Winter Low (26 CCF)

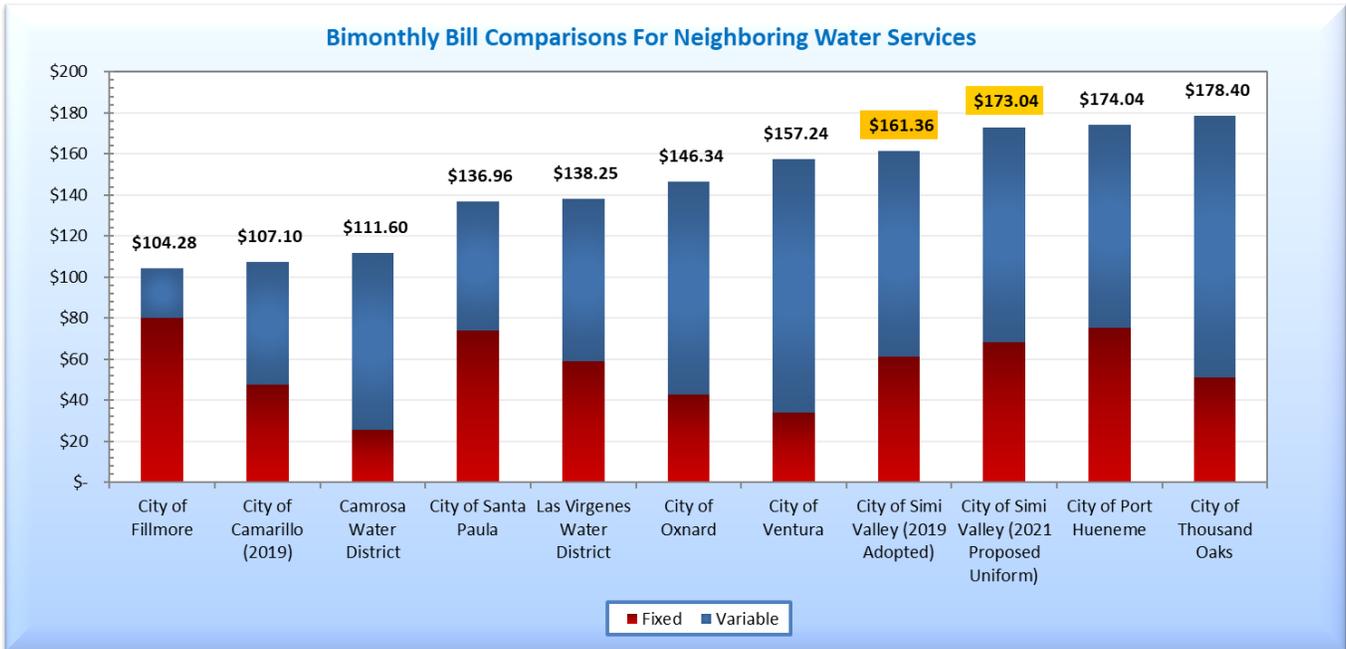


Figure 7-3: Bimonthly Bill Comparisons for Neighboring Water Services – Fall/Spring (32 CCF)

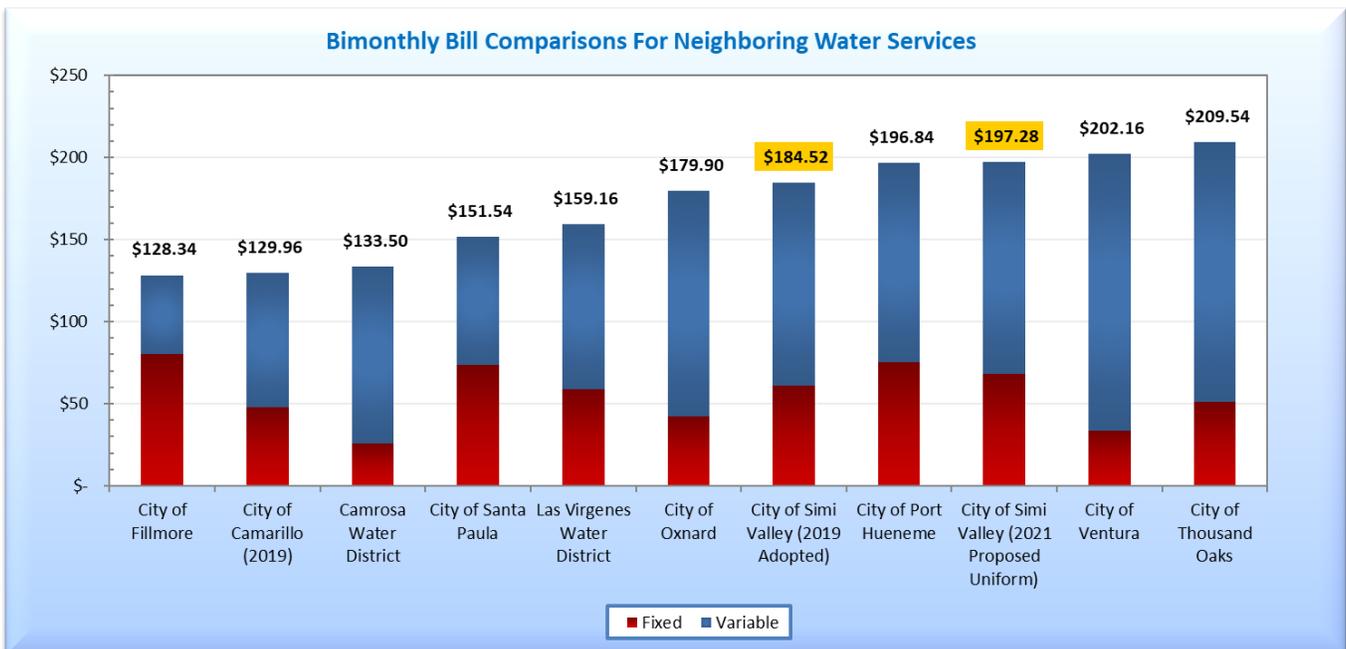


Figure 7-4: Bimonthly Bill Comparisons for Neighboring Water Services – Summer High (42 CCF)

