

CITY OF **CORONA**

Potable and Reclaimed Water Rate Study

Final Report / October 2019



October 18, 2019

Mr. Tom Moody
General Manager
City of Corona, Department of Water and Power
755 Public Safety Way
Corona, CA 92880

Subject: Potable and Reclaimed Water Rate Study Report

Dear Mr. Moody,

Raftelis is pleased to provide this report to the City of Corona Department of Water and Power for the Potable and Reclaimed Water Rate Study. This report presents the analyses, rationales, and methodologies utilized in the study to determine water and reclaimed water rates that meet the requirements of California Constitution Article XIII D, Section 6 (Proposition 218).

The study involved a comprehensive review of the City's current rate structure as well as cost requirements and a rate design process to determine proposed rates that are in line with the City's policy objectives. The City wishes to establish fair and equitable rates that:

- » Proportionately allocate the costs of providing service in accordance with Proposition 218
- » Adequately recover and fund operating expenses, reserve requirements, and capital investment to maintain the water and reclaimed water systems
- » Maintain affordable charges for customers with low water usage
- » Establish an indirect price signal for customers with higher usage, which creates greater demands and burdens on the City's water systems and sources of supply
- » Provide revenue stability and financial sufficiency during instances of water supply shortage or mandatory conservation
- » Are simple and easy for customers to understand and for City staff to implement and update in future years

We are confident that the proposed rates developed during this study are fair and equitable for the City's customers and are compliant with Proposition 218. It was a pleasure working with you and your team, and we wish to express our gratitude for the support you and other City staff provided to us during the study. If you have any questions, please do not hesitate to call me at 213-262-9308.

Sincerely,
Raftelis

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

Sanjay Gaur
Vice President

A handwritten signature in black ink, appearing to read 'Steve Gagnon'.

Steve Gagnon
Manager

A handwritten signature in black ink, appearing to read 'Nancy Phan'.

Nancy Phan
Consultant

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1 Executive Summary

System Overview

The Water Division of the City of Corona (City) was founded in 1964 and subsequently became the Department of Water and Power (Department). The Department serves potable and reclaimed water to roughly 43,000 connections in its service area. The population served by the Department is approximately 165,000 residents over a service area covering 45 square miles.

The City acquires its water supply from several sources, including local groundwater, regional desalted groundwater, imported water via Western Municipal Water District (WMWD), and reclaimed water produced at City-owned water reclamation facilities. The Department operates and maintains three water treatment facilities, 21 wells, 20 booster stations, one groundwater reverse osmosis facility, and a distribution network consisting of 593 miles of water mains. On average, the City treats and serves approximately 30,000 acre-feet (AF) of water annually.

Study Background

In 2018, the City contracted with Raftelis to conduct a Water and Reclaimed Water Rate Study, which includes a long-range financial plan for the potable water and reclaimed water utilities. This study presents the financial plans, cost of service analyses, and resulting potable and reclaimed water rates for implementation in January 2020. Additionally, Raftelis calculated temporary revenue stability charges (TRSCs) that may be implemented in instances of drought, mandatory water conservation, or water supply shortage due to an emergency or state regulatory requirements. The TRSCs calculated in this study are proposed for implementation in conjunction with the proposed potable water rates if the City is experiencing stage 3 conservation or higher.

This Executive Summary reviews the potable water charges, reclaimed water charges, and TRSCs and contains a description of the rate study process, methodology, results, and recommendations. The City's last rate adjustment was effective February 2014 for potable water, and July 2013 for reclaimed water. As costs rise and water supply and demand conditions change, a review of the City's financial position is imperative to ensure that rate revenues are adequate to fund operating costs, reserve requirements, and capital projects.

The City wishes to establish fair and equitable rates that:

- » Proportionately allocate the costs of providing service in accordance with Proposition 218
- » Adequately recover and fund operating expenses, reserve requirements, and capital investment to maintain the water and reclaimed water systems
- » Maintain affordable charges for customers with low water usage
- » Establish an indirect price signal for customers with higher usage, which creates greater demands and burdens on the City's water systems and sources of supply
- » Provide revenue stability and financial sufficiency during instances of water supply shortage or mandatory conservation
- » Are simple and easy for customers to understand and for City staff to implement and update in future years

The major objectives of the water and reclaimed water rate study include the following:

1. Develop financial plans for the potable and reclaimed water enterprises to ensure financial sufficiency and adequate funding of operation and maintenance (O&M) expenses, reserve requirements, and the capital improvement program (CIP)
2. Project future water demand and analyze effects of reduced water sales
3. Conduct a cost of service (COS) analysis for the potable and reclaimed water systems
4. Develop TRSCs to implement during times of drought, supply interruption, and/or mandatory conservation
5. Develop fair and equitable potable and reclaimed water rates that are compliant with Proposition 218

This study was conducted using the principles established in the American Water Works Association's (AWWA) *Principles of Water Rates, Fees, and Charges, Manual of Water Supply Practices M1, 6th edition* (M1 Manual).

Legal Framework

The rate-making process, especially for water agencies in California, begins with reviewing the legal requirements and framework currently in place. The major legal requirements include Proposition 218 and Article X, Section 2 of the California Constitution, which are outlined in the following sections.

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 and subject to the provisions of Proposition 218.

The principal requirements, as they relate to public water service fees and charges, are as follows:

1. Revenues derived from a property-related charge imposed by a public agency 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 the M1 Manual, “water rates and charges should be recovered from classes of customers in proportion to the cost of serving those customers.” Proposition 218 requires that water rates cannot be “arbitrary and capricious,” meaning that the rate-setting methodology must establish a clear nexus between costs and the rates charged.

California Constitution – Article X, Section 2

Article X, Section 2 of the California Constitution was established in 1976 and 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 California Constitution institutes the need to preserve the State’s water supplies and to discourage the wasteful or unreasonable use of water by encouraging conservation. As such, public agencies are constitutionally mandated to maximize the beneficial use of water, prevent waste, and encourage conservation.

Other Considerations

The City established budget-based (also known as allocation-based) water rates in 2010 to incentivize customers to use water in an efficient manner. The budget-based rates (as well as rates for uniform rate classes) need to 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.

Since 1996, the City has been a signatory to the Memorandum of Understanding of the California Urban Water Conservation Council (CUWCC). As a member of the CUWCC, the City has recognized the importance of water conservation in its portfolio of water supplies and is committed to use water efficiently throughout its service area. The City works toward meeting the goals of the CUWCC through implementation of the CUWCC’s five Best Management Practices.

In addition to being a member of the CUWCC, the City is charged with mandates by the State of California to achieve reduced per capita water use. In 2008, Governor Schwarzenegger signed into law a bill referred to as SBX7-7. In addition to providing a plan for improving the Sacramento-San Joaquin Delta through co-equal goals for the environment and people, SBX7-7 required all urban water suppliers to reduce per capita water use by 20 percent by the year 2020. The City is well on its way toward achieving this goal. The City’s rate structure is one of the means by which the City has been able to achieve this statutory mandate.

However, the State Water Resources Control Board will begin to implement new standards for permanent water conservation based on Executive Order B-37-16, which will rescind the current 20 percent reduction standard in favor of an approach based on each utilities’ water needs. Executive Order B-37-16 specifically states that concrete, measurable actions that “Make Conservation a California Way of Life” and “Manage and Prepare for Dry Periods” must be undertaken in order to improve the use of water in California. As such, the State Water Resources Control Board is charged with developing standards that will result in reduced water usage, including new targets for indoor residential per capita water use, climate and landscape area based outdoor irrigation, and eliminating water waste. Until new standards can be adopted, the State Water Resources Control Board recognizes 55 gallons per capita per day as the indoor residential water use standard and 0.55 percent of evapotranspiration for residential landscape and water use as established by SB X7-7.

The actions by the Governor and the State Water Resources Control Board underscore that California’s water resources are finite and must be managed responsibly for sustainable future water supplies. The City imports nearly 50 percent of its water supply and as an urban water supplier must meet per capita water reduction requirements of

the State of California. Population growth is expected to continue in both Corona and Southern California. In light of population growth, potential drought conditions, regulatory and environmental issues, and limited storage, water conservation becomes a low-cost, feasible means of ensuring adequate future supplies.

Budget-based water rates are a specific form of a traditional inclining tiered rate structure. “Inclining” tiered rate structures (which are synonymous with “increasing” tiered rate structures and “tiered” rates), when properly designed and differentiated by customer class, allow a water utility to send indirect conservation price signals to customers while proportionately allocating the costs of service. Due to heightened interest in water use efficiency and conservation, budget-based water rates have gained widespread use, especially in relatively water-scarce regions like Southern California. Tiered rates meet the requirements of Proposition 218 as long as the tiered rates reasonably reflect the proportionate cost of providing service on a parcel basis in each tier.

Study Approach

The process and approach Raftelis utilized in the study is informed by the general guidelines included in the M1 Manual, the study objectives, the City’s current water system and rates, and the legal requirements in California (namely, Proposition 218). The resulting COS analysis and rate design process take all factors into consideration and follow four key steps, outlined below, to determine proposed rates that fulfill the City’s objectives, meet industry standards, and comply with Proposition 218.

Step 1: Revenue Requirement Calculation

The rate-making process begins by determining the revenue requirement for the test year, also known as the rate-setting year. The base year, or the budget year, for this study is fiscal year (FY) 2019¹. The test year for this study is FY 2020. The revenue requirement, equal to the total amount of revenue recovered from rates, should sufficiently fund the utility’s O&M costs, annual debt service, capital project expenses, and reserve funding as projected in the City’s budget.

Step 2: Cost of Service Analysis

The annual cost of providing water service, or the revenue requirement, is then distributed among customer classes commensurate with their use of and burden on the system.

A COS analysis involves the following steps:

1. Functionalize costs – the O&M expense budget is categorized into functions such as supply, treatment, pumping, transmission and distribution (T&D), etc.
2. Allocate to cost components – the functionalized costs are then allocated to cost components such as supply, delivery, peaking, conservation, etc.
3. Develop unit costs – unit costs for each cost component are determined using appropriate units of service for each component.
4. Distribute cost components – the cost components are allocated to each customer class using the unit costs in proportion to their demand and burden on the system.

¹ FY 2019 is the period starting July 1, 2018 to June 30, 2019.

Step 3: Rate Design and Calculation

After allocating the revenue requirement to each customer class, the rate design and calculation process can begin. Rates do more than simply recover costs; within the legal framework and industry standards, properly designed rates should support and optimize the City's objectives. Rates may also act as a public information tool in communicating these objectives to customers.

Step 4: Administrative Record Preparation and Rate Adoption

The final step in a cost of service and rate study is to develop the administrative record in preparation for the rate adoption process. The administrative record, also known as the study report, documents the rate study results and presents the methodologies, rationale, justifications, and calculations utilized to determine the proposed rates. A thorough and methodological administrative record serves two important functions: maintaining defensibility in a stringent legal environment and communicating the rate adoption process to customers and important stakeholders.

Results and Recommendations

The results and recommendations that Raftelis developed in collaboration with Department staff include the following:

- » Proposed revenue adjustments for the potable and reclaimed water systems, shown in **Table 1-1**
- » Proposed revisions to the water budget rate structure and tiers

Table 1-1: Proposed Revenue Adjustments

	A	B	C	D	E	F
Line	Revenue Adjustments	FY 2020*	FY 2021	FY 2022	FY 2023	FY 2024
1	Month Effective	January	January	January	January	January
2	Potable Water	5.0%	5.0%	5.0%	5.0%	5.0%
3	Reclaimed Water	9.0%	9.0%	8.0%	5.0%	5.0%

* Adjustment is to total revenues.

Factors Affecting Revenue Adjustments – Potable Water

- » **Capital Funding:** The City's potable water CIP includes approximately \$71.6 million in capital project costs from FY 2019 to FY 2024, almost entirely funded through potable water rates. The City does not plan to incur additional debt to fund capital projects for the study period. Major projects include the Manglar Blending Facility, the Southwest Grand Quadrant Waterline Replacement, waterline infrastructure improvements, the Zone 1380 Water Storage Tank, the Zone 1220 Pump Station, and the Automated Metering Infrastructure (AMI) meter replacement.
- » **Reserve Funding:** The City has financial reserve policies in place to meet cash flow needs, ensure adequate funding of repairs and replacements in case of asset failure or other emergencies, and protect ratepayers from rate spikes. The financial reserve policies include 90 days of O&M expenses and one year of annual depreciation, equal to approximately \$17.4 million in FY 2019.
- » **Water Supply Costs:** The City's water supply is derived from various sources, including the Arlington and Temescal Desalters, local groundwater wells, Home Garden wells from the Home Gardens Water District, and treated and untreated water from WMWD. In addition, the potable water utility will purchase recycled water for groundwater recharge purposes starting in FY 2019. The total water supply costs increase on average by 5.4 percent for each year of the study.

Factors Affecting Revenue Adjustments – Reclaimed Water

- » **Reserve Funding:** The City’s reclaimed water fund’s balance at the end of FY 2019 is projected to be negative. The proposed revenue adjustments will help the City slowly build reclaimed water reserves over the course of five years. Reserve targets consist of 90 days of O&M (for cash flow needs) and one year of annual depreciation (in case of asset failure or emergency). The reserve target for FY 2024, the end of the study, is equal to approximately \$1.1 million. With the proposed revenue adjustments for reclaimed water, the City will not meet reserve targets by the end of the study period. This will be discussed further in the financial plan.
- » **Capital Funding and Debt Service:** The City’s reclaimed water CIP includes approximately \$2.6 million in capital project costs from FY 2019 to FY 2024. Approximately 84.2 percent of CIP costs will be funded by an internal loan; the remaining will be funded by reclaimed water rates. Internal loans typically have lower overall costs than traditional debt. Major projects include the Western Riverside County Wastewater Regional Authority (WRCWRA) Waterline, the Old Temescal Recycled Waterline, and the Alcoa Reclaimed Effluent Relocation and Pipe Removal projects. Existing and proposed debt service, which include the new debt issued to fund capital projects over the study period, average \$2.4 million per year.

Proposed Rates

Table 1-2 and **Table 1-3** show the current and proposed Ready-to-Serve Charge (RTS) charges by meter size for potable and reclaimed water, respectively. The proposed rates are inclusive of all users and customer classes and are calculated based on the meter size serving a property. **Table 1-4** shows the proposed private fireline charges for the potable water system by meter size. The rates are derived in **Sections 5** and **7**.

Table 1-2: Proposed Potable Water RTS Charges

	A	B	C	D	E	F	G
Line	Meter Size	Current	Proposed January 2020	Proposed January 2021	Proposed January 2022	Proposed January 2023	Proposed January 2024
1	5/8"	\$19.23	\$22.28	\$23.40	\$24.57	\$25.80	\$27.09
2	3/4"	\$25.23	\$29.98	\$31.48	\$33.06	\$34.72	\$36.46
3	1"	\$36.09	\$45.38	\$47.65	\$50.04	\$52.55	\$55.18
4	1 1/2"	\$62.90	\$83.88	\$88.08	\$92.49	\$97.12	\$101.98
5	2"	\$91.80	\$130.08	\$136.59	\$143.42	\$150.60	\$158.13
6	3"	\$156.91	\$276.38	\$290.20	\$304.71	\$319.95	\$335.95
7	4"	\$241.02	\$491.98	\$516.58	\$542.41	\$569.54	\$598.02
8	6"	\$442.64	\$1,238.88	\$1,300.83	\$1,365.88	\$1,434.18	\$1,505.89
9	8"	\$651.04	\$2,162.88	\$2,271.03	\$2,384.59	\$2,503.82	\$2,629.02
10	10"	\$651.04	\$3,240.88	\$3,402.93	\$3,573.08	\$3,751.74	\$3,939.33

Table 1-3: Proposed Reclaimed Water RTS Charges

	A	B	C	D	E	F	G
Line	Meter Size	Current	Proposed January 2020	Proposed January 2021	Proposed January 2022	Proposed January 2023	Proposed January 2024
1	5/8"	\$18.90	\$18.12	\$19.75	\$21.33	\$22.40	\$23.52
2	3/4"	\$24.79	\$23.74	\$25.88	\$27.95	\$29.34	\$30.81
3	1"	\$35.46	\$34.97	\$38.12	\$41.17	\$43.23	\$45.39
4	1 1/2"	\$61.79	\$63.06	\$68.74	\$74.23	\$77.95	\$81.84
5	2"	\$90.18	\$96.77	\$105.48	\$113.92	\$119.61	\$125.59
6	3"	\$154.12	\$203.51	\$221.83	\$239.57	\$251.55	\$264.13
7	4"	\$236.76	\$360.81	\$393.28	\$424.75	\$445.98	\$468.28
8	6"	\$434.82	\$905.74	\$987.26	\$1,066.24	\$1,119.55	\$1,175.53
9	8"	\$639.52	\$1,579.89	\$1,722.08	\$1,859.85	\$1,952.84	\$2,050.48
10	10"	\$639.52	\$2,366.39	\$2,579.37	\$2,785.71	\$2,925.00	\$3,071.25

Table 1-4: Proposed Private Fireline Charges

	A	B	C	D	E	F	G
Line	Fireline Size	Current	Proposed January 2020	Proposed January 2021	Proposed January 2022	Proposed January 2023	Proposed January 2024
1	5/8"	\$16.25	\$7.06	\$7.42	\$7.80	\$8.19	\$8.60
2	3/4"	\$16.25	\$7.06	\$7.42	\$7.80	\$8.19	\$8.60
3	1"	\$16.25	\$7.06	\$7.42	\$7.80	\$8.19	\$8.60
4	1 1/2"	\$16.25	\$7.06	\$7.42	\$7.80	\$8.19	\$8.60
5	2"	\$16.25	\$7.99	\$8.40	\$8.82	\$9.27	\$9.74
6	2 1/2"	\$21.50	\$8.88	\$9.33	\$9.80	\$10.29	\$10.81
7	4"	\$42.75	\$13.78	\$14.47	\$15.20	\$15.96	\$16.76
8	6"	\$78.25	\$26.92	\$28.27	\$29.69	\$31.18	\$32.74
9	8"	\$115.25	\$49.58	\$52.06	\$54.67	\$57.41	\$60.29
10	10"	\$152.00	\$83.66	\$87.85	\$92.25	\$96.87	\$101.72

Table 1-5 shows the proposed potable water commodity rates by customer class. Customer classes with tiered rates include Residential, which consists of Single Family Residential (SFR) and Multi-Family Residential (MFR), and Landscape and Commercial, Industrial, and Governmental (CIG). Construction and Fireline customer classes are charged a uniform rate and are referred to herein occasionally as Uniform Customers.

Table 1-5: Proposed Potable Water Commodity Rates

	A	B	C	D	E	F	G
Line	Customer Class	Current	Proposed January 2020	Proposed January 2021	Proposed January 2022	Proposed January 2023	Proposed January 2024
1	Residential						
2	Tier 1	\$2.10	\$1.57	\$1.65	\$1.74	\$1.83	\$1.93
3	Tier 2	\$2.33	\$2.26	\$2.38	\$2.50	\$2.63	\$2.77
4	Tier 3	\$3.17	\$4.49	\$4.72	\$4.96	\$5.21	\$5.48
5	Tier 4	\$6.35	\$7.48	\$7.86	\$8.26	\$8.68	\$9.12
6	Tier 5	\$11.64	\$11.17	\$11.73	\$12.32	\$12.94	\$13.59
7	Landscape, CIG						
8	Tier 1	\$2.33	\$2.26	\$2.38	\$2.50	\$2.63	\$2.77
9	Tier 2	\$3.17	\$4.49	\$4.72	\$4.96	\$5.21	\$5.48
10	Tier 3	\$6.35	\$7.48	\$7.86	\$8.26	\$8.68	\$9.12
11	Tier 4	\$11.64	\$11.17	\$11.73	\$12.32	\$12.94	\$13.59
12	Uniform Rates						
13	Construction	\$3.17	\$5.40	\$5.67	\$5.96	\$6.26	\$6.58
14	Fireline	\$3.17	\$5.40	\$5.67	\$5.96	\$6.26	\$6.58

Table 1-6 shows the proposed reclaimed water commodity rates by customer class. Reclaimed Water customers have tiered rates; Construction customers are charged a uniform rate.

Table 1-6: Proposed Reclaimed Water Commodity Rates

	A	B	C	D	E	F	G
Line	Customer Class	Current	Proposed January 2020	Proposed January 2021	Proposed January 2022	Proposed January 2023	Proposed January 2024
1	Reclaimed Water						
2	Tier 1	\$1.51	\$1.65	\$1.79	\$1.94	\$2.03	\$2.14
3	Tier 2	\$2.27	\$2.47	\$2.70	\$2.91	\$3.06	\$3.21
4	Tier 3	\$3.02	\$3.29	\$3.59	\$3.88	\$4.07	\$4.27
5	Tier 4	\$4.53	\$4.94	\$5.38	\$5.81	\$6.10	\$6.41
6	Uniform Rates						
7	Construction	\$2.27	\$2.47	\$2.70	\$2.91	\$3.06	\$3.21

Table 1-7 shows the proposed TRSCs by declared water conservation stage in dollars per hundred cubic feet (ccf). These charges are added to the potable water commodity rates during a drought and are designed to recover projected revenue losses to the water enterprise during the implementation of each stage of the City's water conservation ordinance.

Table 1-7: Proposed Temporary Revenue Stability Charges

	A	B	C
Line	Water Conservation Stage	Reduction Target	Temporary Revenue Stability Charge (\$/ccf)
1	Stage 1	0%	N/A
2	Stage 2	10% to 15%	N/A
3	Stage 3	16% to 20%	\$0.15
4	Stage 4	21% to 40%	\$0.45
5	Stage 5	Over 40%	\$0.84

2 Potable Water Financial Plan

This section describes the potable water fund and the proposed financial plan. To develop the financial plan, Raftelis projected annual expenses and revenues, modeled reserve balances, projected capital expenditures, and calculated debt service coverage ratios to estimate the amount of additional rate revenue needed per year. This section of the report provides a discussion of O&M expenses, the CIP, reserve funding, projected revenues under existing rates, and the revenue adjustments required to ensure the fiscal sustainability and solvency of the potable water utility. The numbers shown in this section of the report are rounded and therefore may not equal the exact amounts shown in the tables.

Inflationary Assumptions

Inflationary factors escalate the cost categories across the planning period. City staff provided FY 2019 budget information; the inflationary assumptions are applied to all years beginning in FY 2020. Raftelis worked with City staff to escalate individual budget line items according to the appropriate escalation factor.

Table 2-1 presents the inflationary assumptions used to project the City's expenses for future years. The general inflation rate is based on the long-term change in the Consumer Price Index (CPI) for Los Angeles-Riverside-Orange County. Municipal salaries and benefits tend to outpace general inflation, and therefore a slightly higher escalation factor is used. Utility costs represent recent changes in the price of energy. The chemical cost escalation rate and capital cost escalation rate were provided by City staff and are based on historical averages.

Table 2-1: Expense Inflationary Assumptions

	A	B	C	D	E	F
Line	Escalation Factors	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	General	3.3%	3.3%	3.3%	3.3%	3.3%
2	Salary	3.7%	3.7%	3.7%	3.7%	3.7%
3	Benefits	3.7%	3.7%	3.7%	3.7%	3.7%
4	Utilities	0.3%	0.3%	0.3%	0.3%	0.3%
5	Chemical	3.3%	3.3%	3.3%	3.3%	3.3%
6	Capital	2.8%	2.8%	2.8%	2.8%	2.8%

Table 2-2 shows the inflationary assumptions used to project future revenues, which includes property tax, miscellaneous revenues, and interest income revenues.

Table 2-2: Revenue Inflationary Assumptions

	A	B	C	D	E	F
Line	Escalation Factors	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Property Tax	1.0%	1.0%	1.0%	1.0%	1.0%
2	Miscellaneous Revenues	1.0%	1.0%	1.0%	1.0%	1.0%
3	Reserve Interest	1.0%	1.0%	1.0%	1.0%	1.0%

Projected Revenues at Current Rates

The first step in determining a long-term financial plan is calculating the utility's revenues at current rates. **Table 2-3** shows the current potable water RTS charges and private fireline charges. **Table 2-4** presents the potable water utility's current commodity rates.

Table 2-3: Current Potable Water Fixed Charges

	A	B	C
Line	Meter Size	Current RTS Charges	Current Fireline Charges
1	5/8"	\$19.23	\$16.25
2	3/4"	\$25.23	\$16.25
3	1"	\$36.09	\$16.25
4	1 1/2"	\$62.90	\$16.25
5	2"	\$91.80	\$16.25
6	2 1/2"	N/A	\$21.50
7	3"	\$156.91	\$27.75
8	4"	\$241.02	\$42.75
9	6"	\$442.64	\$78.25
10	8"	\$651.04	\$115.25
11	10"	\$651.04	\$152.00

Table 2-4: Current Potable Water Commodity Rates

	A	B
Line	Customer Class	Current Commodity Rates (\$/ccf)
1	Residential	
2	Tier 1	\$2.10
3	Tier 2	\$2.33
4	Tier 3	\$3.17
5	Tier 4	\$6.35
6	Tier 5	\$11.64
7	Landscape, CIG	
8	Tier 1	\$2.33
9	Tier 2	\$3.17
10	Tier 3	\$6.35
11	Tier 4	\$11.64
12	Uniform Rates	
13	Construction	\$3.17
14	Fireline	\$3.17

City staff provided potable meter counts for FY 2018, estimated the number of new connections for each customer class and meter size for the study period, and potable water demand for each customer class and tier for FY 2018.

Table 2-5 shows the estimated percentage increase in new connections, which was derived from the estimated number of new connections provided by City staff based upon anticipated new developments in the City and are used to project the increase in future water demand due to account growth. The City does not expect any change in water consumption habits and is in Stage 2 water conservation (requires a 10 percent reduction in water consumption).

Table 2-5: Potable Water Account Growth Assumptions

	A	B	C	D	E	F	G
Line	Account Growth	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Residential	2.4%	1.4%	1.7%	1.1%	0.3%	0.0%
2	Non-Residential	0.3%	0.3%	0.2%	0.0%	0.1%	0.0%

Table 2-6 shows the projected potable water and private fireline accounts for the study period, based on the account growth assumptions (**Table 2-5**).

Table 2-6: Projected Potable Water and Private Fireline Accounts

	A	B	C	D	E	F	G	H
Line	Projected Accounts	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Potable Water							
2	5/8"	5,508	5,941	6,341	6,760	7,067	7,087	7,087
3	3/4"	28,311	28,733	28,795	28,795	28,795	28,795	28,795
4	1"	6,040	6,127	6,238	6,501	6,659	6,765	6,765
5	1 1/2"	1,214	1,221	1,227	1,231	1,231	1,233	1,233
6	2"	1,247	1,250	1,251	1,251	1,251	1,251	1,251
7	3"	79	79	80	82	82	82	82
8	4"	34	35	35	36	36	36	36
9	6"	9	9	9	9	9	9	9
10	8"	2	2	2	2	2	2	2
11	10"	0	0	0	0	0	0	0
12	Total	42,444	43,397	43,978	44,667	45,132	45,260	45,260
13	Private Fireline							
14	5/8"	2	2	2	2	2	2	2
15	3/4"	0	0	0	0	0	0	0
16	1"	0	0	0	0	0	0	0
17	1 1/2"	0	0	0	0	0	0	0
18	2"	26	26	26	26	26	26	26
19	2 1/2"	19	19	19	19	19	19	19
20	4"	143	143	143	143	143	143	143
21	6"	459	459	459	459	459	459	459
22	8"	468	468	468	468	468	468	468
23	10"	106	106	106	106	106	106	106
24	Total	1,223	1,223	1,223	1,223	1,223	1,223	1,223

Table 2-7 shows the projected water usage in each customer class for the study period in ccf and AF. These figures are derived by multiplying the actual potable water usage in FY 2018 by the account growth assumption percentages in Table 2-5, with residential growth assumptions applied to single family residential and multifamily residential, and non-residential to the rest.

Table 2-7: Projected Potable Water Usage (ccf)

Line	A Projected Water Usage	B FY 2018	C FY 2019	D FY 2020	E FY 2021	F FY 2022	G FY 2023	H FY 2024
1	Single Family							
2	Tier 1	4,213,567	4,314,687	4,376,130	4,449,263	4,499,125	4,512,637	4,512,637
3	Tier 2	3,697,419	3,786,152	3,840,069	3,904,243	3,947,997	3,959,854	3,959,854
4	Tier 3	241,259	247,049	250,567	254,754	257,609	258,383	258,383
5	Tier 4	109,248	111,870	113,463	115,359	116,652	117,002	117,002
6	Tier 5	114,374	117,119	118,787	120,772	122,125	122,492	122,492
7	Multi-Family							
8	Tier 1	878,912	900,005	912,821	928,076	938,477	941,295	941,295
9	Tier 2	91,055	93,240	94,568	96,148	97,226	97,518	97,518
10	Tier 3	34,529	35,358	35,861	36,460	36,869	36,980	36,980
11	Tier 4	17,830	18,258	18,518	18,827	19,038	19,096	19,096
12	Tier 5	24,720	25,313	25,674	26,103	26,395	26,475	26,475
13	Landscape							
14	Tier 1	1,124,967	1,128,977	1,132,185	1,134,993	1,134,993	1,135,795	1,135,795
15	Tier 2	70,754	71,005	71,206	71,382	71,382	71,432	71,432
16	Tier 3	36,892	37,023	37,128	37,220	37,220	37,246	37,246
17	Tier 4	71,426	71,679	71,882	72,060	72,060	72,111	72,111
18	Commercial							
19	Tier 1	1,133,296	1,136,889	1,139,764	1,142,279	1,142,279	1,142,998	1,142,998
20	Tier 2	44,472	44,613	44,726	44,825	44,825	44,853	44,853
21	Tier 3	23,366	23,440	23,499	23,551	23,551	23,566	23,566
22	Tier 4	54,751	54,925	55,063	55,185	55,185	55,220	55,220
23	Industrial							
24	Tier 1	221,750	222,453	223,016	223,508	223,508	223,648	223,648
25	Tier 2	18,619	18,678	18,725	18,767	18,767	18,778	18,778
26	Tier 3	10,682	10,716	10,743	10,767	10,767	10,773	10,773
27	Tier 4	22,954	23,027	23,085	23,136	23,136	23,150	23,150
28	Governmental							
29	Tier 1	103,626	103,955	104,217	104,447	104,447	104,513	104,513
30	Tier 2	10,068	10,100	10,125	10,148	10,148	10,154	10,154
31	Tier 3	6,156	6,176	6,191	6,205	6,205	6,209	6,209
32	Tier 4	17,746	17,802	17,847	17,887	17,887	17,898	17,898
33	Special Rates							
34	Construction	108,571	108,915	109,191	109,432	109,432	109,500	109,500
35	Fireline	204	205	205	206	206	206	206
36	Total (ccf)	12,503,213	12,739,628	12,885,258	13,056,000	13,167,510	13,199,781	13,199,781
37	Total (AF)	28,703 AF	29,246 AF	29,580 AF	29,972 AF	30,228 AF	30,303 AF	30,303 AF

The current rates are multiplied by the current meter counts and water use data to determine the revenue at current rates, shown in **Table 2-8**, for the study period from FY 2019 to FY 2024. To calculate the RTS charges (Line 1), the projected accounts (**Table 2-6**) are multiplied by the RTS charges (**Table 2-3**, Column B) for each meter size for 12 billing periods. The commodity rate revenues (Line 2) are calculated by multiplying the projected water usage (**Table 2-7**) is multiplied by the current commodity rates (**Table 2-4**) for each customer class and tier. The fireline service charge revenues (Line 3) are calculated by multiplying the projected firelines (**Table 2-6**) by the fireline service charges (**Table 2-3**, Column C) for 12 billing periods.

Table 2-8: Calculated Potable Water Revenues

	A	B	C	D	E	F	G
Line	Calculated Revenues	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	RTS Charges	\$15,335,649	\$15,502,310	\$15,722,575	\$15,861,845	\$15,913,877	\$15,913,877
2	Commodity Rates	\$32,653,052	\$33,010,534	\$33,428,237	\$33,698,305	\$33,777,657	\$33,777,657
3	Fireline Service Charges	\$1,355,128	\$1,355,128	\$1,355,128	\$1,355,128	\$1,355,128	\$1,355,128
4	Total	\$49,343,829	\$49,867,972	\$50,505,940	\$50,915,278	\$51,046,661	\$51,046,661

Other miscellaneous non-rate revenues are projected using the FY 2019 revenue budget provided by City staff and the revenue inflationary assumptions (Table 2-2). Table 2-9 shows the projected miscellaneous revenues for the potable water utility.

Table 2-9: Projected Potable Water Miscellaneous Revenues

	A	B	C	D	E	F	G
Line	Miscellaneous Revenues	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Licenses, Fees, and Permits	\$0	\$0	\$0	\$0	\$0	\$0
2	Permits and Fees	\$1,978,000	\$1,997,780	\$2,017,758	\$2,037,935	\$2,058,315	\$2,078,898
3	Service Installation	\$536,089	\$439,375	\$473,480	\$375,717	\$98,674	\$0
4	Fines, Penalties, and Forfeitures	\$565,000	\$570,650	\$576,357	\$582,120	\$587,941	\$593,821
5	Investment Earnings	\$715,926	\$249,499	\$204,741	\$281,455	\$222,987	\$146,603
6	Intergovernmental Revenues	(\$659)	\$0	\$0	\$0	\$0	\$0
7	Current Services	\$131,400	\$132,714	\$134,041	\$135,382	\$136,735	\$138,103
8	Other Revenues	\$1,516,100	\$1,081,023	\$1,081,833	\$1,082,651	\$1,083,478	\$1,084,313
9	Total	\$5,441,856	\$4,471,040	\$4,488,209	\$4,495,260	\$4,188,130	\$4,041,737

Water Supply Costs

This section provides a brief description of each of the different sources of supply available to the City.

Arlington Desalter: The Western Municipal Water District (WMWD) owns and operates the Arlington Desalter Treatment facility. This facility treats local groundwater and delivers it mainly to the City of Norco, with a portion of it going to the City of Corona and the remainder delivered to areas within the City of Riverside.

Local Wells: The City owns and operates 21 local groundwater wells.

Home Gardens Wells: The City has worked with the Home Gardens Water District to develop and treat groundwater wells in the Home Gardens service area. The treated water is an additional drinking water source for both water systems.

Temescal Desalter: The City owns and operates the Temescal Desalter, a reverse osmosis membrane treatment facility, which provides removal of Total Dissolved Solids and nitrates from local groundwater wells.

WMWD Untreated Tier 1: WMWD is the City's wholesale water provider. WMWD offers both treated and untreated water to the Department that it imports from the Metropolitan Water District (MWD). Untreated Tier 1 water represents the City's allocation from WMWD of imported water that has not been treated to drinking water standards.

WMWD Treated Tier 1: Treated Tier 1 water represents the City's allocation from WMWD of imported water that has been treated to drinking water standards by either MWD or WMWD prior to distribution to the City.

WMWD Untreated Tier 2: Untreated Tier 2 water represents imported water available to the City above its Tier 1 allocation from WMWD. Untreated Tier 2 is water that has not been treated to drinking water standards.

WMWD Treated Tier 2: Treated Tier 2 water represents imported water available to the City above its allocation from WMWD. Treated Tier 2 water has been treated by either MWD or WMWD prior to distribution to the City.

The City acquires water from several of the above sources, which includes imported water, desalted water, and local groundwater wells, among others. The water supply detail includes availability quantities, minimum take requirements, maximum allotments or yields, and potential new sources. The supply mix has the potential to change every year. City staff provided water supply costs for FY 2019.

Table 2-10 presents the inflationary assumptions for water supply costs, including purchased water costs, administrative charges, and ready-to-serve charges, for all sources for FY 2020 and beyond. Raftelis worked with City staff to develop inflation factors for water supply costs by analyzing historical rate increases from each source.

Table 2-10: Potable Water Supply Cost Inflationary Assumptions

	A	B	C	D	E	F
Line	Water Supply Inflation	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	WMWD Administrative Charge	1.3%	0.5%	0.5%	0.5%	0.5%
2	Capacity Reservation Charge	2.3%	2.3%	2.3%	2.3%	2.3%
3	WMWD RTS Charge	2.3%	2.3%	2.3%	2.3%	2.3%
4	Untreated Tier 1	3.3%	4.2%	4.2%	4.2%	4.2%
5	Untreated Tier 2	3.1%	3.8%	3.8%	3.8%	3.8%
6	Arlington Desalter	3.3%	4.2%	4.2%	4.2%	4.2%
7	Treated Tier 1	2.7%	3.1%	3.1%	3.1%	3.1%
8	Treated Tier 2	2.6%	2.9%	2.9%	2.9%	2.9%

Table 2-11 shows the potable water production calculation for each year of the study. The retail potable sales are equal to the total potable usage (**Table 2-7**, Line 37). The total potable sales are inclusive of sales to the Home Gardens Water District. The total potable water production (Line 5) accounts for system water loss using the water loss percentage (Line 4). The following equation is used to calculate potable water production (Line 5):

$$\text{Total Potable Sales (Line 3)} / [1 - \text{Water Loss (Line 4)}] = \text{Potable Water Production (Line 5)}$$

Table 2-11: Calculated Potable Water Production

	A	B	C	D	E	F	G
Line	Water Production	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Retail Potable Sales	29,246 AF	29,580 AF	29,972 AF	30,228 AF	30,303 AF	30,303 AF
2	Home Garden Sales	365 AF	365 AF	365 AF	365 AF	365 AF	365 AF
3	Total Potable Sales	29,611 AF	29,945 AF	30,337 AF	30,593 AF	30,668 AF	30,668 AF
4	Water Loss	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
5	Potable Water Production	31,170 AF	31,522 AF	31,934 AF	32,204 AF	32,282 AF	32,282 AF

Table 2-12 shows the quantities available for purchase from each water supply source.

Table 2-12: Quantity Available for Potable Water Demand

	A	B	C	D	E	F	G
Line	Quantity Available	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Untreated Water						
2	Untreated Tier 1 - Min	0 AF	0 AF	0 AF	0 AF	0 AF	0 AF
3	Local Wells	8,800 AF	8,800 AF	8,800 AF	8,800 AF	8,800 AF	8,800 AF
4	Home Gardens Wells	1,200 AF	1,200 AF	1,200 AF	1,200 AF	1,200 AF	1,200 AF
5	Temescal Desalter	11,202 AF	11,202 AF	11,202 AF	11,202 AF	11,202 AF	11,202 AF
6	Untreated Tier 1 (beyond min)	15,000 AF	15,000 AF	15,000 AF	15,000 AF	15,000 AF	15,000 AF
7	Untreated Tier 2	0 AF	0 AF	0 AF	0 AF	0 AF	0 AF
8	Treated Water						
9	Arlington Desalter	900 AF	900 AF	900 AF	900 AF	900 AF	900 AF
10	Treated Tier 1 - Min	1,665 AF	1,665 AF	1,665 AF	1,665 AF	1,665 AF	1,665 AF
11	Treated Tier 1 (beyond min)	25 AF	25 AF	25 AF	25 AF	25 AF	25 AF
12	Treated Tier 2	0 AF	0 AF	0 AF	0 AF	0 AF	0 AF

Table 2-13 shows the water produced or purchased from each water source. Note that the total water produced from all sources (Line 13) is equal to the total water production (**Table 2-11**, Line 5).

Table 2-13: Potable Water Production by Source

	A	B	C	D	E	F	G
Line	Water Produced and Purchased	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Untreated Water						
2	Untreated Tier 1 - Min	0 AF	0 AF	0 AF	0 AF	0 AF	0 AF
3	Local Wells	8,800 AF	8,800 AF	8,800 AF	8,800 AF	8,800 AF	8,800 AF
4	Home Gardens Wells	1,200 AF	1,200 AF	1,200 AF	1,200 AF	1,200 AF	1,200 AF
5	Temescal Desalter	11,202 AF	11,202 AF	11,202 AF	11,202 AF	11,202 AF	11,202 AF
6	Untreated Tier 1 (beyond min)	7,403 AF	7,755 AF	8,167 AF	8,437 AF	8,515 AF	8,515 AF
7	Untreated Tier 2	0 AF	0 AF	0 AF	0 AF	0 AF	0 AF
8	Treated Water						
9	Arlington Desalter	900 AF	900 AF	900 AF	900 AF	900 AF	900 AF
10	Treated Tier 1 - Min	1,665 AF	1,665 AF	1,665 AF	1,665 AF	1,665 AF	1,665 AF
11	Treated Tier 1 (beyond min)	0 AF	0 AF	0 AF	0 AF	0 AF	0 AF
12	Treated Tier 2	0 AF	0 AF	0 AF	0 AF	0 AF	0 AF
13	Total	31,170 AF	31,522 AF	31,934 AF	32,204 AF	32,282 AF	32,282 AF

Table 2-14 shows the unit cost of production for each water source, excluding pumping and treatment costs. The unit costs for FY 2020 and beyond are escalated based on the water cost inflationary assumptions (**Table 2-10**).

Table 2-14: Potable Water Production Unit Costs

	A	B	C	D	E	F	G
Line	Water Production Unit Cost	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Untreated Water						
2	Untreated Treated 1 – Min (\$/AF)	\$709.83	\$740.89	\$768.16	\$800.67	\$834.55	\$869.86
3	Local Wells (\$/AF)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
4	Home Gardens Wells (\$/AF)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
5	Temescal Desalter (\$/AF)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
6	Untreated Tier 1 (beyond min) (\$/AF)	\$709.83	\$740.89	\$768.16	\$800.67	\$834.55	\$869.86
7	Untreated Tier 2 (\$/AF)	\$795.83	\$827.30	\$855.30	\$888.10	\$922.16	\$957.52
8	WMWD Administrative Charge (\$/AF)	\$22.00	\$23.00	\$23.11	\$23.22	\$23.33	\$23.44
9	Annual WMWD Capacity Charge	\$487,782	\$505,490	\$517,246	\$529,275	\$541,584	\$554,178
10	Annual WMWD RTS Charge	\$1,052,940	\$1,090,785	\$1,115,389	\$1,140,548	\$1,166,275	\$1,192,582
11	Treated Water						
12	Arlington Desalter (\$/AF)	\$984.74	\$1,026.99	\$1,065.23	\$1,110.31	\$1,157.29	\$1,206.26
13	Treated Tier 1 - Min (\$/AF)	\$1,045.70	\$1,077.74	\$1,108.40	\$1,142.29	\$1,177.21	\$1,213.20
14	Treated Tier 1 (beyond min) (\$/AF)	\$1,045.70	\$1,077.74	\$1,108.40	\$1,142.29	\$1,177.21	\$1,213.20
15	Treated Tier 2 (\$/AF)	\$1,131.70	\$1,164.18	\$1,195.56	\$1,229.82	\$1,265.07	\$1,301.32

Table 2-15 shows the water supply cost based on the unit costs (**Table 2-14**) and the water produced by source (**Table 2-13**). The WMWD Administrative Charge (Line 8) is a charge per AF of water purchased from WMWD for administrative costs. The Annual WMWD Capacity Charge and RTS Charge (Lines 9-10) are fixed costs charged once per year that do not vary with water produced; these charges represent WMWD's costs to provide capacity and service to the City (similar to how the City charges its customers an RTS charge).

Table 2-15: Potable Water Supply Cost

	A	B	C	D	E	F	G
Line	Purchased Water Cost	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Untreated Water						
2	Untreated Treated 1 - Min	\$0	\$0	\$0	\$0	\$0	\$0
3	Local Wells	\$0	\$0	\$0	\$0	\$0	\$0
4	Home Gardens Wells	\$0	\$0	\$0	\$0	\$0	\$0
5	Temescal Desalter	\$0	\$0	\$0	\$0	\$0	\$0
6	Untreated Tier 1 (beyond min)	\$5,254,646	\$5,745,270	\$6,273,719	\$6,754,944	\$7,105,861	\$7,406,547
7	Untreated Tier 2	\$0	\$0	\$0	\$0	\$0	\$0
8	WMWD Administrative Charge	\$199,488	\$216,650	\$227,204	\$234,530	\$237,453	\$238,570
9	Annual WMWD Capacity Charge	\$487,782	\$505,490	\$517,246	\$529,275	\$541,584	\$554,178
10	Annual WMWD RTS Charge	\$1,052,940	\$1,090,785	\$1,115,389	\$1,140,548	\$1,166,275	\$1,192,582
11	Total Untreated Water	\$6,994,856	\$7,558,195	\$8,133,558	\$8,659,297	\$9,051,173	\$9,391,878
12	Treated Water						
13	Arlington Desalter	\$886,265	\$924,291	\$958,707	\$999,275	\$1,041,559	\$1,085,633
14	Treated Tier 1 – Min	\$1,741,091	\$1,794,437	\$1,845,480	\$1,901,905	\$1,960,055	\$2,019,983
15	Treated Tier 1 (beyond min)	\$0	\$0	\$0	\$0	\$0	\$0
16	Treated Tier 2	\$0	\$0	\$0	\$0	\$0	\$0
17	Total Treated Water	\$2,627,357	\$2,718,728	\$2,804,187	\$2,901,180	\$3,001,615	\$3,105,616

Table 2-16 summarizes the purchased water costs. The fixed water cost (Line 1) is equal to the annual WMWD capacity and RTS charges (**Table 2-15**, Lines 9-10). The Administrative Charge (**Table 2-15**, Line 8) is added to the cost of untreated water in tier 1 beyond minimum (**Table 2-15**, Line 6).

Table 2-16: Potable Water Supply Cost Summary

	A	B	C	D	E	F	G
Line	Purchased Water Cost	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Fixed Water Costs	\$1,540,722	\$1,596,275	\$1,632,635	\$1,669,823	\$1,707,858	\$1,746,760
2	Untreated Water	\$5,454,134	\$5,961,920	\$6,500,923	\$6,989,474	\$7,343,314	\$7,645,117
3	Treated Water	\$2,627,357	\$2,718,728	\$2,804,187	\$2,901,180	\$3,001,615	\$3,105,616
4	Total	\$9,622,212	\$10,276,923	\$10,937,745	\$11,560,477	\$12,052,787	\$12,497,494

The City plans to purchase surplus reclaimed water to recharge its groundwater basin, which is a cost to the potable water system and a revenue to the reclaimed water system. The program is proposed to take effect in January 2020. Since this program starts late in the fiscal year, FY 2020 shows a lower reclaimed water purchase cost (Column B, Line 3) than other years of the study. The potable water utility can purchase up to 5,960 AF per year to recharge its basins or the amount of surplus reclaimed water, whichever is less. The City provided the estimated groundwater recharge cost (Line 2). **Table 2-17** shows the groundwater recharge program costs.

Table 2-17: Groundwater Recharge Program Costs

	A	B	C	D	E	F
Line	Groundwater Recharge	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Reclaimed Water Purchased	1,699 AF	3,351 AF	3,339 AF	3,339 AF	3,339 AF
2	Groundwater Recharge Cost	\$160 /AF	\$160 /AF	\$160 /AF	\$160 /AF	\$160 /AF
3	Total	\$271,786	\$536,145	\$534,288	\$534,288	\$534,288

Projected O&M Expenses

Table 2-18 shows the projected O&M expenses for the study period. The projected water purchase costs (Lines 19-21) are equal to the calculated water purchase cost (**Table 2-15**); the projected groundwater recharge costs (Line 22) are equal the calculated groundwater recharge costs (**Table 2-17**). All other O&M expenses are from the City's O&M budget for FY 2019, escalated by the inflationary assumptions (**Table 2-1**) for FY 2020 and beyond.

Table 2-18: Projected Potable Water O&M Expenses

	A	B	C	D	E	F	G
Line	Projected O&M Expenses	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Capital Improvements						
2	Salaries & Benefits	\$923,490	\$957,980	\$993,759	\$1,030,874	\$1,069,375	\$1,109,314
3	Supplies	\$713,406	\$737,101	\$761,584	\$786,879	\$813,015	\$840,018
4	Land Development/Permitting						
5	Salaries & Benefits	\$105,093	\$109,018	\$113,090	\$117,313	\$121,695	\$126,240
6	Supplies	\$79	\$82	\$84	\$87	\$90	\$93
7	Water Utility Inspection						
8	Supplies	\$1,400	\$1,447	\$1,495	\$1,544	\$1,595	\$1,648
9	Water General Services						
10	Salaries & Benefits	\$2,133,232	\$2,478,261	\$2,570,818	\$2,666,833	\$2,766,434	\$2,869,754
11	Supplies w/o Interest Expenses	\$8,971,870	\$8,231,542	\$8,252,833	\$8,287,858	\$8,336,422	\$8,398,357
12	Capital Outlay	\$0	\$271,374	\$0	\$0	\$0	\$0
13	Water Regulatory Compliance						
14	Salaries & Benefits	\$159,674	\$111,396	\$115,556	\$119,872	\$124,349	\$128,993
15	Supplies	\$636,385	\$657,522	\$679,361	\$701,926	\$725,240	\$749,328
16	Water Operations						
17	Salaries & Benefits	\$3,644,040	\$3,780,137	\$3,921,317	\$4,067,770	\$4,219,693	\$4,377,289
18	Supplies w/o Water Supply Costs	\$7,768,612	\$7,376,228	\$6,413,862	\$6,543,613	\$6,638,081	\$6,722,651
19	Fixed Water Costs	\$1,540,722	\$1,596,275	\$1,632,635	\$1,669,823	\$1,707,858	\$1,746,760
20	Raw Water Purchases	\$5,454,134	\$5,961,920	\$6,500,923	\$6,989,474	\$7,343,314	\$7,645,117
21	Treated Water Purchases	\$2,627,357	\$2,718,728	\$2,804,187	\$2,901,180	\$3,001,615	\$3,105,616
22	Purchased Recharge Groundwater	\$0	\$271,786	\$536,145	\$534,288	\$534,288	\$534,288
23	Capital Outlay	\$0	\$0	\$0	\$0	\$0	\$0
24	Water Infrastructure Maintenance						
25	Salaries & Benefits	\$2,069,885	\$2,147,191	\$2,227,384	\$2,310,572	\$2,396,867	\$2,486,385
26	Supplies	\$1,742,426	\$1,800,299	\$1,860,095	\$1,921,877	\$1,985,711	\$2,051,665
27	Capital Outlay	\$90,000	\$92,989	\$96,078	\$99,269	\$102,566	\$105,973
28	Water Facilities Maintenance						
29	Salaries & Benefits	\$768,863	\$797,578	\$827,366	\$858,267	\$890,321	\$923,573
30	Supplies	\$2,016,436	\$2,083,407	\$2,152,602	\$2,224,096	\$2,297,964	\$2,374,285
31	Capital Outlay	\$100,000	\$102,806	\$105,690	\$108,656	\$111,704	\$114,839
32	Sustainability & Conservation						
33	Salaries & Benefits	\$484,568	\$502,666	\$521,439	\$540,914	\$561,116	\$582,072
34	Supplies	\$159,946	\$165,258	\$170,747	\$176,419	\$182,278	\$188,333
35	Utility Billing						
36	Salaries & Benefits	\$577,577	\$599,148	\$621,525	\$644,738	\$668,817	\$693,796
37	Supplies	\$1,369,318	\$1,414,799	\$1,461,790	\$1,510,343	\$1,560,508	\$1,612,339
38	Less Capitalized Expenses	(\$19,500)	(\$20,148)	(\$20,817)	(\$21,508)	(\$22,223)	(\$22,961)
39	Total	\$44,039,012	\$44,946,791	\$45,321,549	\$46,792,974	\$48,138,692	\$49,465,766

Debt Service

The City's potable water utility has four outstanding long-term debt obligations:

1. The Brine Loan System Discharge Right Agreement
2. Elsinore Valley Municipal Water District (EVMWD) Agreement
3. 2012 Water Revenue Bonds
4. State Revolving Fund (SRF) Loan

Table 2-19 shows the existing debt service allocation between the City’s three funds for the potable water-related debt service obligations. Fund 507 (Column C) is used for development or expansion-related contributions, which does not affect the potable water financial plan.

Table 2-19: Existing Potable Water Debt Service Allocation

	A	B	C	D	E
Line	Existing Debt Allocation	570 - Potable Water	507 - Water Capacity	567 - Reclaimed Water	Total
1	Brine Loan	100%	0%	0%	100%
2	Lake Elsinore	100%	0%	0%	100%
3	2012 Water Bonds	45%	41%	14%	100%
4	SRF Loan	0%	100%	0%	100%

Table 2-20 shows the total annual debt service for each of the four outstanding loans and the amount allocated to the potable water fund (Line 6) based on the debt allocation percentages (**Table 2-19**).

Table 2-20: Existing Potable Water Debt Service

	A	B	C	D	E	F	G
Line	Existing Debt Service	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Brine Loan	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000
2	Lake Elsinore	\$250,000	\$0	\$0	\$0	\$0	\$0
3	2012 Water Bonds	\$2,740,250	\$2,744,375	\$2,736,500	\$2,739,000	\$2,725,725	\$2,725,850
4	SRF Loan	\$507,889	\$507,889	\$507,889	\$507,889	\$507,889	\$507,889
5	Total	\$4,098,139	\$3,852,264	\$3,844,389	\$3,846,889	\$3,833,614	\$3,833,739
6	Fund 570 - Potable Water	\$2,083,112	\$1,834,969	\$1,831,425	\$1,832,550	\$1,826,576	\$1,826,632

The City is not planning to incur additional debt for its potable water system during this study period.

Capital Projects

Table 2-21 shows the capital projects funded by the potable water fund and the associated funding percentage for each project. The potable water fund pays for a small portion of reclaimed water CIP, which is included in this table. The CIP costs are then inflated for future years (Line 35) using the capital inflationary assumption (**Table 2-1**, Line 6). The final capital costs (Line 35) include potable and reclaimed water CIP costs paid by the potable water fund. The potable water system pays for a portion of two reclaimed water capital projects, including the WRCRWA Treatment Plant, because the construction of these projects partially benefits the potable water system. All capital costs are funded through rates or reserves because the City does not plan to incur new debt.

Table 2-21: Potable Water CIP Costs

	A	B	C	D	E	F	G	H
Line	Potable Water Capital Projects	Funded by 570	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Potable Water CIP							
2	Emergency Generators	100%	\$0	\$500,000	\$500,000	\$500,000	\$500,000	\$0
3	Temescal Vly Wtr Dist Svc Bnd	100%	\$0	\$0	\$0	\$0	\$1,000,000	\$0
4	Mangular Blending - 2012 Wrrb	100%	\$4,632,504	\$0	\$0	\$0	\$0	\$0
5	SW Grand Quad Wtrln Rplcmt Ph1	100%	\$0	\$0	\$3,000,000	\$0	\$0	\$0
6	SE Grand Quad Wtrln Rplcmt	100%	\$0	\$0	\$0	\$2,308,333	\$2,308,333	\$2,308,333
7	Lester Inlet Valve Relocation	100%	\$0	\$0	\$0	\$351,619	\$0	\$0
8	Lester Post Disinfection Stn	100%	\$0	\$280,000	\$0	\$0	\$0	\$0
9	Well 14A	100%	\$0	\$400,000	\$2,471,373	\$0	\$0	\$0
10	Well 15 Relocation	100%	\$0	\$2,206,705	\$0	\$0	\$0	\$0
11	Keith Water Storage Tank	100%	\$200,000	\$0	\$0	\$0	\$0	\$0
12	Well Rehabilitation	100%	\$0	\$450,000	\$450,000	\$450,000	\$450,000	\$0
13	Arcadia/Minnesota Wl Rplcmt	100%	\$850,000	\$0	\$0	\$0	\$0	\$0
14	Scada Panel Rplcmt	100%	\$200,000	\$600,000	\$600,000	\$200,000	\$200,000	\$0
15	Rincon Bridge	100%	\$400,000	\$0	\$0	\$0	\$0	\$0
16	Downtown 6th St Wtrln Rplcmt	100%	\$0	\$0	\$0	\$2,900,000	\$0	\$0
17	Meter Replacements	100%	\$156,000	\$900,000	\$900,000	\$0	\$0	\$0
18	Water System Improvements	100%	\$10,000	\$0	\$0	\$0	\$0	\$0
19	Waterline Infrastructure	100%	\$960,000	\$960,000	\$960,000	\$960,000	\$960,000	\$960,000
20	Household Hazardous Waste Fac	100%	\$0	\$144,800	\$0	\$0	\$0	\$0
21	Alcoa Dike Potable Water Noncompensable Utilities	100%	\$5,000	\$0	\$0	\$0	\$0	\$0
22	Development Meters	100%	\$131,250	\$506,974	\$0	\$0	\$0	\$0
23	Sixth & Yorba Street Wl Replc	100%	\$1,000,000	\$0	\$0	\$0	\$0	\$0
24	Hayden Avenue and Howe Street Wl	100%	\$75,000	\$0	\$0	\$0	\$0	\$0
25	Business Process Management	100%	\$151,250	\$0	\$0	\$0	\$0	\$0
26	1220 Zone Bs Pump Station	100%	\$500,000	\$4,000,000	\$0	\$0	\$0	\$0
27	SDO Plant Landscape Repair	100%	\$70,000	\$0	\$0	\$0	\$0	\$0
28	Desalter Chemical Feed System	100%	\$0	\$0	\$0	\$300,000	\$192,144	\$0
29	AMI Meter Replacement Project	100%	\$0	\$0	\$0	\$9,260,000	\$9,260,000	\$0
30	Generator DPF at Well 22 and Lester	100%	\$0	\$700,000	\$0	\$0	\$0	\$0
31	Capitalized Expenses	100%	\$19,500	\$20,148	\$20,817	\$21,508	\$22,223	\$22,961
32	Reclaimed Water CIP							
33	WRCRWA Flow Control Improvements	80%	\$120,000	\$840,000	\$0	\$0	\$0	\$0
34	Adjacent Irrigation Conversion	100%	\$0	\$133,800	\$133,800	\$133,800	\$133,800	\$133,800
35	Total – Fund 570		\$9,480,504	\$12,642,426	\$9,035,990	\$17,385,261	\$15,026,500	\$3,425,094
36	Total – Fund 570 (Inflated)		\$9,480,504	\$12,996,582	\$9,548,982	\$18,888,228	\$16,782,666	\$3,929,924

Current Financial Plan

Table 2-22 shows the City's current potable water financial plan, with revenues based on current rates. Rate revenues (Lines 2-4) are equal to calculated rate revenues (**Table 2-8**). Miscellaneous revenues (Lines 9-16) are equal to projected miscellaneous revenues (**Table 2-9**), with slightly lower investment earnings due to fund balances. O&M expenses (Lines 20-30) are equal to projected O&M expenses (**Table 2-18**). Existing debt service (Line 36) is equal to the potable water fund's portion of debt service (**Table 2-20**, Line 6). Rate funded capital project costs (Line 41) are equal to inflated capital project costs (**Table 2-21**, Line 36).

Net revenue (Line 33) is equal to all revenues (Lines 6 and 17) less O&M expenses (Line 31). Net cash flow (Line 44) is net revenue (Line 33) less debt service (Line 38) and capital project costs (Line 42). Based on this financial plan, the City will have a negative fund balance in FY 2022 (Column E, Line 47) if no revenue adjustments are implemented. The net cash flow for all years of the study is negative, signifying that the City's current rates are not sufficient to fund its O&M expenses, debt service and capital project obligations.

Table 2-22: Current Potable Water Financial Plan

	A	B	C	D	E	F	G
Line	Potable Water Financial Plan	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Rate Revenues						
2	RTS Charges	\$15,335,649	\$15,502,310	\$15,722,575	\$15,861,845	\$15,913,877	\$15,913,877
3	Commodity Charges	\$32,653,052	\$33,010,534	\$33,428,237	\$33,698,305	\$33,777,657	\$33,777,657
4	Fireline Service Charges	\$1,355,128	\$1,355,128	\$1,355,128	\$1,355,128	\$1,355,128	\$1,355,128
5	Revenue Adjustments	\$0	\$0	\$0	\$0	\$0	\$0
6	Total Rate Revenues	\$49,343,829	\$49,867,972	\$50,505,940	\$50,915,278	\$51,046,661	\$51,046,661
7							
8	Miscellaneous Revenues						
9	Licenses, Fees, and Permits	\$0	\$0	\$0	\$0	\$0	\$0
10	Permits and Fees	\$1,978,000	\$1,997,780	\$2,017,758	\$2,037,935	\$2,058,315	\$2,078,898
11	Service Installation	\$536,089	\$439,375	\$473,480	\$375,717	\$98,674	\$0
12	Fines, Penalties, and Forfeitures	\$565,000	\$570,650	\$576,357	\$582,120	\$587,941	\$593,821
13	Investment Earnings	\$715,926	\$243,234	\$172,796	\$196,560	\$56,104	(\$132,890)
14	Intergovernmental Revenues	(\$659)	\$0	\$0	\$0	\$0	\$0
15	Current Services	\$131,400	\$132,714	\$134,041	\$135,382	\$136,735	\$138,103
16	Other Revenues	\$1,516,100	\$1,081,023	\$1,081,833	\$1,082,651	\$1,083,478	\$1,084,313
17	Total Miscellaneous Revenues	\$5,441,856	\$4,464,775	\$4,456,264	\$4,410,365	\$4,021,248	\$3,762,244
18							
19	O&M Expenses						
20	Capital Improvements	\$1,636,896	\$1,695,082	\$1,755,342	\$1,817,753	\$1,882,389	\$1,949,332
21	Land Development/Permitting	\$105,172	\$109,100	\$113,174	\$117,400	\$121,785	\$126,333
22	Water Utility Inspection	\$1,400	\$1,447	\$1,495	\$1,544	\$1,595	\$1,648
23	Water General Services	\$11,105,102	\$10,981,177	\$10,823,651	\$10,954,691	\$11,102,856	\$11,268,111
24	Water Regulatory Compliance	\$796,059	\$768,918	\$794,917	\$821,797	\$849,588	\$878,321
25	Water Operations	\$21,034,864	\$21,705,074	\$21,809,069	\$22,706,148	\$23,444,849	\$24,131,723
26	Water Infrastructure Maintenance	\$3,902,311	\$4,040,480	\$4,183,557	\$4,331,718	\$4,485,144	\$4,644,022
27	Water Facilities Maintenance	\$2,885,299	\$2,983,791	\$3,085,659	\$3,191,018	\$3,299,989	\$3,412,697
28	Sustainability & Conservation	\$644,514	\$667,924	\$692,187	\$717,332	\$743,394	\$770,405
29	Utility Billing	\$1,946,895	\$2,013,947	\$2,083,316	\$2,155,081	\$2,229,325	\$2,306,135
30	Less Capitalized Expenses	(\$19,500)	(\$20,148)	(\$20,817)	(\$21,508)	(\$22,223)	(\$22,961)
31	Total O&M Expenses	\$44,039,012	\$44,946,791	\$45,321,549	\$46,792,974	\$48,138,692	\$49,465,766
32							
33	Net Revenue	\$10,746,672	\$9,385,956	\$9,640,655	\$8,532,669	\$6,929,217	\$5,343,139
34							
35	Debt Service						
36	Existing Debt Service	\$2,083,112	\$1,834,969	\$1,831,425	\$1,832,550	\$1,826,576	\$1,826,632
37	Proposed Debt Service	\$0	\$0	\$0	\$0	\$0	\$0

	A	B	C	D	E	F	G
Line	Potable Water Financial Plan	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
38	Total Debt Service	\$2,083,112	\$1,834,969	\$1,831,425	\$1,832,550	\$1,826,576	\$1,826,632
39							
40	Capital Projects						
41	Rate Funded	\$9,480,504	\$12,996,582	\$9,548,982	\$18,888,228	\$16,782,666	\$3,929,924
42	Total Capital Projects	\$9,480,504	\$12,996,582	\$9,548,982	\$18,888,228	\$16,782,666	\$3,929,924
43							
44	Net Cash Flow	(\$816,944)	(\$5,445,594)	(\$1,739,752)	(\$12,188,109)	(\$11,680,025)	(\$413,418)
45							
46	Beginning Balance	\$13,031,587	\$12,214,643	\$6,769,049	\$5,029,297	(\$7,158,812)	(\$18,838,837)
47	Ending Balance	\$12,214,643	\$6,769,049	\$5,029,297	(\$7,158,812)	(\$18,838,837)	(\$19,252,255)
48							
49	Reserve Target	\$17,422,494	\$17,829,367	\$18,108,034	\$18,666,057	\$19,197,989	\$19,730,746

Proposed Financial Plan

Table 2-23 shows the proposed revenue adjustments that will allow the City’s potable water utility to meet its debt service obligations, capital project costs, and reserve funding requirements.

The recommended reserve policy includes 90 days of O&M expenses and one year of annual depreciation. Reserve policies enable the City 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 2-23: Proposed Potable Water Revenue Adjustments

	A	B	C	D	E	F
Line	Revenue Adjustments	FY 2020*	FY 2021	FY 2022	FY 2023	FY 2024
1	Month Effective	January	January	January	January	January
2	Potable Water	5.0%	5.0%	5.0%	5.0%	5.0%

* Adjustment is to total revenue.

Table 2-24 shows the proposed financial plan with revenue adjustments (**Table 2-23**). The additional revenue (Line 5) is based on the revenue adjustment percentage (**Table 2-23**) and the number of effective months in the fiscal year. For example, the revenue adjustment percentage for FY 2020 is effective for six months out of the year; the total revenue adjustment (Column C, Line 5) reflects this. Based on the proposed financial plan, the City will fully fund its potable water utility costs, which include O&M expenses, debt service, and capital projects, while building reserves over the study period.

Table 2-24: Proposed Potable Water Financial Plan

	A	B	C	D	E	F	G
Line	Potable Water Financial Plan	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Rate Revenues						
2	RTS Charges	\$15,335,649	\$15,502,310	\$15,722,575	\$15,861,845	\$15,913,877	\$15,913,877
3	Commodity Charges	\$32,653,052	\$33,010,534	\$33,428,237	\$33,698,305	\$33,777,657	\$33,777,657
4	Fireline Service Charges	\$1,355,128	\$1,355,128	\$1,355,128	\$1,355,128	\$1,355,128	\$1,355,128
5	Revenue Adjustments	\$0	\$1,246,699	\$3,851,078	\$6,622,168	\$9,523,552	\$12,552,063
6	Total Rate Revenues	\$49,343,829	\$51,114,671	\$54,357,018	\$57,537,446	\$60,570,213	\$63,598,724
7							
8	Miscellaneous Revenues						
9	Licenses, Fees, and Permits	\$0	\$0	\$0	\$0	\$0	\$0
10	Permits and Fees	\$1,978,000	\$1,997,780	\$2,017,758	\$2,037,935	\$2,058,315	\$2,078,898
11	Service Installation	\$536,089	\$439,375	\$473,480	\$375,717	\$98,674	\$0
12	Fines, Penalties, and Forfeitures	\$565,000	\$570,650	\$576,357	\$582,120	\$587,941	\$593,821
13	Investment Earnings	\$715,926	\$249,499	\$204,741	\$281,455	\$222,987	\$146,603
14	Intergovernmental Revenues	(\$659)	\$0	\$0	\$0	\$0	\$0
15	Current Services	\$131,400	\$132,714	\$134,041	\$135,382	\$136,735	\$138,103
16	Other Revenues	\$1,516,100	\$1,081,023	\$1,081,833	\$1,082,651	\$1,083,478	\$1,084,313
17	Total Miscellaneous Revenues	\$5,441,856	\$4,471,040	\$4,488,209	\$4,495,260	\$4,188,130	\$4,041,737
18							
19	O&M Expenses						
20	Capital Improvements	\$1,636,896	\$1,695,082	\$1,755,342	\$1,817,753	\$1,882,389	\$1,949,332
21	Land Development/Permitting	\$105,172	\$109,100	\$113,174	\$117,400	\$121,785	\$126,333
22	Water Utility Inspection	\$1,400	\$1,447	\$1,495	\$1,544	\$1,595	\$1,648
23	Water General Services	\$11,105,102	\$10,981,177	\$10,823,651	\$10,954,691	\$11,102,856	\$11,268,111
24	Water Regulatory Compliance	\$796,059	\$768,918	\$794,917	\$821,797	\$849,588	\$878,321
25	Water Operations	\$21,034,864	\$21,705,074	\$21,809,069	\$22,706,148	\$23,444,849	\$24,131,723
26	Water Infrastructure Maintenance	\$3,902,311	\$4,040,480	\$4,183,557	\$4,331,718	\$4,485,144	\$4,644,022
27	Water Facilities Maintenance	\$2,885,299	\$2,983,791	\$3,085,659	\$3,191,018	\$3,299,989	\$3,412,697
28	Sustainability & Conservation	\$644,514	\$667,924	\$692,187	\$717,332	\$743,394	\$770,405
29	Utility Billing	\$1,946,895	\$2,013,947	\$2,083,316	\$2,155,081	\$2,229,325	\$2,306,135
30	Less Capitalized Expenses	(\$19,500)	(\$20,148)	(\$20,817)	(\$21,508)	(\$22,223)	(\$22,961)
31	Total O&M Expenses	\$44,039,012	\$44,946,791	\$45,321,549	\$46,792,974	\$48,138,692	\$49,465,766
32							
33	Net Revenue	\$10,746,672	\$10,638,921	\$13,523,677	\$15,239,732	\$16,619,652	\$18,174,694
34							
35	Debt Service						
36	Existing Debt Service	\$2,083,112	\$1,834,969	\$1,831,425	\$1,832,550	\$1,826,576	\$1,826,632
37	Proposed Debt Service	\$0	\$0	\$0	\$0	\$0	\$0

	A	B	C	D	E	F	G
Line	Potable Water Financial Plan	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
38	Total Debt Service	\$2,083,112	\$1,834,969	\$1,831,425	\$1,832,550	\$1,826,576	\$1,826,632
39							
40	Capital Projects						
41	Rate Funded	\$9,480,504	\$12,996,582	\$9,548,982	\$18,888,228	\$16,782,666	\$3,929,924
42	Total Capital Projects	\$9,480,504	\$12,996,582	\$9,548,982	\$18,888,228	\$16,782,666	\$3,929,924
43							
44	Net Cash Flow	(\$816,944)	(\$4,192,630)	\$2,143,271	(\$5,481,046)	(\$1,989,590)	\$12,418,138
45							
46	Beginning Balance	\$13,031,587	\$12,214,643	\$8,022,014	\$10,165,284	\$4,684,239	\$2,694,648
47	Ending Balance	\$12,214,643	\$8,022,014	\$10,165,284	\$4,684,239	\$2,694,648	\$15,112,786
48							
49	Reserve Target	\$17,422,494	\$17,829,367	\$18,108,034	\$18,666,057	\$19,197,989	\$19,730,746

To better visualize the effects of the revenue adjustments on the proposed financial plan, this section displays the proposed financial plan in graphical format. The figures show the City’s resulting debt service coverage from revenue adjustments, the proposed operating financial plan comparing current and proposed revenues, projected ending balances and reserve targets, and the CIP and its funding sources.

Figure 2-1 shows the proposed revenue adjustments and resulting debt service coverage. The City is exceeding its debt service coverage targets for all years of the study.

Figure 2-1: Proposed Potable Water Revenue Adjustments and Debt Coverage

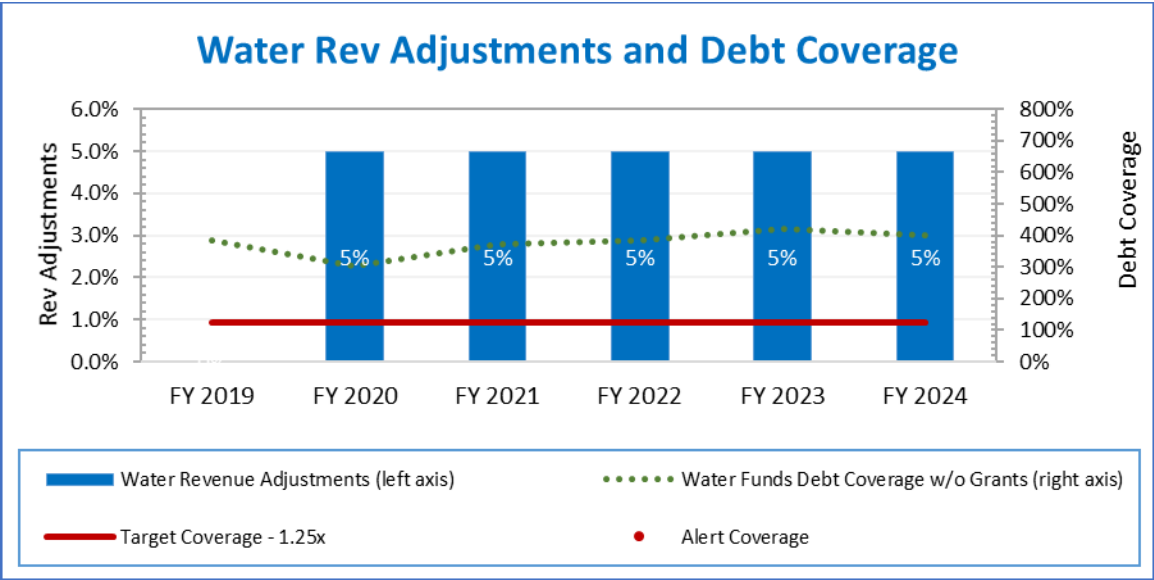


Figure 2-2 shows the potable water operating financial plan and compares existing revenues (red line) and proposed revenues (green line). The bars consist of the various expenses for the potable water utility, including debt service (green bars), water supply costs (blue bars), reserve funding (red bars), and all other O&M expenses excluding water supply (orange bars).

Figure 2-2: Projected Potable Water Financial Plan

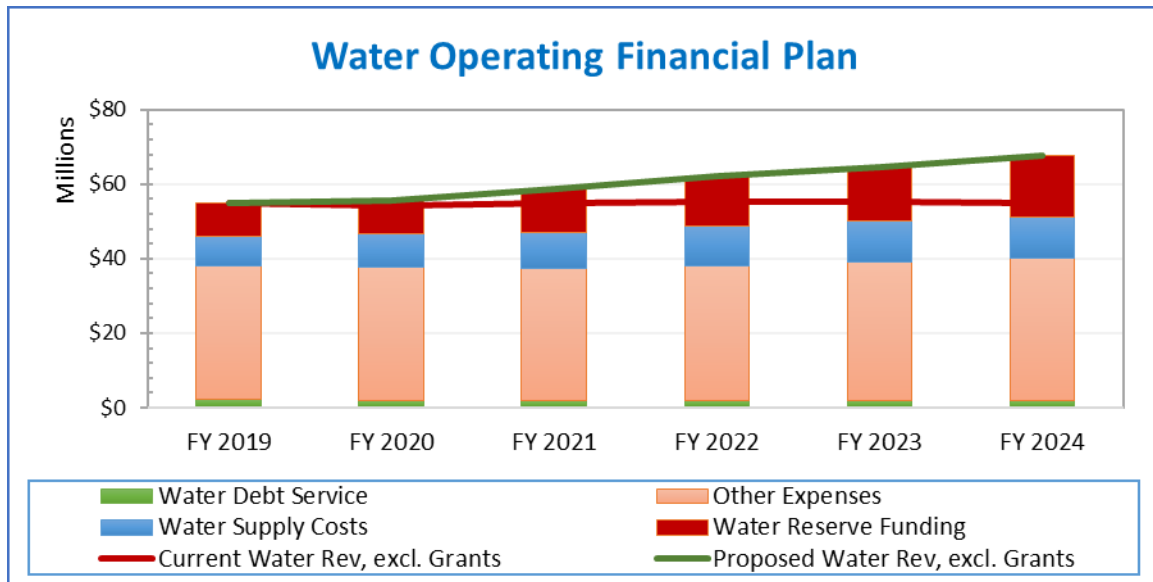


Figure 2-3 shows the potable water utility’s ending balance for each year of the study. The blue bars represent the ending balance, and the red line indicates the target reserve level. The potable water balances will not meet the reserve target during the study period. The AMI meter replacement project, occurring in FY 2022 and FY 2023, is a one-time capital project that will temporarily reduce the City’s potable water reserves. Permanent rate increases to fund a one-time project can inordinately impact customers over the long term, so the City has decided to fund the AMI project through reserves to reduce potential customer impacts due to these costs. However, Raftelis recommends that the City review the revenue adjustments in the years following the study to meet reserve target levels in the future.

Figure 2-3: Projected Potable Water Ending Balances

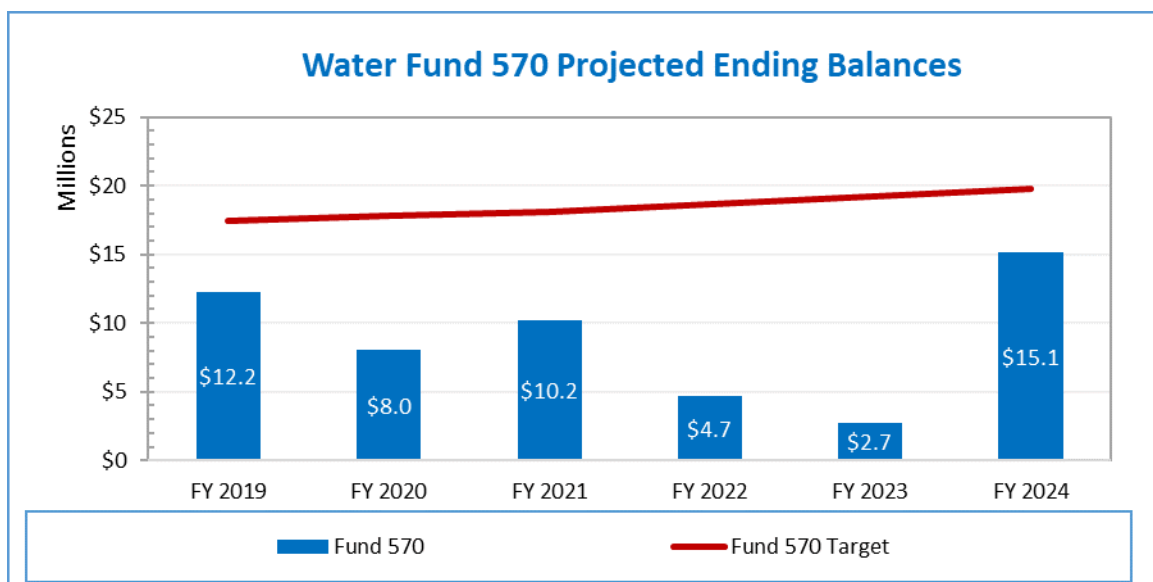
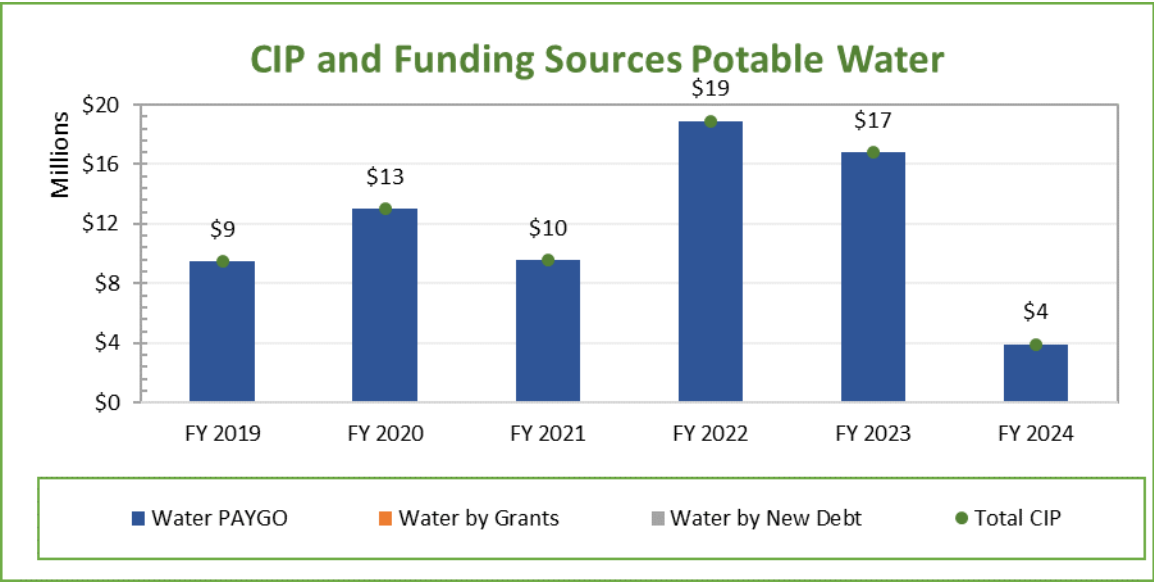


Figure 2-4 shows the capital financing plan for the potable water utility. The City does not plan to incur debt to fund its capital projects over the study period; therefore, all capital projects are shown as rate funded (also known

as PAYGO). Note that the capital project costs for FY 2022 and FY 2023 are higher than shown in other years; this is due to the AMI meter replacement project as mentioned previously.

Figure 2-4: Proposed Potable Water Capital Financing Plan



3 Potable Water Cost of Service Analysis

This section of the report describes the potable water COS analysis. The purpose of a COS analysis is to proportionately allocate costs to the customer class and tiers based on their cost burden on the system. The numbers shown in this section of the report are rounded and therefore the totals and subtotals may not equal the exact amounts shown in the tables.

Revenue Requirement

The potable water revenue requirement is equal to the revenue to be collected from potable water rates (**Table 2-22**, Lines 2-4). **Table 3-1** shows the revenue requirement derivation with the total revenue required from rates before revenue adjustments (Line 16).

Raftelis calculated the revenue requirement using FY 2020 expenses and rate funded capital costs. O&M expenses include costs directly related to the supply, treatment, and distribution of water, as well as routine maintenance of system facilities. The total revenue requirement from all revenue sources (Line 5) is equal to the O&M (Line 1) and capital costs (Lines 2-4) for FY 2020.

The **Revenue Required from Rates** is equal to Total Revenue Requirements (Line 5) less Total Revenue Offsets (Line 15). Reserve funding (Line 4) equals the net cash flow prior to revenue adjustments. Revenue offsets (Line 15) are non-rate revenues. These revenues are utilized to offset, or reduce, the revenue requirement. Note that this is equal to the amount of rate revenue projected in FY 2020, prior to revenue adjustments (**Table 2-22**, Lines 2-4).

Table 3-1: Potable Water Revenue Requirement before Revenue Adjustments

	A	B
Line	Revenue Requirements	FY 2020
1	O&M Expenses	\$44,946,791
2	Debt Service	\$1,834,969
3	Rate Funded Capital Projects	\$12,996,582
4	Reserve Funding w/o Adjustment	(\$5,439,329)
5	Total Revenue Requirements	\$54,339,012
6	Revenue Offsets	
7	Licenses, Fees, and Permits	\$0
8	Permits and Fees	(\$1,997,780)
9	Service Installation	(\$439,375)
10	Fines, Penalties, and Forfeitures	(\$570,650)
11	Investment Earnings	(\$249,499)
12	Intergovernmental Revenues	\$0
13	Current Services	(\$132,714)
14	Other Revenues	(\$1,081,023)
15	Total Revenue Offsets	(\$4,471,040)
16	Revenue Required from Rates (Before Adjustments)	\$49,867,972

Functions and Cost Components

After determining a utility's revenue requirements, the next step in a cost of service analysis is to functionalize O&M costs. The functions used for this study (or cost categories) include:

- » General Services
- » Average Demand
- » Peak Demand
- » Water Treatment O&M
- » Fixed Water Purchase
- » Water Purchase
- » Capital Outlay/Capital
- » Transmission and Distribution (Trans. & Dist.)
- » Water Facilities
- » Conservation
- » Billing and Customer Service (Billing & CS)
- » Treatment Capital
- » Pumping
- » Storage
- » Revenue Offsets
- » General and Administrative (Gen. & Admin)

Functionalized costs can then be allocated to the cost causation components (also called cost components). Cost components represent the various costs of the water system. The cost components include:

- » **Supply** costs are related to the purchase of water supplies including untreated and treated water from all sources.
- » **Base** (average) costs vary with the total quantity of water used within the water system under average conditions. These costs may include treatment, pumping, and transmission and distribution facilities, and capital costs related to plant investment associated with serving customers at a constant, or average, annual rate of use. Base costs are therefore spread over all units of water equally.
- » **Peaking** (maximum day and maximum hour) 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 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 average annual rate of use or base use requirements.
- » **Billing and Customer Service** costs are 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.
- » **Fire Protection** are costs of providing public and private fire protection, which includes both direct and indirect capital-related and maintenance costs of fire hydrants and private fire connections, as well as indirect costs for source of supply, treatment, transmission, and distribution of water as these facilities and infrastructure must be upsized to meet fire protection demands placed on the water system.
- » **Private Fire Protection** are costs of providing private fire protection service for private property, such as for on-site fire hydrants or fire sprinkler systems.
- » **Conservation** costs include all costs of funding, administering, and executing water conservation and efficiency related programs and services, as well as development of alternative and/or supplemental water supplies.

- » **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 allocated to the other cost causation components in proportion to the relative percentages of the other cost components.
- » **Revenue Offsets** refer to non-rate revenues (miscellaneous and non-operating revenues) which are derived by the utility through other activities. Examples include sales of investments, interest income, or rental income.

This method of functionalizing costs and then allocating functionalized costs to the cost components is consistent with the AWWA M1 Manual and is widely used in the water industry to perform COS analyses.

Functionalization of O&M Expenses

Table 3-2 shows the functionalization of the City's O&M expenses for the test year, FY 2020. Functionalizing O&M expenses is in line with the principles of rate-setting theory, in which the end goal is to allocate the City's O&M expenses to the cost components. Note that the total is equal to the O&M expenses shown in the financial plan (**Table 2-18**, Column C, Line 39).

Table 3-2: Functionalized O&M Expenses for Potable Water

	A	B	C
Line	O&M Expenses	Function	FY 2020
1	Capital Improvements		
2	Salaries & Benefits	Capital Outlay	\$957,980
3	Supplies	Capital Outlay	\$737,101
4	Land Development/Permitting		
5	Salaries & Benefits	Capital Outlay	\$109,018
6	Supplies	Capital Outlay	\$82
7	Water Utility Inspection		
8	Supplies	Water Treatment O&M	\$1,447
9	Water General Services		
10	Salaries & Benefits	General Services	\$2,478,261
11	Supplies w/o Interest Expenses	General Services	\$8,231,542
12	Capital Outlay	General Services	\$271,374
13	Water Regulatory Compliance		
14	Salaries & Benefits	Average Demand	\$111,396
15	Supplies	Average Demand	\$657,522
16	Water Operations		
17	Salaries & Benefits	Average Demand	\$3,780,137
18	Supplies	Average Demand	\$7,376,228
19	Fixed Water Costs	Fixed Water Purchase	\$1,596,275
20	Raw Water Purchases	Water Purchase	\$5,961,920
21	Treated Water Purchases	Water Purchase	\$2,718,728
22	Purchased Recharge Groundwater	Water Purchase	\$271,786
23	Water Infrastructure Maintenance		
24	Salaries & Benefits	Trans. & Dist.	\$2,147,191
25	Supplies	Trans. & Dist.	\$1,800,299
26	Capital Outlay	Trans. & Dist.	\$92,989
27	Water Facilities Maintenance		
28	Salaries & Benefits	Water Facilities	\$797,578
29	Supplies	Water Facilities	\$2,083,407
30	Capital Outlay	Capital Outlay	\$102,806
31	Sustainability & Conservation		
32	Salaries & Benefits	Conservation	\$502,666
33	Supplies	Conservation	\$165,258
34	Utility Billing		
35	Salaries & Benefits	Billing & CS	\$599,148
36	Supplies	Billing & CS	\$1,414,799
37	Less Capitalized Expenses	Gen. & Admin	(\$20,148)
38	Total		\$44,946,791

Table 3-3 shows the O&M expenses summarized by the various functions (Table 3-2, Column B).

Table 3-3: Functionalized O&M Expenses for Potable Water Summary

	A	B
Line	Functionalized O&M Expenses	FY 2019
1	General Services	\$10,981,177
2	Average Demand	\$11,925,283
3	Water Treatment O&M	\$1,447
4	Gen. & Admin	(\$20,148)
5	Fixed Water Purchase	\$1,596,275
6	Water Purchase	\$8,952,433
7	Capital Outlay	\$1,906,987
8	Trans. & Dist.	\$4,040,480
9	Water Facilities	\$2,880,985
10	Conservation	\$667,924
11	Billing & CS	\$2,013,947
12	Total	\$44,946,791

Functionalization of Capital Assets

Similarly, capital assets are functionalized in **Table 3-4**. The City's complete list of capital assets are functionalized as opposed to functionalizing capital project costs in any particular year. The functions of capital project costs can fluctuate greatly each year depending on the project type; however, functionalized capital assets, which are representative of the utility's entire system, remain relatively stable from year to year. This is so that the cost of service is not unduly affected by a large short-term capital project for one function (supply, for example). The asset values (Column C) are the replacement value, which takes into consideration annual capital inflation costs.

Table 3-4: Functionalized Capital Assets for Potable Water

	A	B	C
Line	Capital Assets	Function	FY 2020
1	Contreras Park Well Installation/Rehab	Gen. & Admin	\$191,274
2	Lester Water Treatment Plant	Treatment Capital	\$17,661,447
3	Sierra Del Oro Water Treatment	Treatment Capital	\$10,947,432
4	Green River Water Treatment Plant	Treatment Capital	\$2,887,078
5	Water Reclamation Facility #1	Treatment Capital	\$68,567
6	Desalter Plant	Treatment Capital	\$28,983,898
7	Corporation Yard	Gen. & Admin	\$3,800,878
8	Water Reclamation Facility #3	Treatment Capital	\$139,063
9	Rimpau Zone 4 Pump Station	Pumping	\$854,227
10	Eagle Glen Emergency Pump Station	Pumping	\$2,032,693
11	Radio Sites Throughout City	Gen. & Admin	\$33,848
12	Water Reservoirs	Storage	\$48,854,694
13	Wells	Storage	\$18,786,352
14	Booster Pump Stations	Pumping	\$12,634,918
15	Pressure Reducing Stations	Pumping	\$1,467,494
16	Blend Stations	Peak Demand	\$73,821
17	Corona Heights Mutual Water Co	Average Demand	\$551,105
18	Interconnections	Trans. & Dist.	\$1,329,016
19	Licensed Vehicles	Gen. & Admin	\$3,073,970
20	Infrastructure Assets	Trans. & Dist.	\$315,654,900
21	Land	Gen. & Admin	\$1,517,233
22	Total		\$471,543,907

Table 3-5 shows the O&M expenses summarized by the various functions (Table 3-4, Column B).

Table 3-5: Functionalized Capital Assets for Potable Water Summary

	A	B
Line	Functionalized Capital Assets	FY 2020
1	Gen. & Admin	\$8,617,203
2	Treatment Capital	\$60,687,484
3	Pumping	\$16,989,331
4	Storage	\$67,641,047
5	Peak Demand	\$73,821
6	Average Demand	\$551,105
7	Trans. & Dist.	\$316,983,916
8	Total	\$471,543,907

Allocation of Functionalized Expenses to Cost Components

After functionalizing expenses, the next step is to allocate the functionalized expenses to cost components. This step requires the identification of system-wide peaking factors, which are calculated in Table 3-6. The system-wide peaking factors are used to derive the cost component allocation percentages between base and peaking cost components.

The average day demand (Column B) and max day demand (Column D) are derived from billed customer usage data for FY 2015. At the time of the study, the FY 2015 detailed customer billing information was readily available. Average and max day demand typically do not fluctuate drastically from year to year. Max hour peaking factors (Column E) are derived from the Water Master Plan of September 2005 and represent the additional capacity required over the max day factor to meet demand for the maximum hour on the maximum day. Max hour demand (Column F) is equal to the max day demand (Column D) multiplied by the peaking hour factor (Column E).

Base costs represent costs proportional to the average day demand throughout the year and therefore has a factor of 1.00. System-wide max day and max hour peaking factors are calculated based on the average day, max day, and max hour demand of total existing and future demand (Line 10).

Max day is the ratio of maximum day demand to base demand:

$$\text{Max Day Demand (Column D, Line 10)} / \text{Average Day Demand (Column B, Line 10)} = \text{Max Day Peaking Factor (Column C, Line 10)}$$

Similarly, max hour is the ratio of maximum hour demand, on the maximum day, to base demand:

$$\text{Max Hour Demand (Column F, Line 10)} / \text{Average Day Demand (Column B, Line 10)} = \text{Max Hour Peaking Factor (Column E, Line 10)}$$

Table 3-6: Potable Water System Peaking Factor Calculation

	A	B	C	D	E	F
Line	Peaking Factors	Average Day Demand (gpd)	Max Day Peaking Factor	Max Day Demand (gpd)	Max Hour Peaking Factor	Max Hour Demand (gpd)
1	Existing Demand					
2	Zone 1	2,824,840	1.63	4,608,958	2.00	9,217,916
3	Zone 2	11,486,090	1.63	18,740,497	1.26	23,613,026
4	Zone 3	9,773,810	1.63	15,946,772	1.60	25,514,835
5	Zone 4	6,602,020	1.63	10,771,737	1.88	20,250,866
6	Zone 5	4,616,050	1.63	7,531,464	1.67	12,577,545
7	Zone 6	944,220	1.63	1,540,572	2.51	3,866,836
8	Total Existing	36,247,030	1.63	59,140,000	2.62	95,041,024
9	Future Demand	44,106,072	1.80	79,390,930	2.62	208,004,237
10	Total	80,353,102	1.72	138,530,930	3.77	303,045,260

The peaking factors describe the total flow during peak times of use. As customer classes peak demands increase, so must the size of facilities and pipelines to meet their demands. The larger facilities cost more to construct, maintain, and replace. The point of identifying peaking factors is to charge each class in proportion to the peak demands they place on the water system. Functionalized expenses are then allocated to the cost components using the allocation bases derived from the peaking factors shown in **Table 3-7**.

The Max Day allocations are calculated using the following equations:

- » Base: $58.1\% = (1.00/1.72) \times 100\%$
- » Max Day: $41.9\% = (1.72-1.00)/1.72 \times 100\%$

The Max Hour allocations are calculated using the following equations:

- » Base: $26.5\% = (1.00/3.77) \times 100\%$
- » Maximum Day: $19.1\% = (1.72-1.00)/3.77 \times 100\%$
- » Maximum Hour: $54.4\% = (3.77-1.72)/3.77 \times 100\%$

The Max Day and Max Hour with Fire allocations (Lines 4-5) include a percentage allocation for fire protection (Column F) based on City staff and industry estimates.

The Max Day with Fire allocations are calculated using the following equations:

- » Base: $45.3\% = (1.00/1.72) \times (100\% - 22\%)$
- » Max Day: $32.7\% = (1.72-1.00)/1.72 \times (100\% - 22\%)$

The Max Hour allocations are calculated using the following equations:

- » Base: $20.7\% = (1.00/3.77) \times (100\% - 22\%)$
- » Maximum Day: $14.9\% = (1.72-1.00)/3.77 \times (100\% - 22\%)$
- » Maximum Hour: $42.4\% = (3.77-1.72)/3.77 \times (100\% - 22\%)$

Table 3-7: Potable Water System-Wide Peaking Factor Allocations

	A	B	C	D	E	F	G
Line	Peaking Factors	Peaking Factor	Base	Max Day	Max Hour	Fire Protection	Total
1	Base (Average Demand)	1.00	100.0%				100.0%
2	Max Day	1.72	58.1%	41.9%			100.0%
3	Max Hour	3.77	26.5%	19.1%	54.4%		100.0%
4	Max Day w/ Fire		45.3%	32.7%		22.0%	100.0%
5	Max Hour w/ Fire		20.7%	14.9%	42.4%	22.0%	100.0%

The following figures shows the cost of service analysis in a visual format. **Figure 3-1** shows a graphic representation of allocating the various costs of service to each cost component. **Figure 3-2** shows the allocation of the cost components to different rate components.

Figure 3-1: Cost Allocation to Cost Components

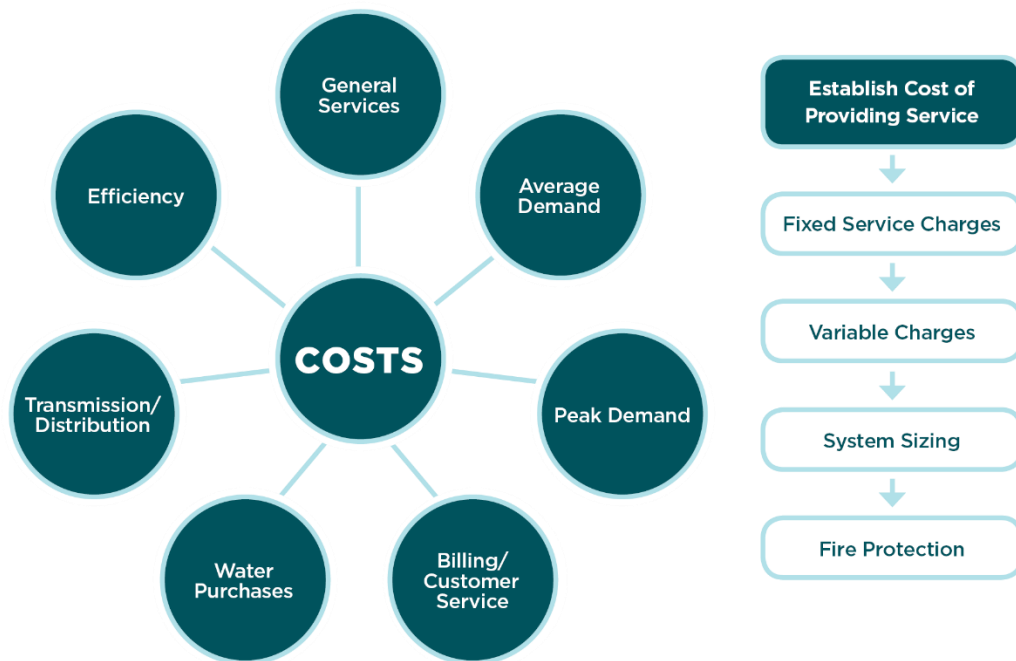
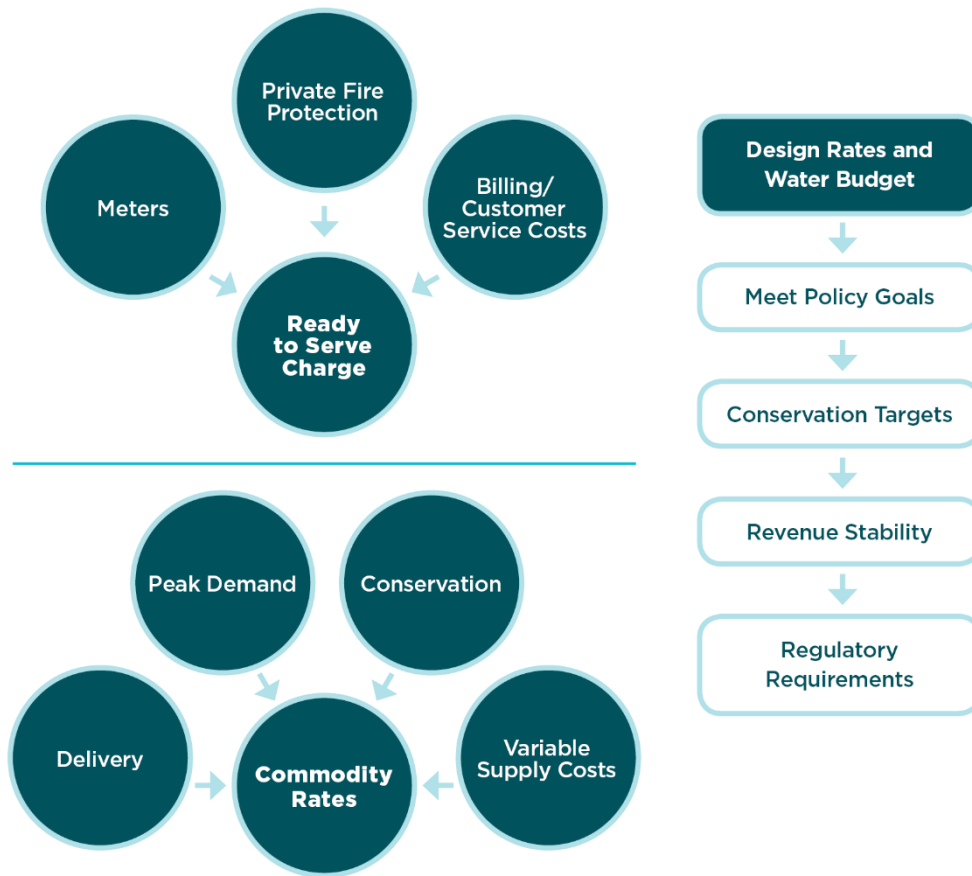


Figure 3-2: Cost Component Allocation to Rate Components



The allocation of functions to cost components is shown in **Table 3-8**.

The water purchase (Line 1) and treatment (Line 2) functions are allocated to Variable Supply (Column B) because these costs are associated with obtaining water, including treated and untreated water purchases. Fixed water purchase (Line 3) and average demand (Line 4) functions are allocated entirely to Base (Column C) because these costs do not vary with water production or usage. Peak demand (Line 5) functions are allocated based on the Max Hour allocation (**Table 3-7**, Line 3) because these costs are associated with meeting max hour (also known as peaking) customer demands.

Storage (Line 6) and water facilities (Line 9) costs are allocated based on the Max Day with Fire allocation (**Table 3-7**, Line 4) because these facilities are built to serve maximum day demand with fire protection capacity. Similarly, pumping (Line 7) and transmission and distribution (Line 10) costs are allocated based on the Max Hour with Fire allocation (**Table 3-7**, Line 5) because these facilities must be sized for maximum hour demand with fire protection capacity. Treatment capital (Line 8) costs are allocated based on the Max Day allocation (**Table 3-7**, Line 2).

The general services (Line 11) function is allocated based on the cost allocation provided by City staff. General and administrative (Line 12), billing and customer service (Line 13), conservation (Line 14), and revenue offset (Line 15) functions are allocated to their respective cost components with the same name.

Table 3-9 shows the functionalized capital assets (**Table 3-5**) allocated to cost components based on the allocation percentages (**Table 3-8**) for the respective functions. The total allocation percentage of all capital assets (Line 18) is used to allocate capital-related costs to the cost components. Capital-related costs include capital outlay, debt service, rate funded capital projects, and reserve funding.

Table 3-10 shows the functionalized O&M expenses (**Table 3-3**) allocated to cost components based on the allocation percentages (**Table 3-8**) for the various functions. Capital outlay costs (Line 8) are allocated based on the capital allocation (**Table 3-9**, Line 18). The O&M expense allocation (Line 26) is used to allocate certain portions of the revenue requirement to the cost components. The O&M expense allocation less supply, conservation, and revenue offsets (SCRO) (Line 27) is also used to allocate portions of the revenue requirement.

Table 3-11 shows the total revenue requirement (**Table 3-1**) allocated to cost components based on each line item's respective allocation methodology (Column B). The allocation methodologies are as follows:

- » O&M Expenses (Line 2) – allocated based on O&M expense allocation (**Table 3-10**, Line 26)
- » Capital Costs (Lines 3-5 and 12) – allocated based on capital asset allocation (**Table 3-9**, Line 18)
- » O&M Less SCRO (Lines 7-10, 13, and 16) – allocated based on O&M expenses less SCRO allocation (**Table 3-10**, Line 27)
- » Revenue Offsets (Line 11 and 15) – allocated entirely to Revenue Offsets cost component
- » Peak Demand (Line 19) – allocated based on Peak Demand allocation (**Table 3-8**, Line 5)

General costs (Line 18) are allocated to Base, Max Day, Max Hour, and Billing & Customer Service (CS) based on the proportionate cost of service before general cost. For example, the formula used to calculate the General cost reallocation for Base is as follows:

$$\text{Base revenue requirement (Column D, Line 17)} / [\text{Base (Column D, Line 17)} + \text{Max Day (Column E, Line 17)} + \text{Max Hour (Column F, Line 17)} + \text{Billing and CS (Column J, Line 17)}] \times \text{General revenue requirement (Column K, Line 17)}$$

To isolate the costs of providing private fire protection, the Fire Protection costs are allocated between public fire and private fire protection. Public fire protection benefits all customers equally, and the costs allocated to public fire protection are reallocated to all customers on the Base, Max Day, and Max Hour cost components because the City's water system is upsized to serve peak demands with fire flow. The remaining costs in Fire Protection (Column I, Line 20) represent the costs of providing private fire protection.

The dollar amount allocated to public fire protection (**Table 3-11**, Column I, Line 19) is derived in **Table 3-12** based on the number of public hydrants and private fire lines (Line 1), provided by City staff. The percent allocation (Line 2) is calculated using the proportion of public fire hydrant and private fire line counts in the system (Line 1). These percentage allocations are then multiplied by the total Fire Protection costs (**Table 3-11**, Column I, Line 17) to determine the costs between public and private fire protection (Line 3). Note that the costs allocated to public fire protection (Column B, Line 3) equal the amount of reallocated costs for public fire protection (**Table 3-11**, Column I, Line 19).

Table 3-8: Allocation of Functionalized Potable Water Expenses to Cost Components

	A	B	C	D	E	F	G	H	I	J	K
Line	Functions	Variable Supply	Base	Max Day	Max Hour	Conservation	Revenue Offsets	Fire Protection	Billing & CS	General	Total
1	Water Purchase	100.0%									100.0%
2	Water Treatment O&M	100.0%									100.0%
3	Fixed Water Purchase		100.0%								100.0%
4	Average Demand		100.0%								100.0%
5	Peak Demand		26.5%	19.1%	54.4%						100.0%
6	Storage		45.3%	32.7%				22.0%			100.0%
7	Pumping		20.7%	14.9%	42.4%			22.0%			100.0%
8	Treatment Capital		58.1%	41.9%							100.0%
9	Water Facilities		45.3%	32.7%				22.0%			100.0%
10	Trans. & Dist.		20.7%	14.9%	42.4%			22.0%			100.0%
11	General Services		0.1%			13.4%			10.3%	76.2%	100.0%
12	Gen. & Admin									100.0%	100.0%
13	Billing & CS								100.0%		100.0%
14	Conservation					100.0%					100.0%
15	Revenue Offsets						100.0%				100.0%

Table 3-9: Potable Water Capital Asset Allocation

	A	B	C	D	E	F	G	H	I	J	K
Line	Capital Asset Allocation	Variable Supply	Base	Max Day	Max Hour	Conservation	Revenue Offsets	Fire Protection	Billing & CS	General	Total
1	Percentage										
2	Gen. & Admin									100.0%	100.0%
3	Treatment Capital		58.1%	41.9%	0.0%						100.0%
4	Pumping		20.7%	14.9%	42.4%			22.0%			100.0%
5	Storage		45.3%	32.7%	0.0%			22.0%			100.0%
6	Peak Demand		26.5%	19.1%	54.4%						100.0%
7	Average Demand		100.0%	0.0%	0.0%						100.0%
8	Trans. & Dist.		20.7%	14.9%	42.4%			22.0%			100.0%
9	Dollars										
10	Gen. & Admin	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$8,617,203	\$8,617,203
11	Treatment Capital	\$0	\$35,283,421	\$25,404,063	\$0	\$0	\$0	\$0	\$0	\$0	\$60,687,484
12	Pumping	\$0	\$3,515,034	\$2,530,825	\$7,205,820	\$0	\$0	\$3,737,653	\$0	\$0	\$16,989,331
13	Storage	\$0	\$30,674,428	\$22,085,588	\$0	\$0	\$0	\$14,881,030	\$0	\$0	\$67,641,047
14	Peak Demand	\$0	\$19,581	\$14,099	\$40,142	\$0	\$0	\$0	\$0	\$0	\$73,821
15	Average Demand	\$0	\$551,105	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$551,105
16	Trans. & Dist.	\$0	\$65,582,879	\$47,219,673	\$134,444,902	\$0	\$0	\$69,736,462	\$0	\$0	\$316,983,916
17	Total	\$0	\$135,626,448	\$97,254,247	\$141,690,864	\$0	\$0	\$88,355,145	\$0	\$8,617,203	\$471,543,907
18	Total Allocation	0.0%	28.8%	20.6%	30.0%	0.0%	0.0%	18.7%	0.0%	1.8%	100.0%

Table 3-10: Potable Water O&M Expense Allocation

	A	B	C	D	E	F	G	H	I	J	K
Line	O&M Expense Allocation	Variable Supply	Base Fixed	Max Day	Max Hour	Conservation	Revenue Offsets	Fire Protection	Billing & CS	General	Total
1	Percentage										
2	General Services		0.1%			13.4%			10.3%	76.2%	100.0%
3	Average Demand		100.0%	0.0%	0.0%						100.0%
4	Water Treatment O&M	100.0%									100.0%
5	Gen. & Admin									100.0%	100.0%
6	Fixed Water Purchase		100.0%								100.0%
7	Water Purchase	100.0%									100.0%
8	Capital Outlay	0.0%	28.8%	20.6%	30.0%	0.0%	0.0%	18.7%	0.0%	1.8%	100.0%
9	Trans. & Dist.		20.7%	14.9%	42.4%			22.0%			100.0%
10	Water Facilities		45.3%	32.7%	0.0%			22.0%			100.0%
11	Conservation					100.0%					100.0%
12	Billing & CS								100.0%		100.0%
13	Dollars										
14	General Services	\$0	\$14,829	\$0	\$0	\$1,471,662	\$0	\$0	\$1,131,610	\$8,363,076	\$10,981,177
15	Average Demand	\$0	\$11,925,283	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$11,925,283
16	Water Treatment O&M	\$1,447	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,447
17	Gen. & Admin	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	(\$20,148)	(\$20,148)
18	Fixed Water Purchase	\$0	\$1,596,275	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,596,275
19	Water Purchase	\$8,952,433	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$8,952,433
20	Capital Outlay	\$0	\$548,492	\$393,309	\$573,017	\$0	\$0	\$357,320	\$0	\$34,849	\$1,906,987
21	Trans. & Dist.	\$0	\$835,961	\$601,892	\$1,713,721	\$0	\$0	\$888,905	\$0	\$0	\$4,040,480
22	Water Facilities	\$0	\$1,306,493	\$940,675	\$0	\$0	\$0	\$633,817	\$0	\$0	\$2,880,985
23	Conservation	\$0	\$0	\$0	\$0	\$667,924	\$0	\$0	\$0	\$0	\$667,924
24	Billing & CS	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,013,947	\$0	\$2,013,947
25	Total	\$8,953,880	\$16,227,333	\$1,935,877	\$2,286,738	\$2,139,586	\$0	\$1,880,042	\$3,145,557	\$8,377,778	\$44,946,791
26	Total Allocation	22.5%	33.5%	4.3%	5.1%	4.8%	0.0%	4.2%	7.0%	18.7%	100.0%
27	Total Allocation Less SCRO		46.0%	5.9%	7.0%	0.0%		5.8%	9.6%	25.7%	100.0%

Table 3-11: Potable Water Revenue Requirement Allocation

	A	B	C	D	E	F	G	H	I	J	K	L
Line	Revenue Requirements	Allocation	Variable Supply	Base	Max Day	Max Hour	Conser- vation	Revenue Offsets	Fire Protection	Billing & CS	General	Total
1	Revenue Requirements											
2	O&M Expenses	O&M Expenses	\$10,116,559	\$15,046,326	\$1,935,877	\$2,286,738	\$2,136,886	\$0	\$1,880,042	\$3,143,481	\$8,400,883	\$44,946,791
3	Debt Service	Capital Costs	\$0	\$527,777	\$378,456	\$551,377	\$0	\$0	\$343,826	\$0	\$33,533	\$1,834,969
4	Rate Funded Capital Projects	Capital Costs	\$0	\$3,738,104	\$2,680,499	\$3,905,250	\$0	\$0	\$2,435,224	\$0	\$237,505	\$12,996,582
5	Reserve Funding w/o Adjustment	Capital Costs	\$0	(\$1,564,471)	(\$1,121,842)	(\$1,634,425)	\$0	\$0	(\$1,019,190)	\$0	(\$99,401)	(\$5,439,329)
6	Revenue Offsets											
7	Licenses, Fees, and Permits	O&M Less SCRO	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8	Permits and Fees	O&M Less SCRO	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
9	Service Installation	O&M Less SCRO	\$0	(\$919,430)	(\$118,295)	(\$139,735)	\$0	\$0	(\$114,883)	(\$192,087)	(\$513,350)	(\$1,997,780)
10	Fines, Penalties, and Forfeitures	O&M Less SCRO	\$0	(\$202,212)	(\$26,017)	(\$30,732)	\$0	\$0	(\$25,266)	(\$42,246)	(\$112,902)	(\$439,375)
11	Investment Earnings	Revenue Offsets						(\$570,650)				(\$570,650)
12	Intergovernmental Revenues	Capital Costs	\$0	(\$71,761)	(\$51,458)	(\$74,970)	\$0	\$0	(\$46,750)	\$0	(\$4,559)	(\$249,499)
13	Current Services	O&M Less SCRO	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
14	Other Revenues											
15	<i>Damage Recovery</i>	Revenue Offsets						(\$25,250)				(\$25,250)
16	<i>All Other Revenues</i>	O&M Less SCRO	\$0	(\$2,057,689)	(\$264,744)	(\$312,727)	\$0	\$0	(\$257,109)	(\$429,893)	(\$1,148,879)	(\$4,471,040)
17	Total		\$10,116,559	\$14,496,644	\$3,412,474	\$4,550,775	\$2,136,886	(\$595,900)	\$3,195,894	\$2,479,254	\$6,792,831	\$46,585,418
18	Reallocate General Costs			\$3,948,541	\$929,477	\$1,239,523				\$675,290	(\$6,792,831)	\$0
19	Reallocate Public Fire Costs	Peak Demand		\$741,500	\$533,880	\$1,520,074			(\$2,795,454)			\$0
20	Total Adjusted Cost of Service		\$10,116,559	\$20,995,699	\$5,198,423	\$7,768,682	\$2,136,886	(\$274,749)	\$425,838	\$3,500,634	\$0	\$49,867,972

Table 3-12: Potable Water Fire Protection Cost Allocation

	A	B	C	D
Line	Fire Protection	Public	Private	Total
1	Counts	8,537	1,223	9,760
2	Percentage	87.5%	12.5%	100.0%
3	Costs	\$2,795,454	\$400,440	\$3,195,894

The revenue requirement by cost component is shown in **Table 3-13**. Note that the total revenue requirement (Column B, Line 9) is equal to the previously calculated revenue requirement (**Table 3-11**, Line 20).

The revenue adjustment (Column C, Line 9) is equal to the revenue adjustment percentage for FY 2020 (**Table 2-23**, Column C, Line 2). The revenue adjustment percentage and dollar amount are divided between the Base, Max Day, Max Hour, Fire Protection, and Billing and CS components (Columns C and D, Lines 2-4 and 7-8). The adjusted revenue requirement for each cost component (Column E) is equal to the sum of the non-adjusted revenue requirement (Column B) and the dollar amount of the revenue adjustment (Column D). The Variable Supply, Conservation, and Revenue Offsets components (Lines 1, 5, and 6) are not adjusted because they represent the actual water supply costs, conservation costs, and miscellaneous revenues from the City's budget and are omitted for ease of comprehension.

Table 3-13: Potable Water Revenue Requirement with Revenue Adjustment

	A	B	C	D	E
Line	Cost Components	Revenue Requirement	Revenue Adjustment (%)	Revenue Adjustment (\$)	Adjusted Revenue Requirement
1	Variable Supply	\$10,116,559			\$10,116,559
2	Base	\$20,995,699	2.8%	\$1,381,674	\$22,377,373
3	Max Day	\$5,198,423	0.7%	\$342,095	\$5,540,518
4	Max Hour	\$7,768,682	1.0%	\$511,238	\$8,279,920
5	Conservation	\$2,136,886			\$2,136,886
6	Revenue Offsets	(\$274,749)			(\$274,749)
7	Private Fire Protection	\$425,838	0.1%	\$28,023	\$453,862
8	Billing & CS	\$3,500,634	0.5%	\$230,368	\$3,731,002
9	Total	\$49,867,972	5.0%	\$2,493,399	\$52,361,370

Allocation of Cost Components to Rate Components

The revenue requirements for each cost component (**Table 3-13**, Column E) are recovered from customers through the RTS and commodity rates. **Table 3-14** shows the total revenue requirement to be collected through rates. The sum of the Variable Supply, Delivery, Peaking, Conservation, and Revenue Offsets rate components (Columns B to F) is equal to the revenue to be collected from the commodity rate. The remaining rate components – which include Billing and CS, Meters and Services, and Private Fire Protection – are recovered through the RTS charges (Columns G to I). To balance between affordability and revenue stability, it is a common practice to collect a portion of the Base costs through the RTS charges (Column H, Line 4).

The COS analysis allocates the revenue requirement to each cost component, then to the rate components. The dollar amounts allocated to each rate component are utilized in **Section 5** to calculate the unit rate for each component and the final potable water rates.

Table 3-14: Potable Water Cost Recovery

	A	B	C	D	E	F	G	H	I	J
Line		Commodity Rate					RTS Charge			
1	Cost Component Allocation	Variable Supply	Delivery	Peaking	Conservation	Revenue Offsets	Billing & CS	Meters & Services	Private Fire Protection	Total
2	Percentage									
3	Variable Supply	100.0%								100.0%
4	Base		30.0%					70.0%		100.0%
5	Max Day			100.0%						100.0%
6	Max Hour			100.0%						100.0%
7	Conservation				100.0%					100.0%
8	Revenue Offsets					100.0%				100.0%
9	Private Fire Protection								100.0%	100.0%
10	Billing & CS						100.0%			100.0%
11	Dollars									
12	Variable Supply	\$10,116,559	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$10,116,559
13	Base	\$0	\$6,713,212	\$0	\$0	\$0	\$0	\$15,664,161	\$0	\$22,377,373
14	Max Day	\$0	\$0	\$5,540,518	\$0	\$0	\$0	\$0	\$0	\$5,540,518
15	Max Hour	\$0	\$0	\$8,279,920	\$0	\$0	\$0	\$0	\$0	\$8,279,920
16	Conservation	\$0	\$0	\$0	\$2,136,886	\$0	\$0	\$0	\$0	\$2,136,886
17	Revenue Offsets	\$0	\$0	\$0	\$0	(\$274,749)	\$0	\$0	\$0	(\$274,749)
18	Fire Protection	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$453,862	\$453,862
19	Billing & CS	\$0	\$0	\$0	\$0	\$0	\$3,731,002	\$0	\$0	\$3,731,002
20	Total	\$10,116,559	\$6,713,212	\$13,820,438	\$2,136,886	(\$274,749)	\$3,731,002	\$15,664,161	\$453,862	\$52,361,370

4 Water Budget Rate Structure Revisions

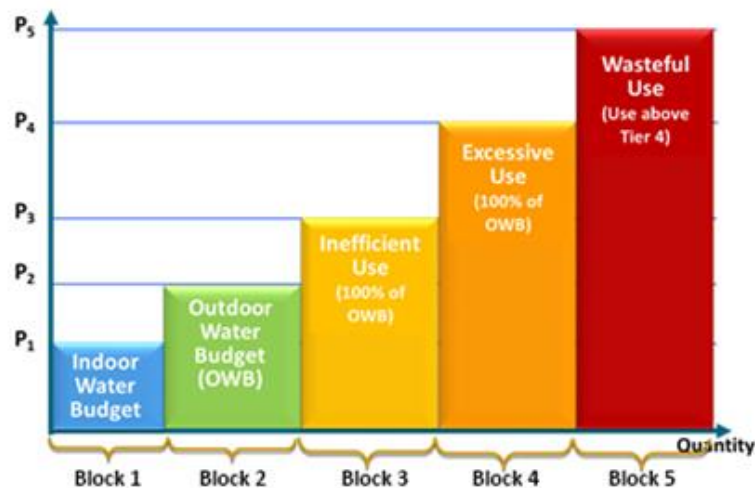
The City implemented a water budget rate structure in 2010² to indirectly incentivize conservation and water use efficiency for residential, CGI, landscape irrigation water customers, and reclaimed water customers. Individual customer water allocations and the development of water budgets are described in this section. Proposed revisions to the water budget rate structure apply to both potable water and reclaimed water services.

Water Budget Definitions

The AWWA Journal defines a water budget as “the quantity of water required for an *efficient* level of water use by that customer³.” Therefore, each customer has their own allocation or water budget as shown in the following figures. The City’s potable and reclaimed water customers both use water budget rate structures.

Figure 4-1 shows a hypothetical construction of water budget tiers. In the example, Tier 1 (or Block 1 as shown in the Figure) is defined by the allotment of water for efficient indoor use, and Tier 2 is defined by the allotment of water for efficient outdoor use. Tier 3 and 4 allotments are each set to 100 percent of the outdoor water budget (OWB). For example, if the Tier 2 OWB is 12 units, then Tier 3 would be an additional 12 units, and Tier 4 would be another 12 units. Any use beyond Tier 4 is considered wasteful and falls into Tier 5.

Figure 4-1: Water Budget Tiers



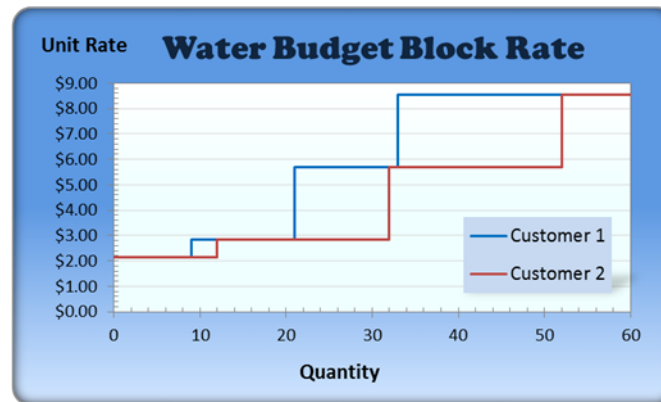
Water budget rate structures are customized for each individual customer, which results in different tier breakpoints for each customer. For example, as illustrated by **Figure 4-2**, the first nine units consumed by Customer 1 are charged at the Tier 1 rate, whereas Customer 2 has 12 units at the Tier 1 rate for indoor use. The next 12 units (10-21 units) consumed by Customer 1 are reserved for outdoor use, which are charged at the Tier 2

² City Ordinance No. 3025 dated February 17, 2010 establishes a water budget rate structure and corresponding rates for City water and reclaimed water customers.

³ *American Water Works Association Journal*, May 2008, Volume 100, Number 5

rate, and usage from 22-32 units falls into Tier 3. Any usage exceeding 33 units will be deemed excessive and charged at the Tier 4 rate. Similarly, for Customer 2, Tier 2 spans from 13-32 units, Tier 3 spans from 33-51 units, and usage exceeding 52 units will be charged at the Tier 4 rate. Customer 2, with a larger indoor and outdoor water budget (or allotment), represents a residential customer with a larger family and larger irrigated landscape area than Customer 1. Thus, tier breakpoints are established on a parcel basis for purposes of allocating the costs of service.

Figure 4-2: Account-Specific Water Budget Tiers



Current Water Budget Methodology

The indoor water budget (IWB) is determined by a customer's household size and a standard consumption per person. The IWB formula is as follows:

$$\text{IWB} = \frac{\text{GPCD} * \text{Household Size} * \text{Dwelling Units} * \text{Days of Service}}{748} + V_{\text{indoor}}$$

Where:

- » GPCD – Gallons per capita per day (efficient use).
- » Household Size – Number of residents per dwelling unit.
- » Dwelling Units – The number of dwelling units served by the meter. A single family residence is one dwelling unit.
- » Days of Service – The number of days of service varies with each billing cycle for each customer. The actual number of days of service will be applied to calculate the IWB for each billing cycle.
- » V_{indoor} – Indoor variance. The additional water allotment to be granted for extenuating circumstances is subject to the City's approval or verification as outlined in the City's variance program.
- » 748 is the conversion from gallons to a billing unit of one ccf.

The OWB is determined by three main variables:

1. Irrigable landscape area
2. Weather data (evapotranspiration, or ET)
3. Evapotranspiration adjustment factor (ETAF)

The irrigable landscape area is measured as the square footage of landscape surface on a customer's property. The weather data is based on the reference evapotranspiration (ET_0), which is the amount of water lost to the atmosphere over a given time period at given specific atmospheric conditions. ET_0 is the amount of water (in inches of water) needed for a hypothetical reference crop to maintain its health and appearance; currently the City uses cool season turf grass, a high water use plant, as its reference crop. The ETAF is a coefficient that adjusts ET_0

values based on the type of plants (plant factor) and irrigation system efficiency. The formula to calculate an OWB is as follows:

$$OWB = \left(\frac{\text{LandscapeArea} * ET_0 * ETAF}{1200} + V_{\text{outdoor}} \right)$$

Where:

- » Landscape Area (or Irrigable Landscape Area) in square feet is the estimated or measured irrigable landscape served by a customer's meter, including pool surface area.
- » ET_0 is measured in inches of water during the billing period based on actual ET measurements taken from California Irrigation Management Information System (CIMIS) Station #44 at University of California, Riverside (UCR).
- » ETAF (% of ET_0) is currently set to 114 percent, which was the metric set by the City in 2010 when the water budget structure was first introduced. It is based upon the plant factor divided by irrigation efficiency; currently, the City uses a plant factor of 0.8 (for cool season turf grass) and an irrigation efficiency factor of 0.7 (average level of efficiency, or approximately the efficiency level of spray heads), which effectively provides for 114 percent of ETAF. The current ETAF far exceeds the standard set in the California Model Water Efficient Landscape Ordinance⁴ (CMWELo) of 55 and 45 percent for new residential landscape and non-residential landscape projects, respectively.
- » V_{outdoor} – Outdoor variance. The additional water allotment to be granted for extenuating circumstances is subject to the City's approval or verification as outlined in the variance program.
- » 1,200 is the conversion unit to convert from inches to cubic feet. ET_0 is measured in inches and must be converted to feet. To convert the resulting cubic feet from the OWB equation to billing units, cubic feet must be converted into a water billing unit.

Due to the varying consumption needs within the CIG customer classes, the City established water budgets based on a three-year rolling average of historical water use for CIG customers without a dedicated landscape meter. If a CIG customer has a dedicated landscape meter for irrigation, then the OWB is used to define the water budget. The water budget of CIG customers with dedicated landscape meters, or meters that only feed landscaping, is based on the OWB described above. The water budget rate structure and individualized allocation recognizes that business needs may vary dramatically depending on the type of business. For example, a car wash and an office building may contain the same number of employees, lot size, or even building footprint, but their water needs are quite different. The City will calculate each individual billing-period allocation based on a rolling three-year billing period average use. The City will evaluate and grant requests to increase water budgets on a case-by-case basis to accommodate economic growth and/or other changes in the business.

The formula to calculate a CIG historical water budget (HWB) is as follows:

$$HWB = \left(\frac{\sum \text{Use}_n}{\sum \text{Days}_n} * \text{Days} + V_{\text{historical}} \right)$$

Where:

- » Use_n – usage in the billing period of up to the prior 3 years corresponding to the current billing period.
- » Days_n – the days of services for the associated usage
- » Days – the days of service in the current billing period

⁴ California Code of Regulations Title 23, Division 2, Chapter 2.7. Model Water Efficient Landscape Ordinance.

- » $V_{\text{historical}}$ – historical variance. An “adjustment” to the water budget may be requested for changing or updating the average use and/or change in water need for any business or industrial customer.

Proposed Water Budget Methodology

Raftelis worked closely with City staff and management during the study to recommend revisions to the water budget allocations. The proposed changes apply to potable and reclaimed water services. These recommendations have been included in and are utilized in this rate study.

Tier 1: Residential Indoor Budget Definition (Efficient Use)

The State of California has targeted 55 GPCD as an efficient indoor use goal. Currently the City allocates 60 GPCD based upon the AWWA 1999 Residential End Users Study. The City’s current estimated indoor usage, represented as Residential Tier 1 usage, is currently greater than 55 GPCD based on 2018 population estimates⁵. For FY 2019, the estimated indoor usage is 70 GPCD for the City’s residents. Raftelis recommends amending the daily allocation to 55 gallons for both single-family and multi-family residential customers. The other major determinant of the residential indoor budget is household size, which remains at the default size of four persons per single-family household and two persons per multi-family household based upon 2010 Census data. Customers may change the size of their household by filling out a variance form with the City and providing the appropriate information. In addition to the 55 GPCD goal, the State Water Resources Control Board will implement permanent conservation requirements in the future based on the City’s water needs, according to Executive Order B-37-16.

Tier 2: Residential and Landscape Outdoor Budget Definition (Efficient Use)

The 2010 CMWELo uses 80 percent ETAF for existing landscapes, which reflects the amount of water for cool season turf grass. Raftelis recommends that the City amend the ETAF used for determining outdoor allocations to 80 percent. This change will be consistent with both the model landscape ordinance and regional agencies with water budget rate structures. It is recommended that the City review the ETAF factor for both existing and new development as part of the next rate study, as the MWELo was recently revised to adjust the ETAF for new landscape projects. As of December 1, 2015, the new ETAF is 55 percent for new residential landscape and 45 percent for non-residential landscape projects.

Tiers 3 and 4: Inefficient and Excessive Use Definition

The current definition for Tier 3 (inefficient use) and Tier 4 (excessive use) is 20 percent of the combined IWB and OWB. Raftelis proposes that the allocation be increased to 50 percent, which has become an industry norm for agencies with water budget rate structures. Regional examples of agencies with similar definitions are shown below in **Table 4-1**.

⁵ 152,374 people per the United States Census Bureau 2018 annual population estimates.

Table 4-1: Tier 3 and 4 Definition for Similar Water Providers

Agency	Tier 3 Definition	Tier 4 Definition
Santa Margarita Water District	50% WB	50% WB
Rancho California Water District	50% WB	>Tier 3
Las Virgenes Municipal Water District	50% WB	>Tier 3
East Valley Water District	>Tier 2	N/A

Second, tightening Tier 1 and 2 (by reducing to 55 GPCD and ETAF to 80 percent) shrinks the corresponding allotments. Therefore, the actual amount of water allotted in Tier 3 and 4 is reduced. For example, a customer with an indoor budget of 10 ccf and outdoor budget of 10 ccf would receive allotments in Tier 3 and 4 of 4 ccf (20 x 20 percent) in the existing structure. With the proposed revisions, their indoor and outdoor budgets would be reduced to 9 and 7, respectively, resulting in a total budget of 16 units, with Tier 3 and 4 still calculating at 4 units each. However, by increasing the width of Tiers 3 and 4 from 20 percent to 50 percent, the resultant Tier 3 and Tier 4 allocations become 8 units each. The revision ensures that the Tier 3 and 4 allocations are not nominal amounts for average users and provides a larger buffer for customers before entering the higher tiers.

Tier 5: Unsustainable Use Definition

Unsustainable use continues to be any and all usage in excess of Tier 4.

Table 4-2 shows the current and proposed residential water budget assumptions. Total water budget (TWB) is equal to the sum of the IWB and OWB.

Table 4-2: Current and Proposed Water Budget Factors and Tier Definitions

Variable	Current	Proposed
SFR Household Size	4	4
MFR Household Size	2	2
GPCD	60	55
ETAF	114%	80%
Inefficient Use	20% TWB	50% TWB
Excessive Use	20% TWB	50% TWB
Unsustainable Use	>140% TWB	>200% TWB

Commercial/Industrial/Governmental Budget (Efficient Use)

No changes are recommended to the definition of efficient use for these customer classes. However, all CIG customers with dedicated landscape meters will have the OWB ETAF reduced from 114 percent to 80 percent, as shown for the residential accounts. The changes to the definitions of inefficient, excessive, and unsustainable use will be amended the same as all other customer classes.

Proposed Revisions

A summary of the recommendations are as follows:

- » Reduce the GPCD from 60 to the new standard of 55 for use in residential Tier 1 budgets
- » Reduce the ETAF from 114 percent to the model ordinance factor of 80 percent for residential Tier 2 and landscape irrigation Tier 1 (outdoor budgets)

- » Increase the width of residential Tier 3 and landscape irrigation Tier 2 from 20 percent of the TWB to 50 percent of the TWB
- » Increase the width of residential Tier 4 and landscape irrigation Tier 3 from 20 percent of the TWB to 50 percent of the TWB

Table 4-3 shows the projected water usage in revised tiers for all customer classes. **Table 4-4** shows the proposed water budget amounts for each customer class and tier. The projected water usage in revised tiers and proposed water budget amounts is utilized in **Section 5** to determine potable water rates. The last tier for water budget customers (Line 6, 11, and 16) are empty because water budgets do not account for unsustainable use.

Table 4-3: Projected Potable Water Use in Revised Tiers

	A	B
Line	Customer Class	Projected Usage (ccf)
1	Residential	
2	Tier 1	4,870,620
3	Tier 2	3,638,834
4	Tier 3	838,754
5	Tier 4	233,970
6	Tier 5	204,280
7	Landscape	
8	Tier 1	981,571
9	Tier 2	170,150
10	Tier 3	61,217
11	Tier 4	99,464
12	CIG	
13	Tier 1	1,428,647
14	Tier 2	144,845
15	Tier 3	36,843
16	Tier 4	66,667
17	Uniform Rates	
18	Construction	109,191
19	Fireline	205
20	Total	12,885,258

Table 4-4: Proposed Potable Water Budgets

	A	B
Line	Customer Class	Water Budget (ccf)
1	Residential	
2	Tier 1	5,381,433
3	Tier 2	7,829,457
4	Tier 3	6,605,445
5	Tier 4	6,605,445
6	Tier 5	
7	Landscape	
8	Tier 1	1,508,489
9	Tier 2	754,245
10	Tier 3	754,245
11	Tier 4	
12	CIG	
13	Tier 1	1,707,002
14	Tier 2	853,501
15	Tier 3	853,501
16	Tier 4	
17	Uniform Rates	
18	Construction	109,191
19	Fireline	205
20	Total	32,962,158

5 Potable Water Rate Derivation and Design

This section of the report details the rate derivation and design process for the potable water system. The numbers shown in this section of the report are rounded and therefore the totals and subtotals may not equal the exact amounts shown in the tables.

Existing Rate Structure

The City's current potable water rates consist of two components: a fixed RTS charge and a commodity rate. The RTS charge includes the potable water and private fireline service charges. The rates for the RTS charge increase based on the size of the water meter serving a property. Larger meter sizes generally consume more water on average and tend to have higher peaking rates; therefore, the costs to provide service to these customers are higher.

The proposed rates derived in this report retain the same rate structure, with revisions to the water budget rate structure and tiers as described in the **Section 4**. In addition, to increase revenue stability and enhance financial sufficiency during periods of reduced water usage, the amount of revenue recovered from fixed charges will increase to 37.9 percent from the current 33.8 percent. This does not change the revenue requirement but will change the amount of revenue received from the RTS charges as opposed to the commodity rates.

Ready-to-Serve 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. The RTS charge recognizes the fact that the City incurs fixed costs in connection with operating and maintaining the system regardless if a customer uses any water.

It is common to collect a portion of Base costs through the RTS charge. Collecting a portion of Base costs through the RTS charge (with the remainder collected through the commodity rates) is a common way to provide greater revenue stability, especially in light of decreasing water sales revenues from permanent conservation, reduced demand, or other water shortage circumstances.

The RTS charges include three rate components: Billing and CS, Meters and Services, and Private Fire Protection.

Billing and CS costs are those 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 bill a small meter as it does a large meter.

Meters and Services costs are costs to maintain and replace meters. Larger meters are more expensive to maintain and replace and have the potential to demand more capacity, or, said differently, potentially exert greater peaking characteristics compared to smaller meters. A portion of Base costs are recovered through the Meters and Services rate component.

Private Fire Protection costs are those associated with providing private fire protection to customers with private fire lines.

Units of Service

The first step in calculating the RTS charges is determining the units of service for each of the rate components. The Billing and CS units of service are the number of annual bills sent to customers. The Meters and Services rate component's units of service are equivalent meters (EMUs). Similarly, the Private Fire Protection units of service are equivalent fire lines.

Table 5-1 shows the calculation of equivalent meters for the potable water system. Meter capacity ratios are utilized to calculate EMUs, which relate the flow through each meter size to that of a 5/8" meter. The number of meters (Column B, Line 11) is equal to the meter counts for FY 2020 (**Table 2-6**, Column D, Line 12). The capacity ratio (Column C) is determined from the AWWA capacity factors from the M1 Manual, normalized by the capacity of a 5/8" meter. The capacity ratios show that a 1" meter has 2.5 times the capacity of a 5/8" meter. The equivalent meters (Column D) are calculated by multiplying the meter count (Column B) by the capacity ratio (Column C).

Table 5-1: Potable Water Equivalent Meters

	A	B	C	D
Line	Meter Size	Number of Meters	Capacity Ratio	Equivalent Meters
1	5/8"	6,341	1.00	6,341
2	3/4"	28,795	1.50	43,193
3	1"	6,238	2.50	15,595
4	1 1/2"	1,227	5.00	6,135
5	2"	1,251	8.00	10,008
6	3"	80	17.50	1,400
7	4"	35	31.50	1,103
8	6"	9	80.00	720
9	8"	2	140.00	280
10	10"	0	210.00	0
11	Total	43,978		84,774

Table 5-2 Potable Water Equivalent Fire Lines shows the equivalent fire lines (Column D) based on the number of fire lines (Column B) multiplied by the fire line ratio (Column C). The number of fire lines (Column B, Line 11) is equal to the count of fire lines for FY 2020 (**Table 2-6**, Column D, Line 24). The fire line ratio is calculated for each private fire line size based on the Hazen-Williams equation for flow through pressure conduits, as explained in the M1 Manual. The flow potential is equal to the size of the fire line raised to the power of 2.63.

Table 5-2: Potable Water Equivalent Fire Lines

	A	B	C	D
Line	Fire Line Size	Number of Fire Lines	Fire Line Ratio	Equivalent Lines
1	5/8"	2	1.00	2
2	3/4"	0	1.00	0
3	1"	0	1.00	0
4	1 1/2"	0	1.00	0
5	2"	26	6.19	161
6	2 1/2"	19	11.13	212
7	4"	143	38.32	5,480
8	6"	459	111.31	51,092
9	8"	468	237.21	111,013
10	10"	106	426.58	45,175
11	Total	1,223		213,133

Unit Costs

After determining the equivalent meters, the unit cost for each rate component is calculated. The revenue requirement for each rate component is divided by the units of service to determine the unit cost.

Table 5-3 shows the unit cost derivation for the RTS charge rate components. The revenue requirement for each rate component (Column B) was derived in the COS analysis (**Table 3-14**, Columns G to I, Line 20). The units of service for the Billing and CS rate component (Column C, Line 1) is calculated by multiplying the number of meters (**Table 5-1**, Column B, Line 11) by 12 billing periods. The units of service for the Meters and Services component is calculated by multiplying the number of EMUs (**Table 5-1**, Column D, Line 11) by 12 billing periods. Finally, the units of service for the Private Fire Protection component is calculated by multiplying the number of equivalent lines (**Table 5-2**, Column D, Line 11) by 12 billing periods. The unit cost (Column E) is calculated for each rate component by dividing the revenue requirement (Column B) by the units of service (Column C).

Table 5-3: Potable Water RTS Charge Unit Costs

	A	B	C	D	E
Line	RTS Charges	Revenue Requirement	Units of Service	Unit	Unit Cost
1	Billing & CS	\$3,731,002	542,411	annual bills	\$6.88
2	Meters & Services	\$15,664,161	1,017,288	annual EMUs	\$15.40
3	Private Fire Protection	\$453,862	2,557,599	annual equivalent lines	\$0.18

Proposed RTS Charge

The proposed RTS charge is shown in **Table 5-4**. The unit cost for the Meters and Services (**Table 5-3**, Column E, Line 2) rate component is scaled up for larger meters based on the capacity ratio (Column B). Billing and CS costs (**Table 5-3**, Column E, Line 1) are the same for any size meter. The proposed RTS charge is equal to the sum of the Meters and Services and Billing and CS rate components.

Table 5-4: Proposed Potable Water RTS Charges

	A	B	C	D	E	F	G
Line	Meter Size	Capacity Ratio	Meter Services	Billing & CS	Proposed Charge	Current Charge	Difference (\$)
1	5/8"	1.00	\$15.40	\$6.88	\$22.28	\$19.23	\$3.05
2	3/4"	1.50	\$23.10	\$6.88	\$29.98	\$25.23	\$4.75
3	1"	2.50	\$38.50	\$6.88	\$45.38	\$36.09	\$9.29
4	1 1/2"	5.00	\$77.00	\$6.88	\$83.88	\$62.90	\$20.98
5	2"	8.00	\$123.20	\$6.88	\$130.08	\$91.80	\$38.28
6	3"	17.50	\$269.50	\$6.88	\$276.38	\$156.91	\$119.47
7	4"	31.50	\$485.10	\$6.88	\$491.98	\$241.02	\$250.96
8	6"	80.00	\$1,232.00	\$6.88	\$1,238.88	\$442.64	\$796.24
9	8"	140.00	\$2,156.00	\$6.88	\$2,162.88	\$651.04	\$1,511.84
10	10"	210.00	\$3,234.00	\$6.88	\$3,240.88	\$651.04	\$2,589.84

Proposed Private Fireline Charges

Table 5-5 shows the proposed private fireline charges. The unit cost for the Private Fire Protection rate component (**Table 5-3**, Column E, Line 3) is scaled up for larger meters based on the fire line ratio (Column B). Billing and CS costs (**Table 5-3**, Column E, Line 1) are the same for any size meter. The Private Fire Line Charge is equal to the sum of the Private Fire Protection and Billing and CS rate components. The proposed fireline charges show a significant reduction due to the change in fireline ratio. The recommended fire line ratio is based on the Hazen-Williams equation in the M1 Manual and differs from the ratios utilized in the current fireline charges. The change in fireline ratios increased the number of equivalent firelines (**Table 5-2**, Column D, Line 11), thus decreasing the unit charge for Private Fire Protection (Column C).

Table 5-5: Proposed Potable Water Private Fire Line Charges

	A	B	C	D	E	F	G
Line	Fire Line Size	Fire Line Ratio	Private Fire Protection	Billing & CS	Proposed Charge	Current Charge	Difference (\$)
1	5/8"	1.00	\$0.18	\$6.88	\$7.06	\$16.25	(\$9.19)
2	3/4"	1.00	\$0.18	\$6.88	\$7.06	\$16.25	(\$9.19)
3	1"	1.00	\$0.18	\$6.88	\$7.06	\$16.25	(\$9.19)
4	1 1/2"	1.00	\$0.18	\$6.88	\$7.06	\$16.25	(\$9.19)
5	2"	6.19	\$1.11	\$6.88	\$7.99	\$16.25	(\$8.26)
6	2 1/2"	11.13	\$2.00	\$6.88	\$8.88	\$21.50	(\$12.62)
7	4"	38.32	\$6.90	\$6.88	\$13.78	\$42.75	(\$28.97)
8	6"	111.31	\$20.04	\$6.88	\$26.92	\$78.25	(\$51.33)
9	8"	237.21	\$42.70	\$6.88	\$49.58	\$115.25	(\$65.67)
10	10"	426.58	\$76.78	\$6.88	\$83.66	\$152.00	(\$68.34)

Commodity Rates

The commodity rates for each customer class and tier include the following rate components:

- » Variable Supply costs
- » Delivery costs
- » Peaking costs
- » Conservation costs
- » Revenue offsets

Variable Supply costs are costs related to the purchase and production of water to meet customer demand. The City maintains numerous sources of supply with disparate costs. These variable supply costs form the foundation of the rate components for each tier within the water budget rate structure.

Delivery costs are the costs associated with obtaining and treating water to make it ready for transmission and distribution, as well as the operating and capital costs associated with delivering water to all customers at a constant average rate of use – also known as serving customers under average daily demand conditions. Therefore, base costs are spread over all units of water irrespective of customer class or tiers.

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 tier and class using peaking factors derived from customer use data.

Conservation costs cover water conservation and efficiency programs and efforts. In 2014, the City adopted a water use efficiency master plan which identified several cost-effective measures that could be implemented or enhancements to existing programs to help reduce water use. As program effectiveness and saturation levels are evaluated, these conservation programs are created, modified or stopped as necessary. These programs are targeted to high volume water users. Therefore, conservation costs are allocated to Tiers 4 and 5 for residential customers and Tiers 3 and 4 for non-residential water budget customers, where water consumption is considered excessive or unsustainable and for which conservation programs are designed to promote water use curtailment. Allocation of conservation costs to upper tiers helps provide a strong 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 the City to reduce the commodity rates in the lower tiers to promote affordability and efficient use. Revenue offsets consist of interest earnings, rental and lease income, and other miscellaneous income. These funds allow flexibility in the rate design process to achieve policy objectives while maintaining cost of service principles.

Variable Supply Unit Costs

The unit costs for the Variable Supply rate component are calculated separately from all other commodity-related rate components because each tier will be assigned a different supply unit cost based on water supply availability from the cheapest sources of water. The City purchases and produces water from many sources of supply.

Table 5-6 shows the local water sources, the quantity available from each source, and the supply and treatment costs that is used to determine the blended supply source and costs. The water supply costs (Column C) are equal to the supply unit costs for FY 2020 (**Table 2-14**, Column C). The treatment costs (Column D) are for untreated water purchases.

A blended rate constitutes two or more sources of supply used to meet some portion of total water demand. The six sources of water in **Table 5-6** are combined to create a blended rate. The blended rate (Line 7) includes all local water production sources and any minimum quantities of imported water supply. Combined, it is the lowest cost source of water available to the City.

The blended water supply unit cost (Column C, Line 7) is the weighted unit cost of the six sources of water. The weighted unit cost of water is calculated by multiplying the quantity available for each source (Column B, Lines 1-

6) by the unit cost for each source (Column C, Lines 1-6) and dividing by the total quantity of water available (Column B, Line 7). Similarly, the blended treatment unit cost (Column D, Line 7) is the weighted unit cost for the treatment of the six various sources. The total blended water supply unit cost (Column E, Line 7) is the sum of the blended water supply unit cost and blended water treatment unit cost.

Table 5-6: Potable Water Blended Supply Cost and Availability

	A	B	C	D	E
Line	Blended Water Supply Sources	Quantity Available	Water Supply Unit Cost	Treatment Unit Cost	Total Cost
1	Arlington Desalter	900 AF	\$1,026.99 /AF	\$0.00 /AF	\$1,026.99 /AF
2	Untreated Tier 1 - Min	0 AF	\$740.89 /AF	\$93.87 /AF	\$834.76 /AF
3	Treated Tier 1 - Min	1,665 AF	\$1,077.74 /AF	\$0.00 /AF	\$1,077.74 /AF
4	Local Wells	8,800 AF	\$0.00 /AF	\$93.87 /AF	\$93.87 /AF
5	Home Gardens Wells	1,200 AF	\$0.00 /AF	\$93.87 /AF	\$93.87 /AF
6	Temescal Desalter	11,202 AF	\$0.00 /AF	\$93.87 /AF	\$93.87 /AF
7	Total - Blended Water	23,767 AF	\$114.39 /AF	\$83.74 /AF	\$198.13 /AF

Table 5-7 shows the City's five water sources, which includes blended water from **Table 5-6** as a single source, the quantity available for each, and the unit costs associated with each. The water supply costs for WMWD water sources are equal to the supply unit costs for FY 2020 (**Table 2-14**, Column C). The total cost (Column E) is equal to the water supply unit cost (Column C) plus the treatment unit cost (Column D).

Table 5-7: Potable Water Supply Cost and Availability

	A	B	C	D	E
Line	Water Supply Sources	Quantity Available	Water Supply Unit Cost	Treatment Unit Cost	Total Cost (AF)
1	Blended Water	23,767 AF	\$114.39 /AF	\$83.74 /AF	\$198.13 /AF
2	WMWD Untreated Tier 1	15,000 AF	\$740.89 /AF	\$93.87 /AF	\$834.76 /AF
3	WMWD Treated Tier 1	25 AF	\$1,077.74 /AF	\$0.00 /AF	\$1,077.74 /AF
4	WMWD Untreated Tier 2	No Max	\$827.30 /AF	\$93.87 /AF	\$921.17 /AF
5	WMWD Treated Tier 2	No Max	\$1,164.18 /AF	\$0.00 /AF	\$1,164.18 /AF

Blended water is allocated to each customer class based on the percent of total water usage for each customer class, as shown in **Table 5-8**. The customer classes shown are water budget customers and uniform customers. Uniform customers include construction and fireline customers, which do not have a water budget due to the large potential variance of water usage between each customer. The quantity available from each source is from **Table 5-6**. The percentage use for each class (Columns C and D, Lines 1-7) is based on the proportion water usage in current tiers for FY 2020 (**Table 2-7**, Column D) for each class. The resulting amount of blended water available to each customer class (Line 15) is calculated by multiplying the quantity available (Column B) by the percentage allocation based on water usage for each customer class (Lines 2-7) for all sources of blended water.

Table 5-8: Potable Water Blended Supply Allocation to Customer Classes

	A	B	C	D
Line	Blended Water Supply Sources	Quantity Available	Water Budget	Uniform
1	Percentage of Total Usage			
2	Arlington Desalter		99.2%	0.8%
3	Untreated Treated 1 - Min		99.2%	0.8%
4	Treated Tier 1 - Min		99.2%	0.8%
5	Local Wells		100.0%	
6	Home Gardens Wells		100.0%	
7	Temescal Desalter		100.0%	
8	Water Supply Availability			
9	Arlington Desalter	900 AF	892 AF	8 AF
10	Untreated Treated 1 - Min	0 AF	0 AF	0 AF
11	Treated Tier 1 - Min	1,665 AF	1,651 AF	14 AF
12	Local Wells	8,800 AF	8,800 AF	
13	Home Gardens Wells	1,200 AF	1,200 AF	
14	Temescal Desalter	11,202 AF	11,202 AF	
15	Total	23,767 AF	23,745 AF	22 AF

Water from non-blended sources, including treated and untreated water from WMWD, is allocated among the customer classes similarly to the blended supply, shown in **Table 5-9**. The quantity available from each source is from **Table 5-7**. The WMWD supply quantity, similar to blended water, is allocated between water budget and uniform customers based on proportion of water usage.

Table 5-9: Potable Water Other Supply Allocation to Customer Classes

	A	B	C	D
Line	Water Supply Sources	Quantity Available	Water Budget	Uniform
1	Percentage of Total Usage			
2	WMWD Untreated Tier 1		99.2%	0.8%
3	WMWD Treated Tier 1		99.2%	0.8%
4	WMWD Untreated Tier 2		99.2%	0.8%
5	WMWD Treated Tier 2		99.2%	0.8%
6	Water Supply Availability			
7	WMWD Untreated Tier 1	15,000 AF	14,873 AF	127 AF
8	WMWD Treated Tier 1	25 AF	25 AF	0 AF
9	WMWD Untreated Tier 2	No Max	No Max	No Max
10	WMWD Treated Tier 2	No Max	No Max	No Max
11	Total	15,025 AF	14,897 AF	128 AF

Table 5-10 allocates available water to each water budget tier. The projected usage (Column B, Lines 7-10) is equal to the total projected water usage for all classes in each tier (**Table 4-3**). The quantity available from each source (Line 1) is equal to the quantity of water available from blended sources (**Table 5-8**, Column C, Line 15) and from all other sources (**Table 5-9**, Column C, Lines 7-10). The unit costs for each source (Line 5) is equal to the unit cost for blended water (**Table 5-6**, Column E, Line 7) and for all other sources (**Table 5-7**, Column E, Lines 1-5). The quantity available and unit costs are converted to ccf (Lines 3-4) and then inflated to account for water loss (Line 5). The water loss percentage is from **Table 2-11**.

The weighted average unit cost for each water budget tier (Column I, Lines 7-10) is calculated by taking the weighted average of the supply unit cost by source (Line 5) weighted by the projected water usage in each tier after accounting for 5 percent water loss (Column C, Lines 7-10). The City's estimated water loss percentage is in line with industry standards. The unit cost for Unsustainable Use (Line 5) is equal to the supply cost from WMWD Treated Tier 2 (**Table 5-10**, Column H, Line 5).

For example, to calculate the weighted Variable Supply unit cost for Efficient Water Use (Column I, Line 7), the following equation is used, where columns are represented as letters and rows are represented as numbers:

$$[(D5 \times D7) + (E5 \times E7) + (F5 \times F7) + (G5 \times G7)] / [D7 + E7 + F7 + G7]$$

Table 5-11 shows a similar process allocating water supply to uniform customer classes.

The projected water usage (**Table 4-3**) is used to determine the Variable Supply unit costs because projected usage represents the amount of water that is anticipated to be required to meet the demand of each customer and customer class. This methodology allocates the cheapest water supply sources to essential water use based on the amount of water each customer class should be using. The Efficient Use tiers (Residential Tier 1 and 2 and CIG Tier 1) are allocated the most economical sources of water, followed by Inefficient Use and Excessive Use. This is consistent with Article X Section 2 of the State of California Constitution, which mandates utilities to maximize the beneficial use of water.

Table 5-10: Potable Water Supply Allocation to Water Budget Customers

	A	B	C	D	E	F	G	H	I
Line	Water Budget Customers	Projected Usage (ccf)	Projected Usage with 5% Loss (ccf)	Blended Water	WMWD Untreated Tier 1	WMWD Treated Tier 1	WMWD Untreated Tier 2	WMWD Treated Tier 2	Weighted Average Unit Cost
1	Quantity Available (AF)			23,745	14,873	25	No Max	No Max	
2	Unit Cost (AF)			\$198.13	\$834.76	\$1,077.74	\$921.17	\$1,164.18	
3	Quantity Available (ccf)			10,343,419	6,478,526	10,798	No Max	No Max	
4	Unit Cost (ccf)			\$0.46	\$1.92	\$2.48	\$2.12	\$2.68	
5	Unit Cost with 5% loss (ccf)			\$0.49	\$2.02	\$2.61	\$2.23	\$2.82	
6	Water Supply by Source								
7	Efficient Use	10,919,673	11,465,656	10,343,419	1,122,237	0	0		\$0.64
8	Inefficient Use	1,153,749	1,211,436	0	1,211,436	0	0		\$2.02
9	Excessive Use	332,030	348,632	0	348,632	0	0		\$2.02
10	Unsustainable Use	370,411	388,932	0	388,932	0	0		\$2.02
11	Total	12,775,863	13,414,656	10,343,419	3,071,236	0	0		

Table 5-11: Potable Water Supply Allocation to Uniform Customers

	A	B	C	D	E	F	G	H	I
Line	Uniform Customers	Usage (ccf)	Usage with 5% Loss (ccf)	Blended Water	WMWD Untreated Tier 1	WMWD Treated Tier 1	WMWD Untreated Tier 2	WMWD Treated Tier 2	Weighted Average Unit Cost
1	Quantity Available (AF)			22	127	0	No Max	No Max	
2	Unit Cost (AF)			\$198.13	\$834.76	\$1,077.74	\$921.17	\$1,164.18	
3	Quantity Available (ccf)			9,486	55,474	92	No Max	No Max	
4	Unit Cost (ccf)			\$0.46	\$1.92	\$2.48	\$2.12	\$2.68	
5	Unit Cost with 5% loss (ccf)			\$0.49	\$2.02	\$2.61	\$2.23	\$2.82	
6	Water Supply by Source								
7	All Use	109,396	114,866	9,486	55,474	92	49,813	0	
8	Total	109,396	114,866	9,486	55,474	92	49,813	0	\$1.99

Delivery, Peaking, Conservation, and Revenue Offsets Unit Costs

Table 5-12 shows the projected water usage in revised tiers in each customer class and tier. The projected usage in each tier is derived from reanalyzing the water usage information based on the revised tier definitions in **Section 4**. Note that the usage is equal to the projected water usage after revising tier breakpoints (**Table 4-3**).

Table 5-12: Potable Water Projected Usage by Customer Class and Tier

	A	B
Line	Customer Class	Projected Usage (ccf)
1	Water Budget	
2	Essential Use	4,870,620
3	Efficient Use	6,049,052
4	Inefficient Use	1,153,749
5	Excessive Use	332,030
6	Unsustainable Use	370,411
7	Total for Water Budget Customers	12,775,863
8	Uniform	
9	All Usage	109,396
10	Total	12,885,258

The Peaking unit costs are based on peak usage, calculated from the peaking factors. **Table 5-13** shows the peaking factor calculation for all customers. The max month usage per bill for all classes and tiers (Column B), which represents the maximum usage per bill in each tier, is divided by the average usage in all tiers for that customer class (Column C) to determine the peaking factor (Column D). The Water Budget class peaking factor is calculated by dividing max month usage per bill for the entire class (Column B, Line 8) by the average usage per bill for the class (Column C, Line 8). All other peaking factors are then divided by the Water Budget class peaking factor (Column D, Line 8) to determine the scaled peaking factors (Column E). The peaking factor is scaled to normalize the peaking factor of the water budget class as a whole. Note that the scaled peaking factor for the water budget customer class (Column E, Line 8) is equal to one.

Table 5-13: Potable Water Peaking Factors

	A	B	C	D	E
Line	Customer Class and Tier	Max Month Usage per Bill	Average Usage per Bill	Peaking Factor	Scaled Peaking Factor
1	Water Budget Tiers				
2	Essential Use	9 ccf	25 ccf	0.4	0.30
3	Efficient Use	29 ccf	25 ccf	1.1	0.80
4	Inefficient Use	52 ccf	25 ccf	2.0	1.40
5	Excessive Use	74 ccf	25 ccf	2.9	2.10
6	Unsustainable Use	118 ccf	25 ccf	4.6	3.30
7	Customer Classes				
8	Water Budget	35 ccf	25 ccf	1.4	1.00
9	Uniform	39 AF	11 AF	3.6	2.57

Table 5-14 shows the calculation of peak usage by class. The peaking factors for each customer class (**Table 5-13**, Column E, Lines 8-9) are multiplied by the usage in each class (Column B) to determine the peak usage. Note that

the usage in each class is equal to the projected usage in revised tiers for water budget and uniform customers (Table 5-12, Column B, Line 7 and 9).

Table 5-14: Potable Water Peaking Units of Service

	A	B	C	D
Line	Customer Class	Water Usage (ccf)	Peaking Factor	Peak Usage by Class (ccf)
1	Water Budget	12,775,863	1.00	12,775,863
2	Uniform	109,396	2.57	281,303
3	Total	12,885,258		13,057,166

Table 5-15 derives the allocation unit costs for the Delivery, Peaking, Conservation, and Revenue Offsets rate components used to allocate the revenue requirement between customer classes. The revenue requirement (Column B) was derived in the COS analysis (Table 3-14, Columns B to F, Line 20). The units of service (Column C) for Delivery, Conservation, and Revenue Offsets are equal to the total projected water usage (Table 5-12, Column B, Line 10). The units of service for the Peaking component (Column C, Line 2) are equal to the peak usage for all classes (Table 5-14, Column D, Line 3). The allocation unit cost (Column E) for each rate component is calculated by dividing the revenue requirement (Column B) by the units of service (Column C).

Table 5-15: Potable Water Commodity Rate Component Unit Costs

Line	A	B	C	D	E
	Rate Component	Revenue Requirement	Units of Service	Unit	Allocation Unit Cost
1	Delivery	\$6,713,212	12,885,258	annual usage in hcf	\$0.53
2	Peaking	\$13,820,438	13,057,166	peaked annual usage in hcf	\$1.06
3	Conservation	\$2,136,886	12,885,258	annual usage in hcf	\$0.17
4	Revenue Offsets	(\$274,749)	12,885,258	annual usage in hcf	(\$0.02)

The revenue requirement is then calculated for each customer class based on the allocation unit cost for each rate component (Table 5-15, Column E). Table 5-16 shows the revenue requirement allocation between water budget and uniform customers for the Peaking, Conservation, and Revenue Offsets components.

The Peaking revenue requirement for each customer class (Column C) is calculated by multiplying the peak usage for each customer class (Column B) by the Peaking allocation unit cost (Table 5-15, Column E, Line 2). Similarly, the Conservation and Revenue Offsets revenue requirement for each customer class (Columns E to F) are calculated by multiplying the projected usage for each customer class (Column D) by the Conservation allocation unit cost (Table 5-15, Column E, Line 3) and the Revenue Offsets allocation unit cost (Table 5-15, Column E, Line 4), respectively. Peak usage (Column B) is equal to the peak usage by customer class (Table 5-14, Column D, Lines 1-2). Projected usage by class (Column D) is equal to the projected usage in revised tiers (Table 5-12, Column B, Lines 7 and 9).

Table 5-16: Potable Water Allocation of Peaking, Conservation, and Revenue Offsets Components

Line	A	B	C	D	E	F
	Customer Class	Peak Usage by Class (ccf)	Peaking Revenue Requirement	Projected Usage (ccf)	Conservation Revenue Requirement	Revenue Offsets Revenue Requirement
1	Water Budget	12,775,863	\$13,542,414	12,775,863	\$6,552,884	(\$770,928)
2	Uniform	281,303	\$298,182	109,396	\$18,597	(\$2,188)

Table 5-17 shows the calculation of the Peaking, Conservation, and Revenue Offsets units of service by customer class and tier. The projected usage is equal to the usage in each class and tier (**Table 5-12**). The Peaking, Conservation, and Revenue Offsets units of service are calculated by multiplying the projected usage (Column B) by the respective factors—peaking factor, conservation factor, and revenue offsets factor—for each customer class and tier (Columns C, E, and G).

Tiered peaking factors are equal to the scaled peaking factors (**Table 5-13**, Column E, Lines 2-6 and 9). Conservation factors are allocated to Tier 4 and Tier 5 of the water budget structure, as well as all uniform rate customers. As shown by the conservation factor (Column E), Tier 5 is allocated more Conservation costs than Tier 4 in recognition that this use is considered unsustainable and requires more staff time and targeted resources than general conservation programs for Tier 4. Revenue Offsets are applied equally to Tier 1 and Tier 2 of the water budget rate structure and uniform rate customers.

The Peaking units (Column D) are calculated by multiplying the projected usage (Column B) with the peaking factor (Column C). The Conservation units (Column F) are calculated by multiplying the projected usage (Column B) with the conservation factor (Column E). The Revenue Offsets units (Column H) are calculated by multiplying the projected usage (Column B) with the revenue offsets factor (Column G).

Table 5-17: Potable Water Peaking, Conservation, and Revenue Offsets Units of Service

Line	A Customer Class and Tiers	B Projected Usage (ccf)	C Peaking Factor	D Peaking Units	E Conservation Factor	F Conservation Units	G Revenue Offsets Factor	H Revenue Offsets Units
1	Water Budget							
2	Essential Use	4,870,620	0.30	1,461,186	0.00	0	1.00	4,870,620
3	Efficient Use	6,049,052	0.80	4,839,242	0.00	0	1.00	6,049,052
4	Inefficient Use	1,153,749	1.40	1,615,248	0.00	0	0.00	0
5	Excessive Use	332,030	2.10	697,263	1.00	332,030	0.00	0
6	Unsustainable Use	370,411	3.30	1,222,357	2.00	740,822	0.00	0
7	Total for Water Budget	12,775,863		9,835,296		1,072,852		10,919,673
8	Uniform							
9	All Usage	109,396	2.57	281,303	1.00	109,396	1.00	109,396
10	Total	12,885,258		10,116,600		1,182,248		11,029,068

Table 5-18 shows the unit cost calculation for water budget customers. The revenue requirement (**Table 5-16**, Columns C, E, and F, Line 1) is divided by the units of service (**Table 5-17**, Columns D, F, and H, Line 7) to determine the unit cost for each rate component (Column D).

Table 5-18: Potable Water Peaking, Conservation, and Revenue Offsets Units Costs (Water Budget Customers)

Line	A Water Budget Customers	B Revenue Requirement	C Units of Service (hcf)	D Unit Cost
1	Peaking	\$13,542,414	9,835,296	\$1.38
2	Conservation	\$6,552,884	1,072,852	\$2.03
3	Revenue Offsets	(\$770,928)	10,919,673	(\$0.02)

Table 5-19 shows the unit cost calculation for uniform customers, calculated using a similar methodology as for water budget customers.

Table 5-19: Potable Water Peaking, Conservation, and Revenue Offsets Units Costs (Uniform Customers)

	A	B	C	D
Line	Uniform Customers	Revenue Requirement	Units of Service	Unit Cost
1	Peaking	\$298,182	281,303	\$1.06
2	Conservation	\$18,597	109,396	\$0.17
3	Revenue Offsets	(\$2,188)	109,396	(\$0.02)

Table 5-20 shows the Peaking, Conservation, and Revenue Offsets unit cost by customer class and tier. The unit costs (**Table 5-18**, Column D and **Table 5-19**, Column D) are multiplied by the peaking, conservation, and revenue offsets factors (Columns B, D, and F) to determine the unit cost (Columns C, E, and G) by customer class and tier.

Table 5-20: Potable Water Peaking, Conservation, and Revenue Offsets Unit Cost by Customer Class

	A	B	C	D	E	F	G
Line	Customer Class and Tiers	Peaking Factor	Peaking Unit Cost	Conservation Factor	Conservation Unit Cost	Revenue Offsets Factor	Revenue Offsets Unit Cost
1	Residential						
2	Essential Use	0.30	\$0.42	0.00	\$0.00	1.00	(\$0.02)
3	Efficient Use	0.80	\$1.11	0.00	\$0.00	1.00	(\$0.02)
4	Inefficient Use	1.40	\$1.94	0.00	\$0.00	0.00	\$0.00
5	Excessive Use	2.10	\$2.90	1.00	\$2.03	0.00	\$0.00
6	Unsustainable Use	3.30	\$4.56	2.00	\$4.06	0.00	\$0.00
7	Landscape, CIG						
8	Efficient Use	0.80	\$1.11	0.00	\$0.00	1.00	(\$0.02)
9	Inefficient Use	1.40	\$1.94	0.00	\$0.00	0.00	\$0.00
10	Excessive Use	2.10	\$2.90	1.00	\$2.03	0.00	\$0.00
11	Unsustainable Use	3.30	\$4.56	2.00	\$4.06	0.00	\$0.00
12	Uniform						
13	All Usage	2.57	\$2.73	1.00	\$0.17	1.00	(\$0.02)

Proposed Commodity Rates

Table 5-21 shows the proposed commodity rates based on the Variable Supply unit costs (**Table 5-10**, Column I, Lines 7-10 and **Table 5-11**, Column I, Line 8), the Delivery unit cost (**Table 5-15**, Column E, Line 1), the Peaking unit costs (**Table 5-20**, Column C), the Conservation unit costs (**Table 5-20**, Column E), and the Revenue Offsets unit costs (**Table 5-20**, Column G).

Note the following tier definitions:

- » Essential Use: Residential Tier 1
- » Efficient Use: Residential Tier 2, Landscape and CIG Tier 1
- » Inefficient Use: Residential Tier 3, Landscape and CIG Tier 2
- » Excessive Use: Residential Tier 4, Landscape and CIG Tier 3
- » Unsustainable Use: Residential Tier 5, Landscape and CIG Tier 4

Table 5-21: Potable Water Commodity Rate Calculation

	A	B	C	D	E	F	G
Line	Customer Class	Variable Supply	Delivery	Peaking	Conservation	Revenue Offsets	Proposed Charge
1	Residential						
2	Tier 1	\$0.64	\$0.53	\$0.42	\$0.00	(\$0.02)	\$1.57
3	Tier 2	\$0.64	\$0.53	\$1.11	\$0.00	(\$0.02)	\$2.26
4	Tier 3	\$2.02	\$0.53	\$1.94	\$0.00	\$0.00	\$4.49
5	Tier 4	\$2.02	\$0.53	\$2.90	\$2.03	\$0.00	\$7.48
6	Tier 5	\$2.02	\$0.53	\$4.56	\$4.06	\$0.00	\$11.17
7	Landscape, CIG						
8	Tier 1	\$0.64	\$0.53	\$1.11	\$0.00	(\$0.02)	\$2.26
9	Tier 2	\$2.02	\$0.53	\$1.94	\$0.00	\$0.00	\$4.49
10	Tier 3	\$2.02	\$0.53	\$2.90	\$2.03	\$0.00	\$7.48
11	Tier 4	\$2.02	\$0.53	\$4.56	\$4.06	\$0.00	\$11.17
12	Uniform						
13	All Usage	\$1.99	\$0.53	\$2.73	\$0.17	(\$0.02)	\$5.40

Table 5-22 shows the revised tier definitions, proposed commodity rates, and current rates for all customer classes and tiers.

Table 5-22: Potable Water Proposed Commodity Rates

	A	B	C	D	E
Line	Customer Class and Tiers	Tier Definition	Proposed Charge	Current Charge	Difference (\$)
1	Residential				
2	Tier 1	IWB	\$1.57	\$2.10	(\$0.53)
3	Tier 2	OWB	\$2.26	\$2.33	(\$0.07)
4	Tier 3	50% TWB	\$4.49	\$3.17	\$1.32
5	Tier 4	50% TWB	\$7.48	\$6.35	\$1.13
6	Tier 5	> 200% TWB	\$11.17	\$11.64	(\$0.47)
7	Landscape, CIG				
8	Tier 1	TWB	\$2.26	\$2.33	(\$0.07)
9	Tier 2	50% TWB	\$4.49	\$3.17	\$1.32
10	Tier 3	50% TWB	\$7.48	\$6.35	\$1.13
11	Tier 4	> 200% TWB	\$11.17	\$11.64	(\$0.47)
12	Uniform				
13	All Usage		\$5.40	\$3.17	\$2.23

Proposed Charges

Table 5-23 shows the proposed five-year RTS charges by meter size for potable water. **Table 5-24** shows the proposed five-year private fireline charges for the potable water system by meter size. **Table 5-25** shows the proposed five-year potable water commodity rates by customer class. The proposed rates are inflated in future years by the revenue adjustments shown in **Table 2-23**.

Table 5-23: Proposed Potable Water RTS Charges

	A	B	C	D	E	F	G
Line	Meter Size	Current	Proposed January 2020	Proposed January 2021	Proposed January 2022	Proposed January 2023	Proposed January 2024
1	5/8"	\$19.23	\$22.28	\$23.40	\$24.57	\$25.80	\$27.09
2	3/4"	\$25.23	\$29.98	\$31.48	\$33.06	\$34.72	\$36.46
3	1"	\$36.09	\$45.38	\$47.65	\$50.04	\$52.55	\$55.18
4	1 1/2"	\$62.90	\$83.88	\$88.08	\$92.49	\$97.12	\$101.98
5	2"	\$91.80	\$130.08	\$136.59	\$143.42	\$150.60	\$158.13
6	3"	\$156.91	\$276.38	\$290.20	\$304.71	\$319.95	\$335.95
7	4"	\$241.02	\$491.98	\$516.58	\$542.41	\$569.54	\$598.02
8	6"	\$442.64	\$1,238.88	\$1,300.83	\$1,365.88	\$1,434.18	\$1,505.89
9	8"	\$651.04	\$2,162.88	\$2,271.03	\$2,384.59	\$2,503.82	\$2,629.02
10	10"	\$651.04	\$3,240.88	\$3,402.93	\$3,573.08	\$3,751.74	\$3,939.33

Table 5-24: Proposed Private Fireline Charges

	A	B	C	D	E	F	G
Line	Fire Line Size	Current	Proposed January 2020	Proposed January 2021	Proposed January 2022	Proposed January 2023	Proposed January 2024
1	5/8"	\$16.25	\$7.06	\$7.42	\$7.80	\$8.19	\$8.60
2	3/4"	\$16.25	\$7.06	\$7.42	\$7.80	\$8.19	\$8.60
3	1"	\$16.25	\$7.06	\$7.42	\$7.80	\$8.19	\$8.60
4	1 1/2"	\$16.25	\$7.06	\$7.42	\$7.80	\$8.19	\$8.60
5	2"	\$16.25	\$7.99	\$8.40	\$8.82	\$9.27	\$9.74
6	2 1/2"	\$21.50	\$8.88	\$9.33	\$9.80	\$10.29	\$10.81
7	4"	\$42.75	\$13.78	\$14.47	\$15.20	\$15.96	\$16.76
8	6"	\$78.25	\$26.92	\$28.27	\$29.69	\$31.18	\$32.74
9	8"	\$115.25	\$49.58	\$52.06	\$54.67	\$57.41	\$60.29
10	10"	\$152.00	\$83.66	\$87.85	\$92.25	\$96.87	\$101.72

Table 5-25: Proposed Potable Water Commodity Rates

	A	B	C	D	E	F	G
Line	Customer Class	Current	Proposed January 2020	Proposed January 2021	Proposed January 2022	Proposed January 2023	Proposed January 2024
1	Residential						
2	Tier 1	\$2.10	\$1.57	\$1.65	\$1.74	\$1.83	\$1.93
3	Tier 2	\$2.33	\$2.26	\$2.38	\$2.50	\$2.63	\$2.77
4	Tier 3	\$3.17	\$4.49	\$4.72	\$4.96	\$5.21	\$5.48
5	Tier 4	\$6.35	\$7.48	\$7.86	\$8.26	\$8.68	\$9.12
6	Tier 5	\$11.64	\$11.17	\$11.73	\$12.32	\$12.94	\$13.59
7	Landscape, CIG						
8	Tier 1	\$2.33	\$2.26	\$2.38	\$2.50	\$2.63	\$2.77
9	Tier 2	\$3.17	\$4.49	\$4.72	\$4.96	\$5.21	\$5.48
10	Tier 3	\$6.35	\$7.48	\$7.86	\$8.26	\$8.68	\$9.12
11	Tier 4	\$11.64	\$11.17	\$11.73	\$12.32	\$12.94	\$13.59
12	Uniform						
13	Construction	\$3.17	\$5.40	\$5.67	\$5.96	\$6.26	\$6.58
14	Fireline	\$3.17	\$5.40	\$5.67	\$5.96	\$6.26	\$6.58

Customer Impacts

Figure 5-1 illustrates an SFR monthly bill impacts from the proposed rates in **Table 5-4** and **Table 5-22**. The average SFR customer uses 25 units of water per month.

Figure 5-1: Potable Water Single Family Bill Impacts with ¾" Meter

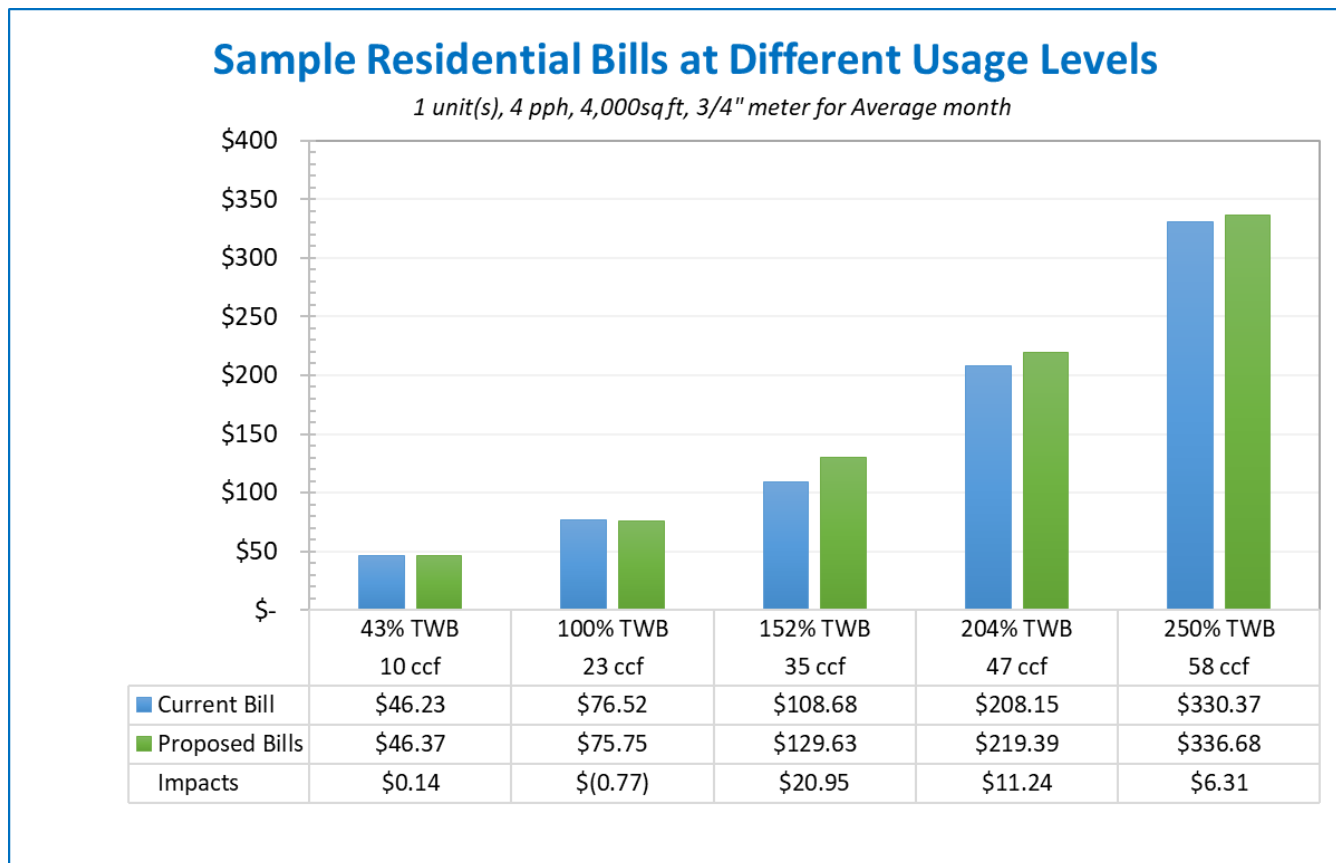
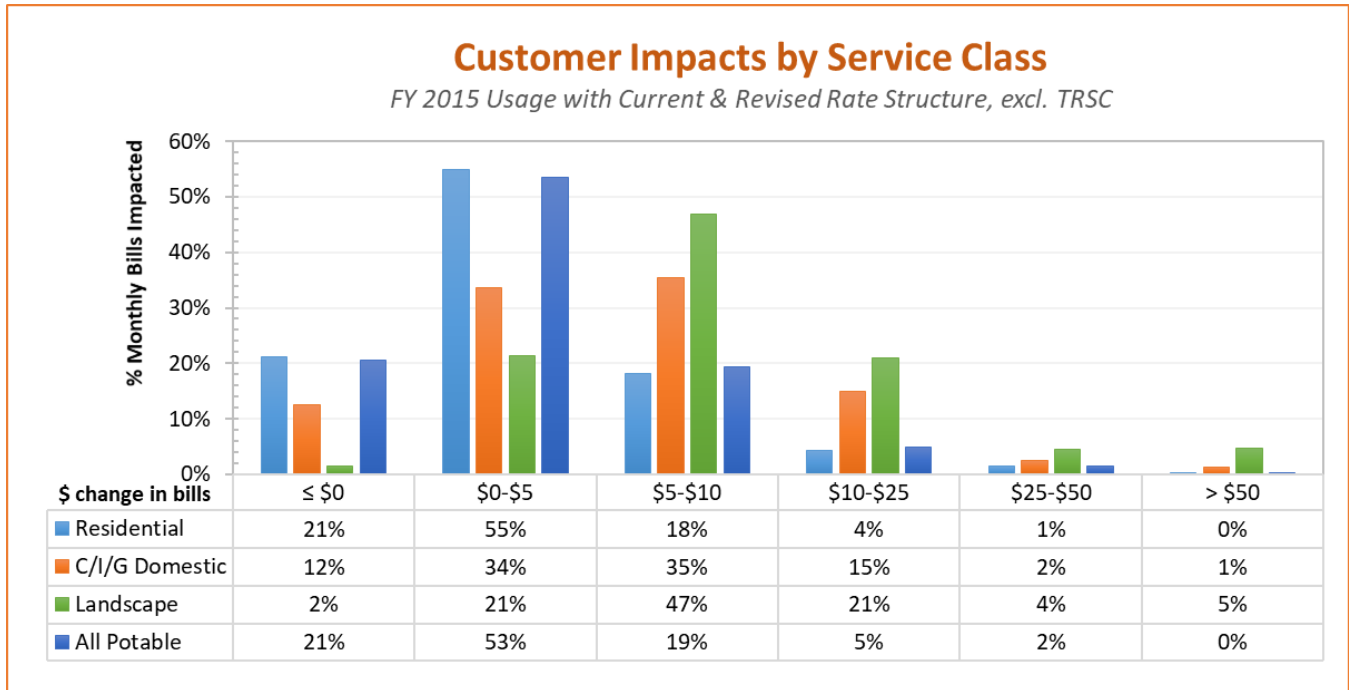


Figure 5-2 shows bill impacts for all customer classes. 21 percent of Residential customers are projected to see a reduction in their monthly bill and 55 percent are projected to realize an impact of \$5 or less.

Figure 5-2: Potable Water Bill Impacts for All Customer Classes



Customer impacts were calculated for a hypothetical SFR water user to illustrate bill impacts due to rate structure changes and changes in the water budget assumptions which construct the indoor and outdoor budgets. The example below assumes a customer with a 10 ccf budget in Tier 1 and a 14 ccf budget in Tier 2 for a total budget of 24 units. The example also assumes that the user remains within budget in the existing rate structure. In the revised budget, the customer's Tier 1 budget is reduced by 1 unit to 9 ccf and their Tier 2 budget is reduced by 4 units to 10 ccf.

Figure 5-3, Figure 5-4, and Figure 5-5 illustrates a single family current budget and bill assuming three scenarios: 1) maintaining their current water use of 24 units, 2) reducing water use by 2 units to 22 ccf, and 3) reducing water use to stay within their new budget of 19 ccf.

Figure 5-3: Potable Water Single Family Bill Impacts, 24 ccf of Usage

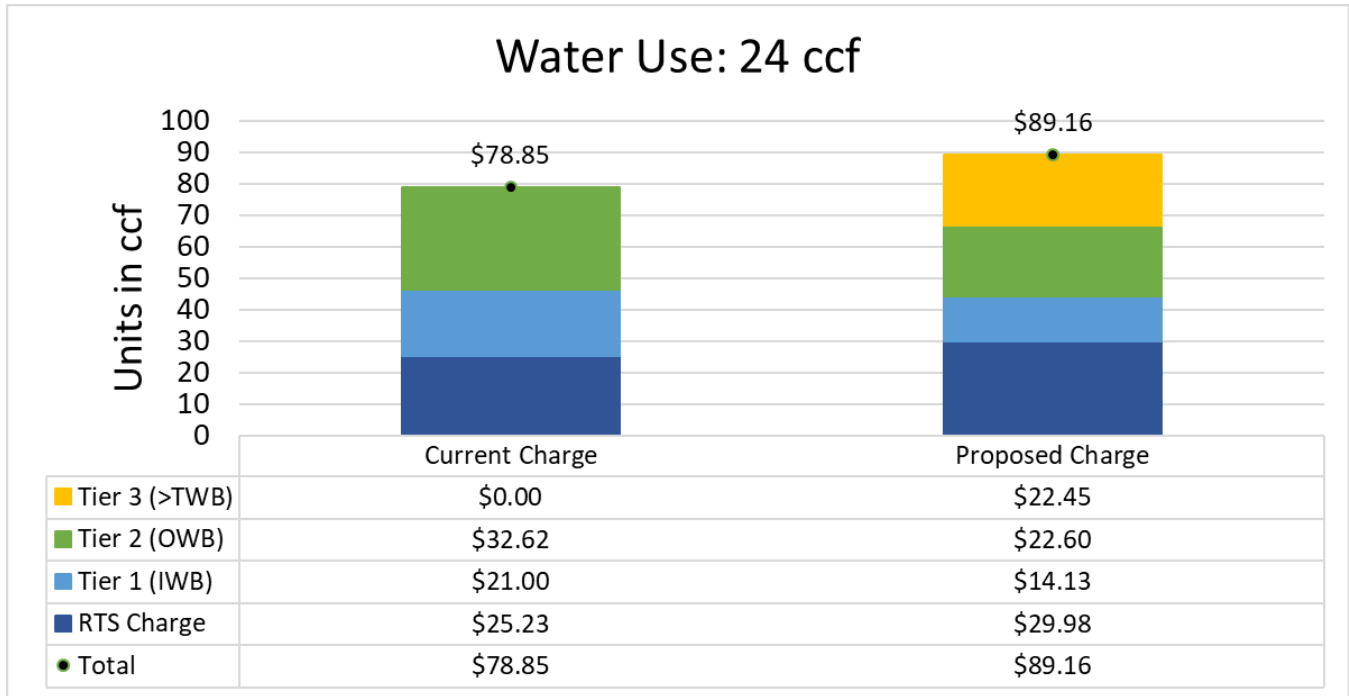


Figure 5-4: Potable Water Single Family Bill Impacts, 22 ccf of Usage

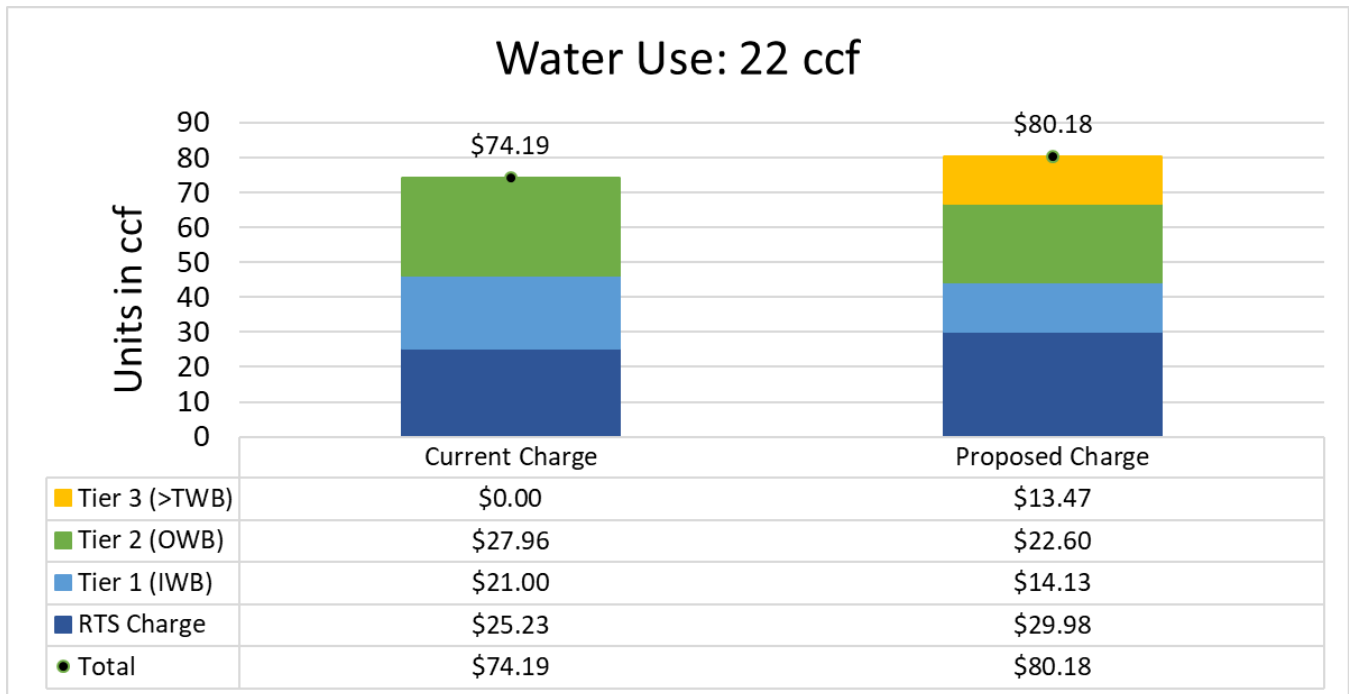
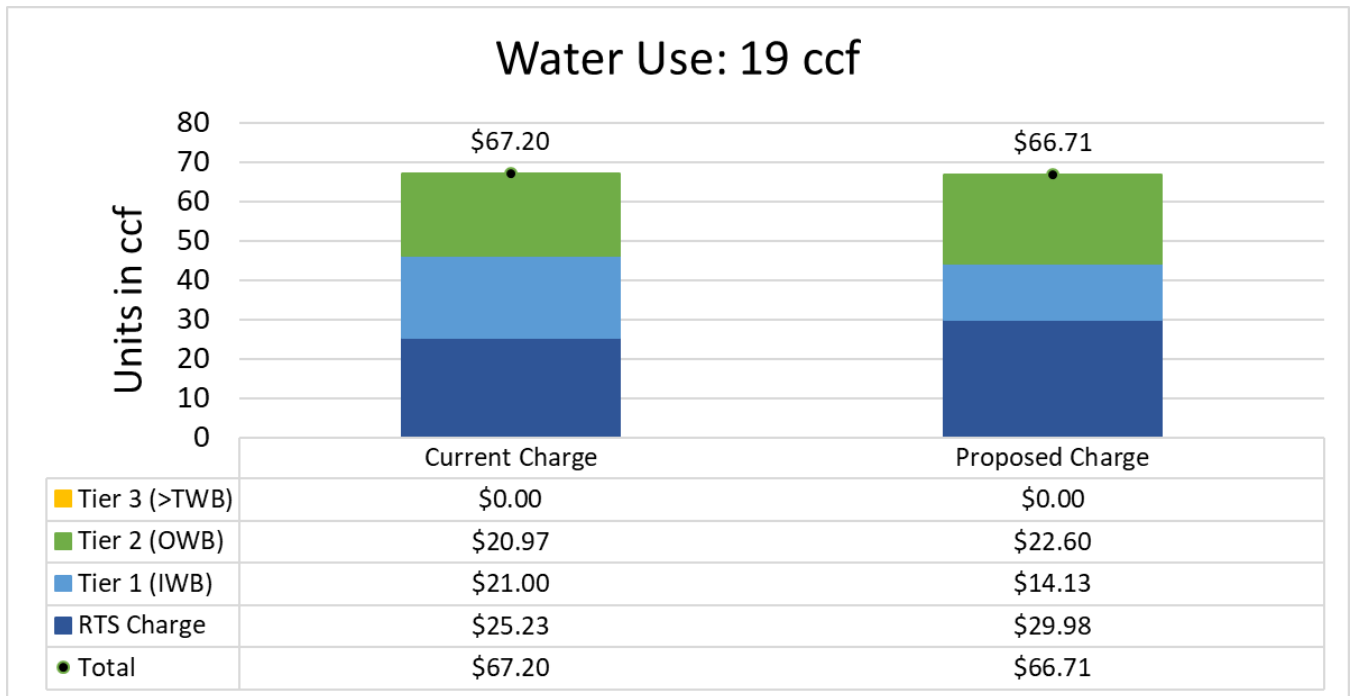


Figure 5-5: Potable Water Single Family Bill Impacts, 19 ccf of Usage



6 Reclaimed Water Financial Plan

This section describes the reclaimed water fund and the proposed financial plan. This section provides a discussion of projected revenues, O&M expenses, capital expenditures, existing and proposed debt service, reserve funding, and the revenue adjustments required to ensure the fiscal sustainability and solvency of the reclaimed water utility. The numbers shown in this section of the report are rounded and therefore totals and subtotals may not equal the exact amounts shown.

Inflationary Assumptions

Inflationary assumptions are used to project cost increases across the planning period. City staff provided FY 2019 budget information; the inflationary assumptions are applied to all years beginning FY 2020. Raftelis worked with City staff to escalate individual budget line items according to the appropriate escalation factor.

Table 6-1 Expense Inflationary Assumptions presents the inflationary assumptions used to project future expenses. The expense inflationary assumptions are the same assumptions used in the potable water financial plan.

Table 6-1: Expense Inflationary Assumptions

	A	B	C	D	E	F
Line	Escalation Factors	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	General	3.3%	3.3%	3.3%	3.3%	3.3%
2	Salary	3.7%	3.7%	3.7%	3.7%	3.7%
3	Benefits	3.7%	3.7%	3.7%	3.7%	3.7%
4	Utilities	0.3%	0.3%	0.3%	0.3%	0.3%
5	Chemical	3.3%	3.3%	3.3%	3.3%	3.3%
6	Capital	2.8%	2.8%	2.8%	2.8%	2.8%

Table 6-2 shows the inflationary assumptions used to project future revenues. The study uses the reserve interest rate to estimate the annual investment income.

Table 6-2: Revenue Inflationary Assumptions

	A	B	C	D	E	F
Line	Escalation Factors	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Miscellaneous Revenues	1.0%	1.0%	1.0%	1.0%	1.0%
2	Reserve Interest	1.0%	1.0%	1.0%	1.0%	1.0%

Projected Revenues

City staff provided rate and non-rate revenue as shown in **Table 6-3**. The groundwater recharge program revenues are equal to the costs shown for the potable water system (**Table 2-17**, Line 3). The groundwater recharge program represents a revenue for the reclaimed water system and an expense for the potable water system. Investment earnings are calculated using the reserve interest rate (**Table 6-2**, Line 2), assuming no revenue adjustments.

Table 6-3: Projected Reclaimed Water Revenues

	A	B	C	D	E	F	G
Line	Projected Revenues	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	RTS Charges	\$432,600	\$432,600	\$432,600	\$432,600	\$432,600	\$432,600
2	Commodity Rates	\$3,215,000	\$3,215,000	\$3,215,000	\$3,215,000	\$3,215,000	\$3,215,000
3	Groundwater Recharge Program	\$0	\$271,786	\$536,145	\$534,288	\$534,288	\$534,288
4	Investment Earnings	\$1,861	(\$2,537)	(\$2,211)	\$1,166	\$2,335	\$3,232
5	Other Revenues	\$79,393	\$0	\$0	\$0	\$0	\$0
6	Grants and Other Contributions	(\$12,505)	\$0	\$0	\$0	\$0	\$0
7	Total	\$3,716,349	\$3,916,849	\$4,181,534	\$4,183,054	\$4,184,223	\$4,185,120

Projected O&M Expenses

Table 6-4 shows the projected O&M expenses for the study period. All O&M expenses are from the City's O&M budget for FY 2019, escalated by the inflationary assumptions (Table 6-1) for FY 2020 and beyond.

Table 6-4: Projected Reclaimed Water O&M Expenses

	A	B	C	D	E	F	G
Line	Projected O&M Expenses	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Capital Improvements						
2	Salaries & Benefits	\$11,946	\$12,392	\$12,855	\$13,335	\$13,833	\$14,350
3	Reclaimed General Services						
4	Salaries & Benefits	\$217,239	\$225,352	\$233,769	\$242,500	\$251,556	\$260,952
5	Supplies w/o Interest Expenses	\$295,188	\$304,992	\$315,123	\$325,589	\$336,403	\$347,577
6	Reclaimed Regulatory Compliance						
7	Salaries & Benefits	\$98,609	\$102,292	\$106,112	\$110,075	\$114,186	\$118,451
8	Supplies	\$311,899	\$322,259	\$332,962	\$344,021	\$355,448	\$367,254
9	Reclaimed Operations						
10	Salaries & Benefits	\$97,556	\$100,796	\$104,144	\$107,603	\$111,177	\$114,870
11	Supplies w/o Pumping Costs	\$74,383	\$76,854	\$79,406	\$82,044	\$84,769	\$87,584
12	Pumping Costs	\$672,000	\$674,158	\$676,323	\$678,494	\$680,673	\$682,859
13	Reclaimed Infrastructure Maintenance						
14	Salaries	\$75,831	\$78,350	\$80,952	\$83,641	\$86,419	\$89,289
15	Supplies	\$75,435	\$77,941	\$80,529	\$83,204	\$85,968	\$88,823
16	Capital	\$15,000	\$15,498	\$16,013	\$16,545	\$17,094	\$17,662
17	Reclaimed Facility Maintenance						
18	Salaries & Benefits	\$81,328	\$84,365	\$87,516	\$90,785	\$94,175	\$97,693
19	Supplies	\$143,042	\$147,793	\$152,702	\$157,774	\$163,014	\$168,429
20	Utility Billing						
21	Salaries	\$9,788	\$10,113	\$10,449	\$10,796	\$11,155	\$11,525
22	Total	\$2,179,244	\$2,233,155	\$2,288,855	\$2,346,406	\$2,405,871	\$2,467,316

Debt Service

The City's reclaimed water utility has two outstanding long-term debt obligations:

1. An SRF Loan
2. 2012 Water Revenue Bonds

Table 6-5 shows the existing debt service allocation between the City's three funds for the reclaimed water-related debt service obligations.

Table 6-5: Existing Reclaimed Water Debt Service Allocation

	A	B	C	D	E
Line	Existing Debt Allocation	570 - Potable Water	507 - Water Capacity	567 - Reclaimed Water	Total
1	SRF Loan	0%	0%	100%	100%
2	2012 Water Bonds	45%	41%	14%	100%

Table 6-6 shows the total annual debt service for each of the two outstanding loans and the amount allocated to the reclaimed water fund based on the debt allocation percentages in (**Table 6-5**, Column D).

Table 6-6: Existing Reclaimed Water Debt Service

	A	B	C	D	E	F	G
Line	Existing Debt Service	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	SRF Loan	\$1,944,995	\$1,944,995	\$1,944,995	\$1,944,995	\$1,944,995	\$1,944,995
2	2012 Water Bonds	\$2,740,250	\$2,744,375	\$2,736,500	\$2,739,000	\$2,725,725	\$2,725,850
3	Total	\$4,685,245	\$4,689,370	\$4,681,495	\$4,683,995	\$4,670,720	\$4,670,845
4	Fund 567 – Reclaimed Water	\$2,328,631	\$2,329,208	\$2,328,106	\$2,328,456	\$2,326,597	\$2,326,615

The City plans to incur new debt, in the form of an internal loan from the Water Reclamation Fund (sewer), to fund capital projects over the study period. The proposed terms for new debt include a 2.0 percent interest rate loan over 20 years. **Table 6-7** shows the proposed debt proceeds and annual debt service for the internal loans based on the proposed debt terms. The new debt will be incurred as the capital projects are expensed.

Table 6-7: Proposed Reclaimed Water Debt Service

	A	B	C	D	E	F	G
Line	Proposed Debt Service	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Debt Proceeds	\$317,202	\$1,293,153	\$589,645	\$0	\$0	\$0
2	Annual Debt Service	\$1,617	\$25,989	\$101,489	\$134,545	\$134,545	\$134,545

Capital Projects

Table 6-8 shows the capital projects funded by the reclaimed water fund. The CIP costs are then inflated for future years (Line 11) using the capital inflationary assumption (**Table 6-1**, Line 6). All capital costs are funded through the debt proceeds (**Table 6-7**, Line 1) or through rates and reserves.

Table 6-8: Reclaimed Water CIP Costs

	A	B	C	D	E	F	G	H
Line	Reclaimed Water Capital Projects	Funded by 567	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Reclaimed Water CIP							
2	WRCRWA -Rclmd Waterline	100%	\$0	\$997,860	\$0	\$0	\$0	\$0
3	Old Temescal Recycled W1	100%	\$0	\$0	\$948,250	\$0	\$0	\$0
4	Santa Ana River Trail Swr Ext	100%	\$57,000	\$0	\$0	\$0	\$0	\$0
5	Border Booster Pump Replacement	100%	\$200,000	\$0	\$0	\$0	\$0	\$0
6	Business Process Management	100%	\$8,250	\$0	\$0	\$0	\$0	\$0
7	WRCRWA Flow Control Improvements	20%	\$30,000	\$210,000	\$0	\$0	\$0	\$0
8	Grapehill Telecom Tower No. 2	100%	\$21,952	\$0	\$0	\$0	\$0	\$0
9	Irrigaton Monitoring System	100%	\$0	\$50,000	\$0	\$0	\$0	\$0
10	Total		\$317,202	\$1,257,860	\$948,250	\$0	\$0	\$0
11	Total (Inflated)		\$317,202	\$1,293,153	\$1,002,208	\$0	\$0	\$0

Table 6-9 shows the proposed capital financing plan based on the CIP costs (**Table 6-8**, Line 11) and the debt proceeds (**Table 6-7**, Line 1).

Table 6-9: Reclaimed Water Capital Financing Plan

	A	B	C	D	E	F	G
Line	Capital Financing Plan	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Debt Funded CIP	\$317,202	\$1,293,153	\$589,645	\$0	\$0	\$0
2	Rate Funded CIP	\$0	\$0	\$412,564	\$0	\$0	\$0
3	Total	\$317,202	\$1,293,153	\$1,002,208	\$0	\$0	\$0

Current Financial Plan

Table 6-10 shows the City's current reclaimed water financial plan, with revenues based on current rates. Revenues are from **Table 6-3**. O&M expenses are shown in **Table 6-4**. Existing debt service is equal to reclaimed water debt service (**Table 6-6**, Line 4) and proposed debt service is equal to the debt service from the internal loan (**Table 6-7**, Line 2). Capital project costs are equal to rate funded CIP (**Table 6-9**, Line 2), which omits debt funded CIP to show to overall cash impact of the City's reclaimed water CIP and includes grant funded CIP based on grant funding shown in **Table 6-3**.

Net revenue (Line 23) is equal to all revenues (Lines 5 and 11) less O&M expenses (Line 21). Net cash flow (Line 34) is net revenue (Line 23) less debt service (Line 28) and capital project costs (Line 32). Based on this financial plan, the City will have a negative fund balance for all years of the study if there are no revenue adjustments implemented. The net cash flow for all years of the study is negative, signifying that the City's current rates are not sufficient to fund its debt service and capital project obligations.

Table 6-10: Current Reclaimed Water Financial Plan

	A	B	C	D	E	F	G
Line	Reclaimed Water Financial Plan	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Revenues						
2	RTS Charges	\$432,600	\$432,600	\$432,600	\$432,600	\$432,600	\$432,600
3	Commodity Charges	\$3,215,000	\$3,215,000	\$3,215,000	\$3,215,000	\$3,215,000	\$3,215,000
4	Revenue Adjustments	\$0	\$0	\$0	\$0	\$0	\$0
5	Total Rate Revenues	\$3,647,600	\$3,647,600	\$3,647,600	\$3,647,600	\$3,647,600	\$3,647,600
6							
7	Miscellaneous Revenues						
8	Groundwater Recharge Program	\$0	\$271,786	\$536,145	\$534,288	\$534,288	\$534,288
9	Investment Earnings	\$1,861	(\$3,362)	(\$4,760)	(\$3,153)	(\$3,443)	(\$3,752)
10	Other Revenues and Grants	\$66,888	\$0	\$0	\$0	\$0	\$0
11	Total Revenues	\$68,749	\$268,424	\$531,385	\$531,135	\$530,845	\$530,537
12							
13	O&M Expenses						
14	Capital Improvements	\$11,946	\$12,392	\$12,855	\$13,335	\$13,833	\$14,350
15	Reclaimed General Services	\$512,427	\$530,345	\$548,891	\$568,089	\$587,960	\$608,528
16	Reclaimed Regulatory Compliance	\$410,508	\$424,550	\$439,074	\$454,096	\$469,634	\$485,705
17	Reclaimed Operations	\$843,939	\$851,808	\$859,873	\$868,141	\$876,619	\$885,313
18	Reclaimed Infrastructure Maintenance	\$166,266	\$171,788	\$177,494	\$183,390	\$189,481	\$195,774
19	Reclaimed Facility Maintenance	\$224,370	\$232,158	\$240,218	\$248,559	\$257,190	\$266,121
20	Utility Billing	\$9,788	\$10,113	\$10,449	\$10,796	\$11,155	\$11,525
21	Total O&M Expenses	\$2,179,244	\$2,233,155	\$2,288,855	\$2,346,406	\$2,405,871	\$2,467,316
22							
23	Net Revenue	\$1,537,105	\$1,682,869	\$1,890,130	\$1,832,329	\$1,772,575	\$1,710,820
24							
25	Debt Service						
26	Existing Debt Service	\$2,328,631	\$2,329,208	\$2,328,106	\$2,328,456	\$2,326,597	\$2,326,615
27	Proposed Debt Service	\$1,617	\$25,989	\$101,489	\$134,545	\$134,545	\$134,545
28	Total Debt Service	\$2,330,247	\$2,355,198	\$2,429,595	\$2,463,000	\$2,461,142	\$2,461,159
29							
30	Capital Projects						
31	Rate Funded	\$12,505	\$0	\$412,564	\$0	\$0	\$0
32	Total Capital Projects	\$12,505	\$0	\$412,564	\$0	\$0	\$0
33							
34	Net Cash Flow	(\$805,647)	(\$672,329)	(\$952,029)	(\$630,671)	(\$688,567)	(\$750,339)
35	Beginning Balance	\$119,688	(\$685,959)	(\$1,358,288)	(\$2,310,317)	(\$2,940,988)	(\$3,629,556)
36	Ending Balance	(\$685,959)	(\$1,358,288)	(\$2,310,317)	(\$2,940,988)	(\$3,629,556)	(\$4,379,895)
37	Reserve Target	\$936,399	\$960,864	\$986,085	\$1,012,085	\$1,038,889	\$1,066,524

Proposed Financial Plan

Table 6-11 shows the proposed revenue adjustments that will allow the City's reclaimed water utility to meet its debt service obligations, capital project costs, and reserve funding requirements.

The recommended reserve policy includes 90 days of O&M expenses and one year of annual depreciation. Reserve policies enable the City 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 6-11: Proposed Reclaimed Water Revenue Adjustments

	A	B	C	D	E	F
Line	Revenue Adjustments	FY 2020*	FY 2021	FY 2022	FY 2023	FY 2024
1	Month Effective	January	January	January	January	January
2	Reclaimed Water	9.0%	9.0%	8.0%	5.0%	5.0%

* Adjustment is to total revenue.

Table 6-12 shows the proposed financial plan with revenue adjustments. The additional revenue (Line 4) is based on the revenue adjustment percentage (**Table 6-11**, Line 2) and the number of effective months in the fiscal year. For example, the revenue adjustment percentage for FY 2020 is effective for six months out of the year; the revenue adjustment value (Column C, Line 4) reflects this calculation. Based on the proposed financial plan, the City will be able to fund the O&M expenses related to the reclaimed water utility, shown as a positive net revenue number (Line 23). However, the reclaimed water utility will be negative for all years of the study due to the debt service and capital project costs.

Table 6-12: Proposed Reclaimed Water Financial Plan

	A	B	C	D	E	F	G
Line	Reclaimed Water Financial Plan	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Revenues						
2	RTS Charges	\$432,600	\$432,600	\$432,600	\$432,600	\$432,600	\$432,600
3	Commodity Charges	\$3,215,000	\$3,215,000	\$3,215,000	\$3,215,000	\$3,215,000	\$3,215,000
4	Revenue Adjustments	\$0	\$164,142	\$507,199	\$859,462	\$1,149,821	\$1,389,692
5	Total Rate Revenues	\$3,647,600	\$3,811,742	\$4,154,799	\$4,507,062	\$4,797,421	\$5,037,292
6							
7	Miscellaneous Revenues						
8	Groundwater Recharge Program	\$0	\$271,786	\$536,145	\$534,288	\$534,288	\$534,288
9	Investment Earnings	\$1,861	(\$2,537)	(\$2,211)	\$1,166	\$2,335	\$3,232
10	Other Revenues and Grants	\$66,888	\$0	\$0	\$0	\$0	\$0
11	Total Revenues	\$68,749	\$269,249	\$533,934	\$535,454	\$536,623	\$537,520
12							
13	O&M Expenses						
14	Capital Improvements	\$11,946	\$12,392	\$12,855	\$13,335	\$13,833	\$14,350
15	Reclaimed General Services	\$512,427	\$530,345	\$548,891	\$568,089	\$587,960	\$608,528
16	Reclaimed Regulatory Compliance	\$410,508	\$424,550	\$439,074	\$454,096	\$469,634	\$485,705
17	Reclaimed Operations	\$843,939	\$851,808	\$859,873	\$868,141	\$876,619	\$885,313
18	Reclaimed Infrastructure Maintenance	\$166,266	\$171,788	\$177,494	\$183,390	\$189,481	\$195,774
19	Reclaimed Facility Maintenance	\$224,370	\$232,158	\$240,218	\$248,559	\$257,190	\$266,121
20	Utility Billing	\$9,788	\$10,113	\$10,449	\$10,796	\$11,155	\$11,525
21	Total O&M Expenses	\$2,179,244	\$2,233,155	\$2,288,855	\$2,346,406	\$2,405,871	\$2,467,316
22							
23	Net Revenue	\$1,537,105	\$1,847,836	\$2,399,877	\$2,696,110	\$2,928,173	\$3,107,496
24							
25	Debt Service						
26	Existing Debt Service	\$2,328,631	\$2,329,208	\$2,328,106	\$2,328,456	\$2,326,597	\$2,326,615
27	Proposed Debt Service	\$1,617	\$25,989	\$101,489	\$134,545	\$134,545	\$134,545
28	Total Debt Service	\$2,330,247	\$2,355,198	\$2,429,595	\$2,463,000	\$2,461,142	\$2,461,159
29							
30	Capital Projects						
31	Rate Funded	\$12,505	\$0	\$412,564	\$0	\$0	\$0
32	Total Capital Projects	\$12,505	\$0	\$412,564	\$0	\$0	\$0
33							
34	Net Cash Flow	(\$805,647)	(\$507,362)	(\$442,282)	\$233,110	\$467,032	\$646,336
35	Beginning Balance	\$119,688	(\$685,959)	(\$1,193,321)	(\$1,635,603)	(\$1,402,493)	(\$935,461)
36	Ending Balance	(\$685,959)	(\$1,193,321)	(\$1,635,603)	(\$1,402,493)	(\$935,461)	(\$289,125)
37	Reserve Target	\$936,399	\$960,864	\$986,085	\$1,012,085	\$1,038,889	\$1,066,524

To better visualize the effects of the revenue adjustments on the proposed financial plan, this section displays the proposed financial plan in graphical format. The figures show the City’s resulting debt service coverage from revenue adjustments, the proposed operating financial plan comparing current and proposed revenues, projected ending balances and reserve targets, and the CIP and its funding sources.

Figure 6-1 shows the proposed revenue adjustments and resulting debt service coverage. The City is exceeding its debt service coverage targets for all years of the study.

Figure 6-1: Proposed Reclaimed Water Revenue Adjustments and Debt Coverage

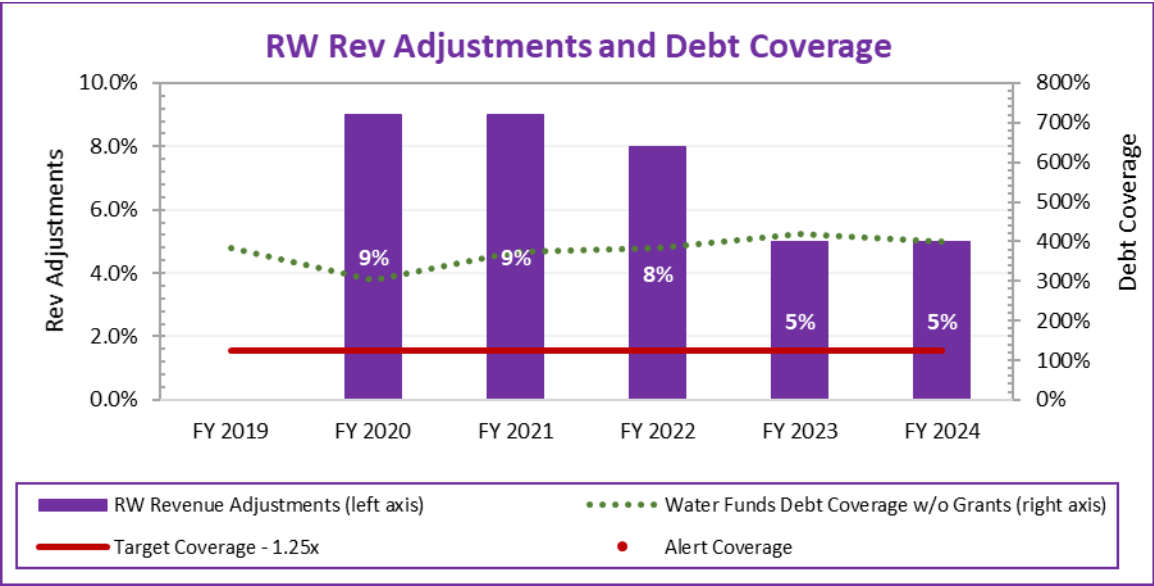


Figure 6-2 shows the reclaimed water operating financial plan and compares existing revenues (red line) and proposed revenues (green line). The bars consist of the various expenses for the reclaimed water utility, including O&M expenses (orange bars), debt service (green bars), pumping costs (blue bars), and reserve funding (red bars).

Figure 6-2: Projected Reclaimed Water Financial Plan

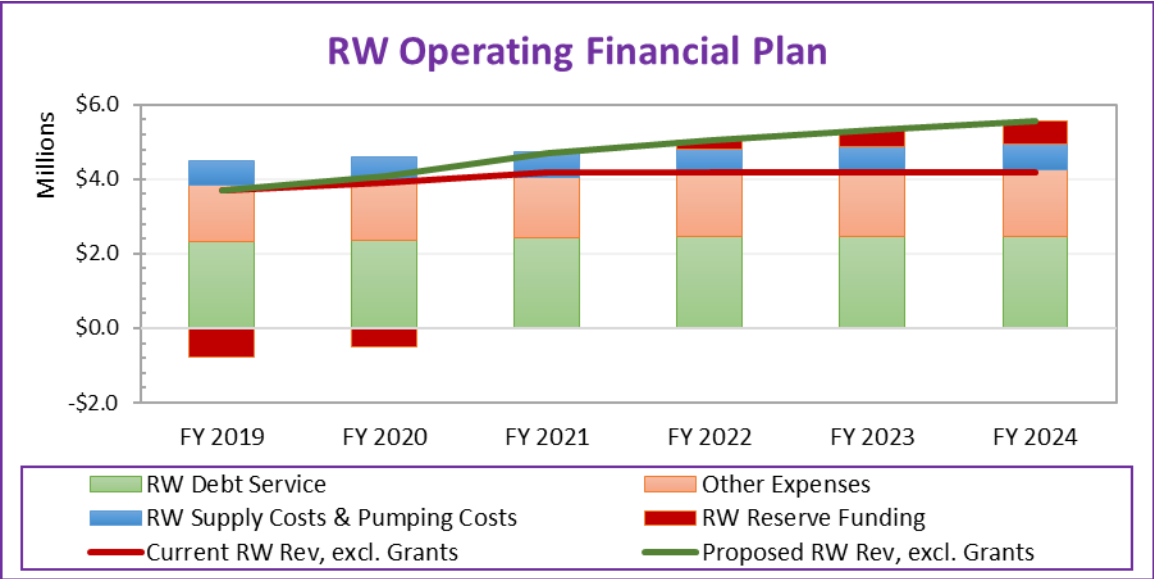


Figure 6-3 shows the reclaimed water utility’s ending balance for each year of the study. The purple bars represent the ending balance, and the red line indicates the target reserve level. The reserve levels for the reclaimed water utility will be negative for all years of the study.

Many new utilities, such as the City’s reclaimed water system, cannot charge rates to fully cover its costs in the early stages. The costs for the system are high due to debt service; the City has opted to fund the reclaimed water CIP through debt to balance costs over a longer time period. The revenue adjustments (**Table 6-11**, Line 2) were specifically chosen to maintain the reclaimed water rates below potable water rates to incentivize customers to utilize the reclaimed water system. Due to the capital-intensive nature of starting a new utility, the reclaimed water system is not able to be solvent in the near-term. However, as new customers connect to the reclaimed system, rate revenues will increase and lead to enhanced financial stability. Raftelis recommends that the City assess additional revenue adjustments after the study period to increase its reclaimed water reserves.

Figure 6-3: Projected Reclaimed Water Ending Balances

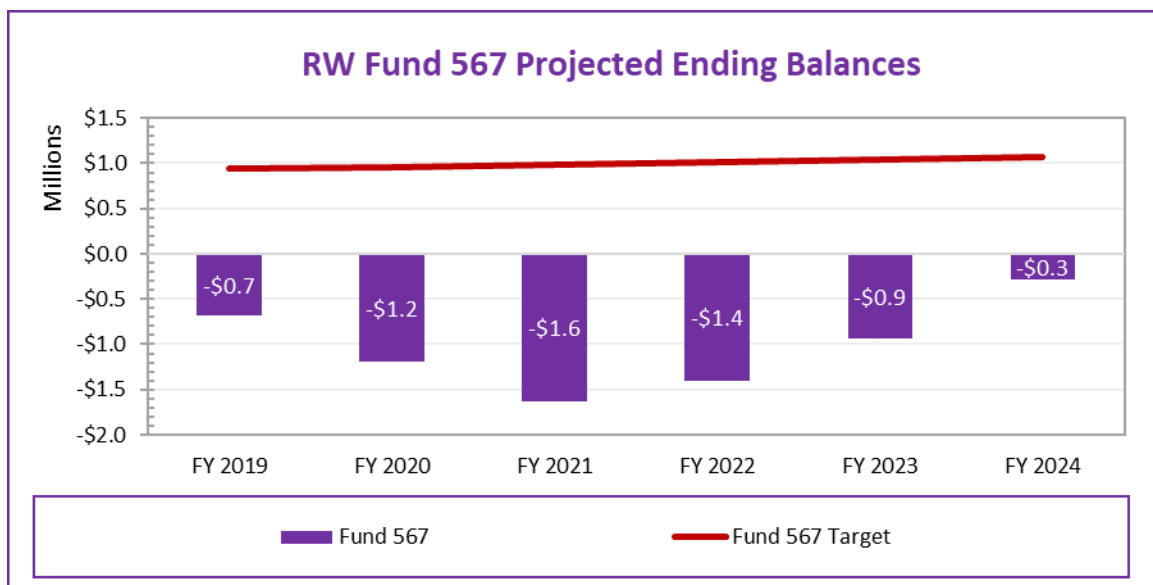
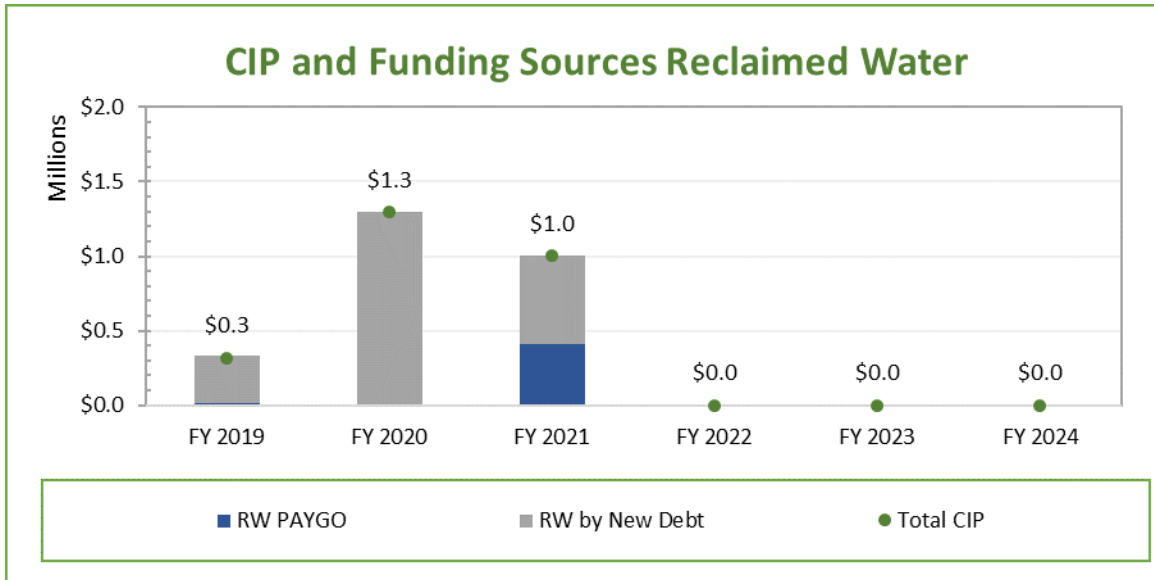


Figure 6-4 shows the capital financing plan for the reclaimed water utility, based on the capital financing plan (**Table 6-9**).

Figure 6-4: Proposed Reclaimed Water Capital Financing Plan



7 Reclaimed Water Rate Derivation

This section of the report details the rate derivation process for the reclaimed water system. The numbers shown in this section of the report are rounded and therefore may not equal the exact amounts shown in the totals and subtotals.

RTS Charges

As with the potable RTS charges, the reclaimed water RTS charges recognize the fact that the City incurs fixed costs in connection with operating and maintaining the reclaimed water system regardless if a reclaimed customer uses any reclaimed water. The reclaimed RTS charge is comprised of two rate components: 1) Billing and CS and 2) Meters and Services. The Billing and CS rate component for the reclaimed RTS charge is equal to the potable Billing and CS rate component developed in **Table 5-3**. This is because the costs associated with meter reading, customer billing and collection, and other customer service are generally the same for both potable and reclaimed water service regardless of meter size. After accounting for Billing and CS costs, the remainder of the revenue requirement for reclaimed RTS charges consists of Meters and Services costs relating to maintaining and replacing meters. The reclaimed Meters and Services rate component for the reclaimed RTS charge does vary by meter size, as larger meters are more expensive to maintain and replace.

Units of Service

Table 7-1 shows both the number of reclaimed meters (which represent the Billing and CS units of service) and equivalent meters (which represent the Meters and Services units of service). Equivalent meters are determined by multiplying the number of meters by standard AWWA capacity ratios.

Table 7-1: Reclaimed Water Meters and Equivalent Meters

Line	A Meter Size	B Number of Meters	C Capacity Ratio	D Equivalent Meters
1	5/8"	0	1.00	0
2	3/4"	17	1.50	26
3	1"	60	2.50	150
4	1 1/2"	158	5.00	790
5	2"	83	8.00	664
6	3"	25	17.50	438
7	4"	12	31.50	378
8	6"	6	80.00	480
9	8"	1	140.00	140
10	10"	1	210.00	210
11	Total	363		3,275

Unit Costs

Table 7-6 shows the determination of the reclaimed RTS charge revenue requirement by rate component. The total revenue requirement (Column B, Line 3) is determined by increasing reclaimed RTS charge revenue under current rates in FY 2020 (**Table 6-12**) by the proposed reclaimed water revenue adjustment in FY 2020 (**Table 6-11**). The Billing and CS revenue requirement (Column B, Line 1) is determined by multiplying the potable Billing and CS unit rate (**Table 5-3**) by the number of annual reclaimed water bills (**Table 7-1**, Column B, Line 11 x 12 billing periods per year). The Meters and Services revenue requirement (Column B, Line 2) is equal to the total reclaimed RTS revenue requirement less the Billing and CS revenue requirement.

Table 7-2: Reclaimed Water RTS Revenue Requirement by Rate Component

	A	B	C
Line	Rate Component	Revenue Requirement	Source/Notes
1	Billing & CS	\$29,969	= \$6.88 unit cost x 363 meters x 12 months
2	Meters & Services	\$441,565	= [Line 3] – [Line 1]
3	Total Revenue Requirement	\$471,534	= Current RTS revenues of \$432,600 increased by 9%

Table 7-3 shows the determination of unit costs for the reclaimed water RTS charges. The revenue requirements in (**Table 7-6**) are divided by the units of service to determine the unit cost for each rate component. The units of service for Billing and CS are equal to the number of meters (**Table 7-1**, Column B, Line 11) multiplied by 12 billing periods per year. The units of service for Meters and Services are equal to the number of equivalent meters (**Table 7-1**, Column D, Line 11) multiplied by 12 billing periods per year.

Table 7-3: Reclaimed Water RTS Charge Unit Costs

	A	B	C	D
Line	Rate Component	Revenue Requirement	Units of Service	Unit Cost
1	Billing & CS	\$29,969	4,356	\$6.88
2	Meters & Services	\$441,565	39,300	\$11.24

Proposed RTS Charge

The proposed RTS charge is shown in **Table 7-4**. The unit cost for the Meters and Services (**Table 7-3**, Column C, Line 2) rate component is scaled up for larger meters based on the capacity ratio (Column B). Billing and CS costs (**Table 7-3**, Column D, Line 1) are the same for any size meter. The proposed RTS charge is equal to the sum of the Meters and Services and Billing and CS rate components.

Table 7-4: Proposed Reclaimed Water RTS Charge Calculation

	A	B	C	D	E	F	G
Line	Meter Size	Capacity Ratio	Meter Services	Billing & CS	Proposed Charge	Current Charge	Difference (\$)
1	5/8"	1.00	\$11.24	\$6.88	\$18.12	\$18.90	(\$0.78)
2	3/4"	1.50	\$16.85	\$6.88	\$23.74	\$24.79	(\$1.05)
3	1"	2.50	\$28.09	\$6.88	\$34.97	\$35.46	(\$0.49)
4	1 1/2"	5.00	\$56.18	\$6.88	\$63.06	\$61.79	\$1.27
5	2"	8.00	\$89.89	\$6.88	\$96.77	\$90.18	\$6.59
6	3"	17.50	\$196.63	\$6.88	\$203.51	\$154.12	\$49.39
7	4"	31.50	\$353.93	\$6.88	\$360.81	\$236.76	\$124.05
8	6"	80.00	\$898.86	\$6.88	\$905.74	\$434.82	\$470.92
9	8"	140.00	\$1,573.00	\$6.88	\$1,579.89	\$639.52	\$940.37
10	10"	210.00	\$2,359.51	\$6.88	\$2,366.39	\$639.52	\$1,726.87

Table 7-5 shows the proposed reclaimed RTS charges for all years of the study, increasing each year after FY 2020 by the reclaimed water revenue adjustment (**Table 6-11**, Line 2).

Table 7-5: Proposed Reclaimed Water RTS Charges

	A	B	C	D	E	F	G
Line	Meter Size	Current	Proposed January 2020	Proposed January 2021	Proposed January 2022	Proposed January 2023	Proposed January 2024
1	5/8"	\$18.90	\$18.12	\$19.75	\$21.33	\$22.40	\$23.52
2	3/4"	\$24.79	\$23.74	\$25.88	\$27.95	\$29.34	\$30.81
3	1"	\$35.46	\$34.97	\$38.12	\$41.17	\$43.23	\$45.39
4	1 1/2"	\$61.79	\$63.06	\$68.74	\$74.23	\$77.95	\$81.84
5	2"	\$90.18	\$96.77	\$105.48	\$113.92	\$119.61	\$125.59
6	3"	\$154.12	\$203.51	\$221.83	\$239.57	\$251.55	\$264.13
7	4"	\$236.76	\$360.81	\$393.28	\$424.75	\$445.98	\$468.28
8	6"	\$434.82	\$905.74	\$987.26	\$1,066.24	\$1,119.55	\$1,175.53
9	8"	\$639.52	\$1,579.89	\$1,722.08	\$1,859.85	\$1,952.84	\$2,050.48
10	10"	\$639.52	\$2,366.39	\$2,579.37	\$2,785.71	\$2,925.00	\$3,071.25

Commodity Rates

The reclaimed water commodity rates are calculated by inflating the City's current reclaimed water commodity rates by the revenue adjustments in **Table 6-11**. The City's current reclaimed water rates were developed in a cost of service and rate study in 2015. Given that an updated cost of service analysis is required every ten years and that there have not been any significant changes to the City's reclaimed water system since the last cost of service study, an across-the-board increase is appropriate.

Table 7-6 shows the proposed reclaimed water commodity rates for all years of the study.

Table 7-6: Proposed Reclaimed Water Commodity Rates

	A	B	C	D	E	F	G
Line	Customer Class	Current	Proposed January 2020	Proposed January 2021	Proposed January 2022	Proposed January 2023	Proposed January 2024
1	Reclaimed Water						
2	Tier 1	\$1.51	\$1.65	\$1.79	\$1.94	\$2.03	\$2.14
3	Tier 2	\$2.27	\$2.47	\$2.70	\$2.91	\$3.06	\$3.21
4	Tier 3	\$3.02	\$3.29	\$3.59	\$3.88	\$4.07	\$4.27
5	Tier 4	\$4.53	\$4.94	\$5.38	\$5.81	\$6.10	\$6.41
6	Uniform Rates						
7	Construction	\$2.27	\$2.47	\$2.70	\$2.91	\$3.06	\$3.21

8 Temporary Revenue Stability Charges

This section documents key assumptions involved in the development of the temporary revenue stability charges, an overview of the use reduction, corresponding revenue impacts, TRSC calculations, and a summary of proposed charges at each Stage. The TRSC is a separate charge independent from the commodity rates discussed in the previous section. Therefore, during times of declared shortage the TRSC represents a third charge in addition to the RTS charge and commodity rate.

Drought Impacts and Assumptions

Mandatory conservation and water supply shortages can have significant impacts on an agency's financial stability, staffing, and planning. Depending upon water supply sources, fixed and variable costs, and other revenue sources, water sales reductions can have a major effect on a water service provider.

The City relies on imported water via WMWD for between 40 to 60 percent of its water supply needs. In periods of reduced demand, less imported water is required, and the corresponding purchased water cost is avoided. However, the vast majority of the City's water supply and total O&M costs are fixed and therefore unavoidable. This means that the City is sensitive to reductions in water sales with significant effects on rate revenue.

Raftelis recommends that the City use a TRSC proactively as part of a cohesive and fiscally sound response for drought, water supply interruptions from natural disasters, or other emergencies. Temporary rates are a mechanism to maintain revenue stability and achieve debt coverage requirements in the short term.

Table 8-1 shows the assumed usage reductions for each stage of conservation for customer classes and tiers. Stage reductions were provided by City staff. Class and tier reductions aim to achieve system-wide reductions of greater than 40 percent at Stage 5. Reductions are higher in the upper tiers, which results in a disproportionate effect on water sales revenues.

Table 8-1: Potable Water Demand Reductions in Stages of Conservation

	A	B	C	D	E	F
Line	Customer Class and Tier	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
1	Single Family					
2	Tier 1	0%	2%	5%	10%	12%
3	Tier 2	0%	20%	35%	55%	65%
4	Tier 3	0%	10%	30%	65%	75%
5	Tier 4	0%	10%	40%	70%	80%
6	Tier 5	0%	35%	60%	75%	90%
7	Multi-Family					
8	Tier 1	0%	0%	5%	5%	8%
9	Tier 2	0%	10%	25%	50%	60%
10	Tier 3	0%	10%	25%	60%	70%
11	Tier 4	0%	10%	30%	70%	80%
12	Tier 5	0%	25%	60%	80%	90%
13	Landscape					
14	Tier 1	0%	0%	10%	25%	50%
15	Tier 2	0%	20%	35%	50%	60%
16	Tier 3	0%	20%	40%	60%	70%
17	Tier 4	0%	50%	70%	80%	90%
18	Commercial					
19	Tier 1	0%	0%	5%	10%	15%
20	Tier 2	0%	10%	30%	40%	50%
21	Tier 3	0%	10%	40%	50%	60%
22	Tier 4	0%	20%	70%	80%	90%
23	Industrial					
24	Tier 1	0%	0%	5%	10%	15%
25	Tier 2	0%	10%	30%	40%	50%
26	Tier 3	0%	10%	40%	50%	60%
27	Tier 4	0%	20%	70%	80%	90%
28	Governmental					
29	Tier 1	0%	0%	10%	20%	35%
30	Tier 2	0%	20%	35%	50%	60%
31	Tier 3	0%	25%	45%	60%	70%
32	Tier 4	0%	50%	70%	80%	90%

Temporary Revenue Stability Charge Calculation

Table 8-2 shows the proposed water sales, rate revenues, O&M expenses, and resulting net revenues for all stages of conservation. The rate revenues (Column D) decrease due to reductions in water use and O&M expenses (Column E) decrease to account for less imported water purchases. The net revenue (Column F) is equal to the rate revenue less O&M expenses for each stage.

Table 8-2: Potable Water TRSC Net Revenue Calculation

	A	B	C	D	E	F
Line	Stage	Reduction	Potable Water Sales (ccf)	Rate Revenue	O&M Expenses	Net Revenue
1	Stage 1	0%	12,739,628	\$49,343,829	\$44,039,012	\$5,304,816
2	Stage 2	10% to 15%	11,702,961	\$45,801,332	\$42,205,684	\$3,595,648
3	Stage 3	16% to 20%	10,524,703	\$41,919,228	\$40,121,955	\$1,797,272
4	Stage 4	21% to 40%	9,071,397	\$37,906,017	\$38,621,509	(\$715,492)
5	Stage 5	Over 40%	8,104,089	\$35,215,983	\$38,621,509	(\$3,405,526)

Table 8-3 shows the TRSC calculation for each conservation stage. The change in net revenue (Column C) is based on Stage 2. From Stage 3 and onward, the City will utilize reserves (Column D) to help offset the revenue required from TRSCs. The revenue required is equal to the change in net revenue less funding utilized from existing reserves. The revenue required (Column E) is divided by the potable water sales, equal to those shown in **Table 8-2**, to determine the TRSC for each stage.

Table 8-3: Potable Water TRSC Calculation

	A	B	C	D	E	F	G
Line	Stage	Net Revenue	Change in Net Revenue	Reserve	Revenue Required	Potable Water Sales (ccf)	TRSC (\$/ccf)
1	Stage 1	\$5,304,816	\$0	\$0	\$0	12,739,628	\$0.00
2	Stage 2	\$3,595,648	\$0	\$0	\$0	11,702,961	\$0.00
3	Stage 3	\$1,797,272	\$1,798,375	\$250,000	\$1,548,375	10,524,703	\$0.15
4	Stage 4	(\$715,492)	\$4,311,140	\$250,000	\$4,061,140	9,071,397	\$0.45
5	Stage 5	(\$3,405,526)	\$7,001,174	\$250,000	\$6,751,174	8,104,089	\$0.84

Table 8-4 shows the proposed TRSC charges.

Table 8-4: Proposed Temporary Revenue Stability Charges

	A	B	C
Line	Water Conservation Stage	Reduction Target	Temporary Revenue Stability Charge (\$/ccf)
1	Stage 1	0%	N/A
2	Stage 2	10% to 15%	N/A
3	Stage 3	16% to 20%	\$0.15
4	Stage 4	21% to 40%	\$0.45
5	Stage 5	Over 40%	\$0.84

Appendix A: Reclaimed Wholesale Rate Derivation

The wholesale reclaimed water rate is derived from the cost for two capital improvement projects that will allow for future wholesale reclaimed water to be sold by the Reclaimed Water Utility, as well as associated debt service to construct the projects and reserve funding to help build the reclaimed water utility reserves.

Specifically, two projects that will transfer water from the Western Riverside County Regional Wastewater Authority (WRCRWA) facility to the Reclaimed Water Utility, the WRCRWA Reclaimed Waterline and the WRCRWA Flow Control Improvements (*City of Corona Potable and Reclaimed Water Rate Study dated October 2019, Table 6-8*).

	A	B	C	D	E	F	G
Line	Reclaimed Water Capital Projects	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	WRCRWA Reclaimed Waterline	\$0	\$997,860	\$0	\$0	\$0	\$0
2	WRCRWA Flow Control Improvements	\$30,000	\$210,000	\$0	\$0	\$0	\$0
3	Total	\$30,000	\$1,207,860	\$0	\$0	\$0	\$0

These two projects total \$1,237,860 over the next five years of the rate study. The City proposes to fund the capital improvement projects for the reclaimed utility by incurring new debt. The proposed debt service for all reclaimed capital improvement projects for the study is \$532,729 (*City of Corona Potable and Reclaimed Water Rate Study dated October 2019, Table 6-7*). These two projects represent 47.38 percent of the total capital projects for the reclaimed water utility. The proportional debt service for these two projects totals \$252,407, based upon the total proposed debt service for the five-year study of \$532,729 multiplied by 47.38 percent.

The City is also proposing to build the reserves for the reclaimed water utility for future improvements in the amount of \$425,000 per year from the wholesale water charge, which totals \$2,125,000 over the five-year period of the study. The recommended reserve policy includes 90 days of O&M expenses and one year of annual depreciation.

The capital improvement projects proportionate debt service, and reserve funding attributable to wholesale water totals \$2,377,413. The potable water utility can purchase up to 5,960 acre-feet per year of reclaimed water to recharge its basins, or the amount of surplus reclaimed water, whichever is less; the City anticipates selling a total of 15,067 acre-feet of wholesale reclaimed water to the potable water utility during the next five years (*City of Corona Potable and Reclaimed Water Rate Study dated October 2019, Table 2-17*).

To derive the per AF cost, the total revenue requirement for the next five years is divided by the total projected sales of wholesale reclaimed water to arrive at the per AF cost:

$$\$2,377,407 \text{ total five-year revenue requirement} / 15,067 \text{ AF projected sales} = \$157.79 / \text{AF}$$

The City recommends setting the price at \$160 per AF of recycled water sales. In the future, there will be additional capital improvement projects that will benefit wholesale reclaimed water customers, as well as commodity charges from other WRCWRA member agencies that will need to be factored into the wholesale reclaimed water rate. This includes a proposed new pump station at the WRCWRA facility. These projects, as well as continuing to fund reserves, will be factored into the wholesale reclaimed water rate in the future.