CITY OF NEWPORT BEACH

Water Rate Study

Final Draft Report / September 9, 2019

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September 9, 2019

Mr. Mark Vukojevic
Utilities Director
City of Newport Beach
100 Civic Center Drive
Newport Beach, CA 92660

Subject: Water Rate Study Report

Dear Mr. Vukojevic,

Raftelis is pleased to provide this Water Rate Study Report for the City of Newport Beach to develop water and recycled water rates in compliance with Proposition 218. In particular, this Report contains the following:

- Legal framework surrounding Proposition 218, particularly with respect to water rates.
- Development of a 10-year financial plan for Water Enterprise Fund to ensure financial sufficiency for operating and capital obligations.
- Revision of the current financial policy and recommendations for policy revisions.
- Cost of service analysis and development of water and recycled water rates that meet the Proposition 218 requirements.

The Report summarizes the key findings and results related to the revision of the water rate structure, development of water and recycled water rates, and customer impact analyses for proposed rates.

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

Sincerely,
RAFTELIS FINANCIAL CONSULTANTS, INC.

Sanjay Gaur
Vice President

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Senior Consultant

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Glossary

Terms	Descriptions
AF	Acre foot / Acre feet
AWWA	American Water Works Association
COS	Cost of Service
EFU	Equivalent Fire Unit
EMU	Equivalent Meter Unit
FY	Fiscal Year (Jul 1 – June 30)
GPCD	Gallons per capita per day
GPM	Gallons per minute
HCF	Hundred Cubic Feet = 100 cubic feet = 748 gallons
M1 Manual	"Principles of Water Rates, Fees, and Charges: Manual of Water Supply Practices M1", 6th edition published by AWWA
MD	Max Day Peaking Factor
MFR	Multi-Family Residential
MGD	Million Gallons per Day
MH	Max Hour Peaking Factor
MWD	Metropolitan Water District of Southern California
MWDOC	Municipal Water District of Orange County
OCWD	Orange County Water District
O&M	Operations and Maintenance
Raftelis	Raftelis Financial Consultants, Inc.
RW	Recycled Water
SFR	Single Family Residential

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1. EXECUTIVE SUMMARY

1.1 INTRODUCTION

The City of Newport Beach Utilities Department in (City) currently serves a population of over 86,000 within a service area of approximately fifty square miles. The Water Division is divided into four sections: Water Maintenance and Repair, Water Production, Water Quality, and Water System Services. The Division is responsible for providing a safe and reliable source of water to approximately 26,200 active connections and delivering approximately 13,500 acre feet (AF) of water per year on average.

The current water rates were developed in the "Water Utility Financial Plan" completed in August 2009. The water rates consist of monthly fixed service charges varied by meter size and a uniform commodity rate. The City last adopted a 5-year water rate increase in December of 2009 and the last water rate increase was in January of 2014. Government Code 54999.7(c) requires that water agencies must conduct a cost of service study a minimum of every 10 years. In early 2019, the City engaged Raftelis to conduct a Water Rate Study for its water and recycled water services.

The major objectives of the Study include:

- Development of a 10-year financial plan for Water Enterprise Fund to ensure financial sufficiency for operating and capital obligations.
- Revision of the current financial policy and recommendations for policy revisions.
- Cost of service analysis and development of water and recycled water rates that meet Proposition 218 requirements.
- Development of a 5-year water and recycled water rates schedule
- Sensitivity and impact analysis on the proposed rates
- Development of an administrative record that demonstrates the nexus between the City's water costs and rates to meet the requirements of Proposition 218.

This Water Rate Report (Report) summarizes the key findings and results related to the development of the long-term financial plan for Water Enterprise Fund, development of water and recycled water rates and customer impact analyses for proposed rates.

1.2 RESERVE POLICY

A reserve policy is a written document that establishes reserve goals/targets. It provides 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. Adopting and adhering to a sustainable reserve policy enhances financial management transparency and helps achieve or maintain a certain credit rating for future debt issues. Reserves can mitigate unanticipated reductions in revenues, offset fluctuations in costs of providing services, and fiscal

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emergencies such as revenue shortfalls, asset failure, and natural disaster. Capital reserves set funds aside for replacement of capital assets as they age and for new capital projects.

Working very closely with City Staff, the Finance Committee, and City Council, along with our understanding of the City's financial infrastructure and financial risk portfolio, Raftelis recommends the minimum reserve targets for Water shown in Table 1-1. The shown dollars are for illustrative purpose only and are subject to change with the actual adopted operating budget and estimated 5-year average CIP. For details about each reserve component, please refer to Section 4.3.

Table 1-1: Projected Reserve Minimum Reserve Targets for Water Fund

Target Reserves		FY 2019	FY 2020	FY 2021	FY 2022
Operations & Maintenance	33% of annual operating expenses	$8,326,572	$8,903,507	$9,043,914	$9,427,501
Capital	75% of 5-year average CIP	$5,708,400	$5,400,000	$5,400,000	$5,400,000
Rate Stabilization	$2,700,000	$2,700,000	$2,700,000	$2,786,914	$2,876,809
Total Target Reserve		**$16,734,972**	**$17,003,507**	**$17,230,828**	**$17,704,310**

1.3 WATER FINANCIAL PLAN

One of the Study's major objectives is to develop a long-term financial plan ensuring financial sufficiency for the Water Fund's projected operating and capital obligations. Raftelis developed a 10-year Financial Plan Model incorporating the known and forecasted cost increases for operating and capital expenditures. The results were presented and discussed with the Finance Committee and City Council. Utilizing the recently approved Federal WaterSMART Water and Energy Efficiency Grant in the amount of $1.5 million for Advance Metering Infrastructure (AMI) along with other forecasts, the proposed revenue adjustments for the Water Fund are shown in Table 1-2 below.

Table 1-2: Proposed Water Revenue Adjustments

Water Fund	Revenue Adjustments
FY 2020 – FY 2024	7.4% per year
FY 2025 – FY 2029	2.5% per year

Under the proposed revenue adjustments, the Water Financial Plan is summarized in the figures below. In Figure 1-1, the dashed red line is the projected revenues from current rates without any adjustment, green line represents the projected revenues with the proposed revenue adjustments shown in Table 1-2. The stacked bars represent the expenditures, such as potable water supply (light blue), recycled water (purple), other O&M expenses (green), and PAYGO CIP (teal). The red bars below the axis in FY 2020 to FY 2023 and FY 2028 to FY 2029 signify that the collected revenues are insufficient for operating and capital costs in those years and require drawing on the current Water Fund balances.

The current water revenues (red line) are insufficient to recover operating and capital costs in all years, thus revenue adjustments are warranted. Figure 1-2 shows the forecasted Water Fund ending balances (teal bars) after incorporating the proposed revenue adjustments, current revenues and expenses (shown in Figure 1-1) and the estimated Water Fund beginning balance as of July 1, 2019. The red line is the recommended minimum target balance.

Figure 1-1: Water Financial Plan

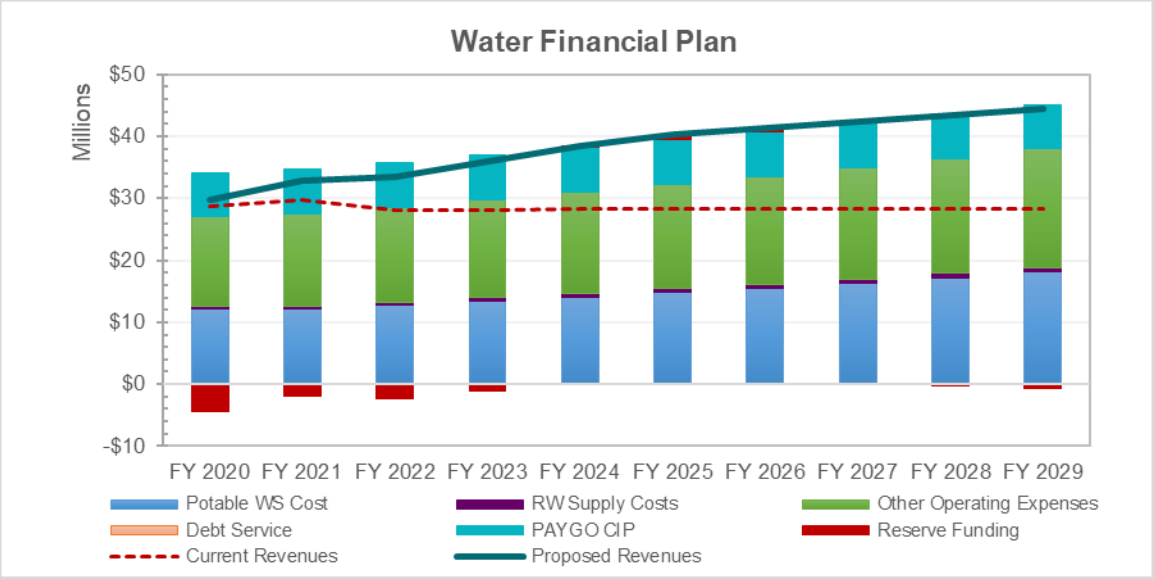
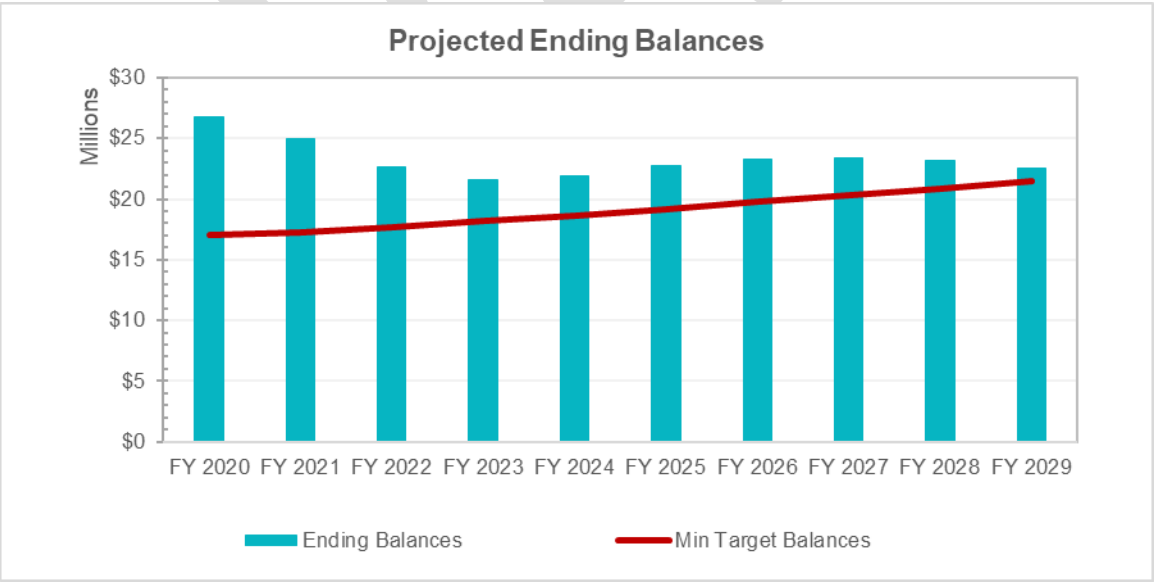


Figure 1-2: Projected Water Fund Ending Balances



1.4 PROPOSED WATER AND RECYCLED WATER RATES

Raftelis performed a cost of service analysis using revenue requirements in FY 2019 in order to calculate fair and equitable rates where users pay proportionally to their cost of providing service. The calculated rates are then increased by the proposed revenue adjustments to determine the proposed

water rates for FY 2020 to FY 2024. A detailed cost of service analysis is included in Sections 6 and 7 of the Report. Table 1-3 and Table 1-4 summarize the proposed Water and RW rates for the next 5 years. Note that the calculated numbers are rounded to the nearest cent.

Table 1-3: Proposed 5-year Water Rates

	FY 2019 Current Rates	FY 2020 Proposed	FY 2021 Proposed	FY 2022 Proposed	FY 2023 Proposed	FY 2024 Proposed
Water Services						
5/8	$17.27	$20.35	$21.86	$23.48	$25.22	$27.09
3/4	$17.27	$20.35	$21.86	$23.48	$25.22	$27.09
1	$28.79	$31.54	$33.88	$36.39	$39.09	$41.99
1 1/2	$57.58	$59.47	$63.88	$68.61	$73.69	$79.15
2	$92.12	$93.00	$99.89	$107.29	$115.23	$123.76
3	$172.73	$246.68	$264.94	$284.55	$305.61	$328.23
4	$287.88	$422.71	$454.00	$487.60	$523.69	$562.45
6	$575.76	$897.73	$964.17	$1,035.52	$1,112.15	$1,194.45
8	$921.22	$1,568.33	$1,684.39	$1,809.04	$1,942.91	$2,086.69
10	$1,655.90	$2,350.70	$2,524.66	$2,711.49	$2,912.15	$3,127.65
12	$2,663.48	$2,965.44	$3,184.89	$3,420.58	$3,673.71	$3,945.57
Per Dwelling Unit Charge						
Residential	$1.00	N/A	N/A	N/A	N/A	N/A
Fire Protection Services						
5/8	$3.13	$10.41	$11.19	$12.02	$12.91	$13.87
1	$5.00	$10.59	$11.38	$12.23	$13.14	$14.12
1 1/2	$7.50	$11.07	$11.89	$12.77	$13.72	$14.74
2	$10.00	$11.87	$12.75	$13.70	$14.72	$15.81
2 1/2	$12.50	$13.09	$14.06	$15.11	$16.23	$17.44
3	$15.00	$14.76	$15.86	$17.04	$18.31	$19.67
4	$20.00	$19.78	$21.25	$22.83	$24.52	$26.34
6	$30.00	$37.72	$40.52	$43.52	$46.75	$50.21
8	$40.00	$68.70	$73.79	$79.26	$85.13	$91.43
10	$50.00	$115.28	$123.82	$132.99	$142.84	$153.42
12	$60.00	$179.85	$193.16	$207.46	$222.82	$239.31
Usage Charges	$3.08	$3.11	$3.35	$3.60	$3.87	$4.16

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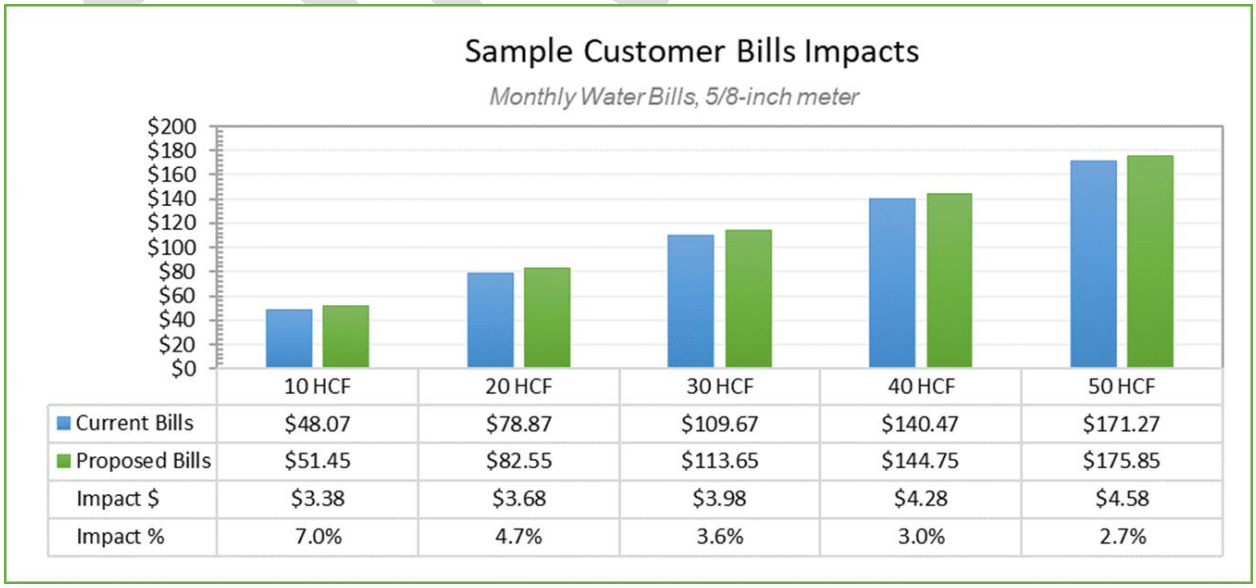
Table 1-4: Proposed 5-year Recycled Water Rates

RW Services	FY 2019 Current Rates	FY 2020 Proposed	FY 2021 Proposed	FY 2022 Proposed	FY 2023 Proposed	FY 2024 Proposed
Meter Size						
5/8	$20.47	$10.34	$11.11	$11.94	$12.83	$13.78
3/4	$20.47	$10.34	$11.11	$11.94	$12.83	$13.78
1	$34.13	$14.85	$15.95	$17.14	$18.41	$19.78
1 1/2	$68.25	$26.10	$28.04	$30.12	$32.35	$34.75
2	$109.19	$39.61	$42.55	$45.70	$49.09	$52.73
3	$204.75	$101.54	$109.06	$117.14	$125.81	$135.12
4	$341.24	$172.47	$185.24	$198.95	$213.68	$229.50
6	$682.48	$363.88	$390.81	$419.73	$450.80	$484.16
8	$1,091.97	$634.09	$681.02	$731.42	$785.55	$843.69
RW Usage Charge	$1.92	$2.05	$2.12	$2.13	$2.21	$2.29
Pump Station Charge	$0.39	$0.53	$0.57	$0.62	$0.67	$0.72

1.5 CUSTOMER IMPACT

Before implementing any rate structure recommendations, it is important to understand how the proposed rate structure will impact the City's customers. Customer impact analysis is a powerful tool which can be used to assist elected officials in making informed decisions. Figure 1-3 shows under the proposed rates, a typical residential customer with 5/8-inch meters will see approximately a $3.38 to $4.58 increase in their monthly water bill with usage ranging from 10 to 50 hundred cubic feet (hcf).

Figure 1-3: Typical Residential Customer Bill Impacts



	10 HCF	20 HCF	30 HCF	40 HCF	50 HCF
Current Bills	$48.07	$78.87	$109.67	$140.47	$171.27
Proposed Bills	$51.45	$82.55	$113.65	$144.75	$175.85
Impact $	$3.38	$3.68	$3.98	$4.28	$4.58
Impact %	7.0%	4.7%	3.6%	3.0%	2.7%

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In summary, the rates calculated in this study for water and recycled water follow industry standard principles of equitable cost-of-service allocations and are thus compliant with Proposition 218. The remainder of this report details the background information utilized by Raftelis in carrying out this study, along with a thorough explanation of the cost-of-service analyses and rate calculations for the City's water and recycled water rates.

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2. INTRODUCTION

2.1 BACKGROUND

The City of Newport Beach Utilities Department (City) currently serves a population of over 86,000 within a service area of approximately fifty square miles. It is located on the Pacific Coast of California, in Orange County, and surrounded by Huntington Beach and Costa Mesa to the north, Laguna Beach to the South, and Irvine to the east. The City currently has over 26,200 active connections and delivers approximately 13,500 acre feet (AF) of water per year on average. The City owns and operates three reservoirs: Big Canyon Reservoir (600 AF), Spyglass Hill Reservoir (4.5 AF), and 16th Street Reservoir (9.2 AF).

The Water Division is divided into four sections: Water Maintenance and Repair, Water Production, Water Quality, and Water System Services. Together, the Division is responsible for providing safe and reliable water.

- **Water Maintenance & Repair** is responsible for the maintenance and operation of the City's water mains and valves that are located underground.
- **Water Production** operates, maintains, and disinfects the City of Newport Beach's water supply.
- **Water Quality** manages the water quality testing and state reporting
- **Water System Services** assists City of Newport Beach customers with any questions regarding water quality, water pressure, consumption usage, any concern with water meters, leak detection, utilities inspections and underground utility locating.

Approximately 75 percent of the City's potable water demand is supplied by Orange County Water District (OCWD) and 25 percent from Municipal Water District of Orange County (MWDOC). The City provides non-potable (recycled) water to seven customers for the purposes of irrigating parks, schools, center medians and golf courses. Recycled water is purchased from OCWD through the Green Acres Project. The current charge for recycled water includes fixed fees and a commodity rate.

The current water rates were developed in the "Water Utility Financial Plan" completed in August 2009. The water rates consist of monthly fixed service charges varied by meter size and a uniform commodity. The City last adopted a 5-year water rate increase in December of 2009 and the last water rate increase was in January of 2014. Government Code 54999.7(c) requires that water agencies must conduct a cost of service study a minimum of every 10 years. In early 2019, the City engaged Raftelis to conduct a Water Rate Study for its water and recycled water services.

The major objectives of the Study include:

- Development of a 10-year financial plan for Water Enterprise Fund to ensure financial sufficiency for operating and capital obligations.
- Revision of the current financial policy and recommendations for policy revisions.
- Cost of service analysis and development of water and recycled water rates that meet Proposition 218 requirements.

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- Development of a 5-year water and recycled water rates schedule
- Sensitivity and impact analysis on the proposed rates
- Development of an administrative record that demonstrates the nexus between the City's water costs and rates to meet the requirements of Proposition 218.

This Water Rate Report (Report) summarizes the key findings and results related to the development of the long-term financial plan for the Water Enterprise Fund, development of water and recycled water rates and customer impact analyses for proposed rates.

2.2 KEY INFORMATION USED IN THE STUDY

The Study utilized the following, but not limited to, key information provided by the City:

1. FY 2018 consumption data (July 1, 2017 to June 2018) for all water and recycled water accounts served within the City service area provided on April 25, 2019.
2. FY 2019 and FY 2020 operating budgets for the Water Fund provided on May 14, 2019
3. Estimated average CIP needs for the next 10 years provided in May 2019
4. Updated water asset list provided on August 8, 2019
5. 2019 Water Master Plan retrieved from the City website
6. Current reserve policy provided on March 11, 2019
7. Beginning Water Fund Balances as of July 1, 2018 (FY 2019) and July 1, 2019 (FY 2020) provided on May 20, 2019

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3. LEGAL FRAMEWORK AND RATE SETTING METHODOLOGY

3.1 CALIFORNIA CONSTITUTION - ARTICLE XIII D, SECTION 6 (PROPOSITION 218)

Proposition 218, reflected in the California Constitution as Article XIII D, was enacted in 1996 to ensure that rates and fees are reasonable and proportional to the cost of providing service. The principal requirements for fairness of the fees, as they relate to public water service, are as follows:

1. A property-related charge (such as water and recycled water rates) imposed by a public agency on a parcel shall not exceed the costs required to provide the property related service.
2. Revenues derived by the charge shall not be used for any purpose other than that for which the charge was imposed.
3. The amount of the charge imposed upon any parcel shall not exceed the proportional cost of service attributable to the parcel.
4. No charge may be imposed for a service unless that service is actually used or immediately available to the owner of property.
5. No fee or charge may be imposed for general governmental services including, but not limited to, police, fire, ambulance or library services, where the service is available to the public at large in substantially the same manner as it is to property owners.
6. A written notice of the proposed charge shall be mailed to the record owner of each parcel at least 45 days prior to the public hearing, when the agency considers all written protests against the charge.

As stated in AWWA's *Principles of Water Rates, Fees, and Charges: Manual of Water Supply Practices M1*, 6th edition *(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 be sound and that there must be a nexus between the costs and the rates charged. This study follows industry standard rate setting methodologies set forth by the *M1 Manual*, adhering to Proposition 218 requirements by developing rates that do not exceed the proportionate cost of providing water services.

3.2 COST-BASED RATE-SETTING METHODOLOGY

As stated in the M1 Manual, "the costs of water rates and charges should be recovered from classes of customers in proportion to the cost of serving those customers." To develop utility rates that comply with Proposition 218 and industry standards while meeting other goals and objectives of the utility, Raftelis carries out a detailed analysis in four major steps, as discussed below.

Calculate Revenue Requirement

The rate-making process starts by determining the test year (rate setting year) revenue requirement, which for this study is FY 2019. The revenue requirement should sufficiently fund the utility's O&M, debt service, capital expenses, and target reserve balances based on a long-term financial plan.

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Cost of Service Analysis (COS)

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

1. Functionalize costs. Examples of functions are supply, treatment, transmission, distribution, storage, meter servicing, and customer billing and collection.
2. Allocate functionalized costs to cost causation components. Cost causation components include base, maximum day, maximum hour[1], conservation, public fire protection, meter service, and customer servicing and billing costs.
3. Distribute cost causation components, using unit costs, to rate components and customers in proportion to their demands on the water system capacity. This is described in the M1 Manual published by AWWA.

A COS analysis considers both the average quantity of water consumed (base costs) and the peak rate at which it is consumed (peaking or capacity costs as identified by maximum day and maximum hour demands).[2] Peaking costs are costs that are incurred during peak times of consumption. There are additional costs associated with designing, constructing, operating and maintaining facilities to meet peak demands. These peak demand costs need to be allocated to those imposing such costs on the utility. In other words, not all customer classes share the same responsibility for peaking related costs.

Rate Design and Calculations

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

Rate Adoption

Rate adoption is the last step of the rate-making process to comply with Proposition 218. Raftelis documents the rate study results in this report to serve as the utility's administrative record and a public education tool about the proposed changes, the rationale and justifications behind the changes, and their anticipated financial impacts.

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[1] Maximum day and maximum hour costs are collectively referred to as peaking costs or capacity costs.

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

4. RESERVE POLICY

4.1 RESERVE POLICY OVERVIEW

A reserve policy is a written document that establishes reserve goals/targets. It provides 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. Adopting and adhering to a sustainable reserve policy enhances financial management transparency and helps achieve or maintain a certain credit rating for future debt issues. Reserves can offset unanticipated reductions in revenues, offset fluctuations in costs of providing services, and fiscal emergencies such as revenue shortfalls, asset failure, and natural disaster. Capital reserves set funds aside for replacement of capital assets as they age and for new capital projects.

The appropriate amount of reserves and reserve types are determined by a variety of factors, such as the size of the operating budget, the amount of debt, the type of rate structure, frequency of customer billing, and risk of natural disaster. However, reserves tend to fall into the following categories: operations & maintenance (O&M), rate stabilization (for revenue loss), and capital replacement funding.

4.2 CURRENT RESERVE POLICY

The City's current reserve policy (City Council Policy F-2) was last revised and approved on September 25, 2018. The Water Enterprise Fund requires a Stabilization and Contingency Reserve equal to 50 percent of the annual operating budget. This Reserve supports seasonal variations in cash flows and, in more extreme conditions, to maintain operations for a reasonable period of time so the City may reorganize in an orderly manner or effectuate a rate increase to offset sustained cost increases. The intent of the Reserve is to provide funds to offset cost increases that are projected to be short-lived, thereby partially eliminating the volatility in annual rate adjustments. It is not intended to offset ongoing, long-term pricing structure changes. City Council must approve the use of these funds, based on City Manager recommendation. Funds collected in excess of the Stabilization Reserve target would be available to offset future rate adjustments, while extended reserve shortfalls would be recovered from future rate increases. Should catastrophic losses to the infrastructure system occur, the Stabilization and Contingency Reserve may be called upon to avoid disruption to water distribution.

The Infrastructure Replacement Funding Policy is intended to be a temporary repository for cash flows associated with the funding of infrastructure replacement projects provided by the Water Master Plan. The contribution rate is intended to level-amortize the cost of infrastructure replacement projects over a long period. The annual funding rate of the Water Master Plan is targeted at an amount that, when combined with prior or future year contributions, is sufficient to provide for the eventual replacement of assets as scheduled in the plan. This contribution policy is based on the funding requirements of the most current Water Master Plan. There are no minimum or maximum balances contemplated by this funding policy. However, the contributions level should be reviewed periodically or as major updates to the Water Master Plan occur. Annual funding is contingent on many factors and may ultimately involve a combined strategy of cash funding and debt issuance with the intent to normalize the burden on Water customer rates.

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4.3 RECOMMENDED REVISION FOR WATER RESERVE POLICY

To enhance financial management transparency and financial risk management, Raftelis recommends the Water Fund to maintain the following reserves:

1. Operating & Maintenance (O&M) Reserve
2. Rate Stabilization Reserve
3. Capital Reserve

4.3.1 O&M Reserve

The purpose of an O&M reserve is to provide working capital to support the operation, maintenance, and administration of the utility. From a risk management perspective, the O&M reserve supports the City's cash flow needs during normal operations and ensures that operations can continue should there be significant events that impact cash flows. As it is unlikely for a utility to perfectly predict the revenues and revenue requirements for each billing period, a reserve set aside to hedge the risk of monthly negative cash positions is prudent in financial planning. Another factor to consider when creating a cash flow reserve is the frequency of billing. A utility that bills once a month would require lower minimum reserves than a utility that bills twice a year.

Raftelis recommends that the City maintain at a minimum 120 days cash on hand (33 percent of annual operating budget) to ensure adequate working capital for operating expenses. The City bills bi-monthly, thus 120 days are the minimum to provide sufficient working capital to account for when expenses occur and revenues are collected. Additionally, this accounts for revenues varying seasonally while expenses remain relatively static.

4.3.2 Rate Stabilization Reserve

While it is not typical for utilities to have substantial rate increases in a short period of time, factors such as declining water sales and an unexpected increase in short-term O&M expenses may result in large rate increases. The intent of the reserve is to provide funds to offset a net loss in revenues that is projected to be short-lived, thereby partially eliminating the volatility in annual rate adjustments. It is not intended to offset ongoing, long-term pricing structure changes.

Table 4-1 summarizes the calculation to estimate the minimum Rate Stabilization reserve target. In the most recent drought in 2016, the City was mandated to reduce annual water usage by 30 percent. The Rate Stabilization reserve is intended to mitigate the impact of a similar event. Using the current FY 2019 values, the cost of a 30% reduction is $2.7M. Raftelis recommends increasing this reserve target by the projected non-water supply cost increase of approximately 3.2% per year.

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Table 4-1: Rate Stabilization Reserve Target Estimate

		FY 2019	Notes
1	Current Water Rates	$3.08 per HCF	
2	Current purchased water unit cost	$1.54 per HCF	
3	Net revenue loss	$1.54 per HCF	[1] – [2]
4	Current water sales	5,905,925 HCF	
5	% Usage Reduction to Mitigate	30%	
6	**Rate Stabilization Reserve Minimum Target**	**$2.7M**	**[3] x [4] x [5]**

4.3.3 Capital Reserve

Adequate and timely capital replacement planning is a critical task to ensure reliability and sustainability of the water system. Capital reserves are used to provide funding for capital expenditures due to the capital-intensive nature of the water system. The estimated 5-year average CIP based on the 2019 Master Plan is $7.2M. Working closely with City Staff and City Council, Raftelis recommends the Capital Reserve to be at least maintained at 75 percent of the 5-year average CIP.

4.3.4 Recommended Total Reserve Targets

Combining the three reserve components for the Water Fund described in Sections 4.3.1, 4.3.2 and 4.3.3 above and the projected O&M expenses (see Section 5.4), Table 4-2 summarizes the Water Fund minimum reserve target by the component for FY 2019 to FY 2022

Table 4-2: Water Fund Projected Minimum Reserve Targets

Target Reserves		FY 2019	FY 2020	FY 2021	FY 2022
Operations & Maintenance	33% of annual operating expenses	$8,326,572	$8,903,507	$9,043,914	$9,427,501
Capital	75% of 5-year average CIP	$5,708,400	$5,400,000	$5,400,000	$5,400,000
Rate Stabilization	$2,700,000	$2,700,000	$2,700,000	$2,786,914	$2,876,809
Total Target Reserve		**$16,734,972**	**$17,003,507**	**$17,230,828**	**$17,704,310**

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5. FINANCIAL PLAN

The Financial Plan provides ten-year financial projections for the Water Enterprise Fund based on projected revenues, operations & maintenance (O&M) expenses, capital improvement plan (CIP) funding, and debt service payments. The primary results of the Financial Plan include a cashflow summary and the rate revenue requirement, the latter being the key factor driving rate development. The following subsections describe the functionality of various Financial Plan components. The ten-year Financial Plan timeframe spans from fiscal year (FY) 2020 through FY 2029.

5.1 FINANCIAL PLAN ASSUMPTIONS

Raftelis worked closely with City Staff to define the assumptions used to forecast revenues and expenses in the financial plan using combination of historical actuals, projections, and other historical cost inflation indices, such as the Consumer Price Index (CPI). Table 5-1 lists the annual inflation factors for each of the City's cost categories, including O&M, capital, and water supply costs. City Staff estimated the fixed water supply cost escalation factors for Orange County Water District (OCWD) and Municipal Water District of Orange County (MWDOC). They additionally provided unit water supply costs from OCWD and MWDOC. Note that the City does not have any outstanding bonds and does not plan to issue any new debt during the study period.

Table 5-1: Inflationary Assumptions

Escalation Factors	Annual FY 2021 – FY 2029
General	3.0%
Salary	3.0%
Benefits	5.0%
Chemicals	2.0%
Utilities	5.0%
Water Supply Fixed Cost (OCWD)	7.0%
Water Supply Fixed Cost (MWDOC)	2.5%
RW Cost	5.0%
Non-Rate Revenues	2.0%
Reserve Interest Rate	1.0%
Capital	0.0%

The City's water system is currently built out, so we do not assume any change in number of accounts over the study period. With input from City Staff, Raftelis assumed water sales would remain 13,558 AF for the entire Study period.

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5.2 REVENUES UNDER CURRENT RATES

The current water rates consist of monthly fixed service charges by meter size and a uniform commodity rate. Table 5-2 shows the current water monthly fixed charges and number of water meters. The City also currently charges multi-family residential customers $1.00 per dwelling unit each month. The total meters of each meter size are multiplied by the current rate for that meter. Likewise, the dwelling unit charges are multiplied by the total dwelling units.

Table 5-3 calculates the total water usage revenue. As mentioned above, this usage will remain the same for the entire study period as the service area is built out and the City does not expect customer usage patterns to change significantly. This usage is multiplied by the water usage rate to arrive at total sales revenue.

Table 5-4 summarizes the current fixed charges for fire protection meters and projected fire protection revenues.

Recycled Water (RW) is currently assessed its own monthly fixed meter charge and uniform usage rate as shown in Table 5-5. Total revenues from current RW rates are also calculated using the number of RW meters, current fixed charges, the RW usage charge, RW pump station charges and projected corresponding RW Sales. RW usage rates will be 100 percent pass-through from OCWD.

Table 5-2: Current Water Monthly Fixed Charges and Number of Water Meters

Meter Size	Current Rates	Current Total Water Meters[3]
5/8	$17.27	16,545
3/4	$17.27	4
1	$28.79	7,585
1 1/2	$57.58	551
2	$92.12	1,430
3	$172.73	32
4	$287.88	51
6	$575.76	15
8	$921.22	8
10	$1,655.90	0
12	$2,663.48	1
Total Water Meters		**26,222**
Per Dwelling Unit Charge[4]		
Residential	$1.00	11,861
Projected Revenues		**$8,620,463**

[3] Including City meters, City Sprinkler, Commercial, SFR, MFR, Sprinklers, Boat docks and Pools meters
[4] The per dwelling unit charge applied to account with more than 1 dwelling unit served by the meter.

Table 5-3: Current Water Usage and Projected Water Sales

Line No.		
1	Current Potable Water Rate	$3.08 per HCF
2	Projected Water Sales	5,905,925 HCF (13,558 AF)
3 = 1 * 2	**Total Water Rate Revenues**	**$18,065,274**

Table 5-4: Current Fire Protection Monthly Fixed Charges and Number of Meters

Meter Size	Current Total Fire Protection Meters	Current Fire Protection Charges
5/8	6	$3.13
1	10	$5.00
1 1/2	0	$7.50
2	20	$10.00
2 1/2	2	$12.50
3	1	$15.00
4	181	$20.00
6	157	$30.00
8	83	$40.00
10	2	$50.00
12	0	$60.00
Total Fire Protection Meters	**462**	**$144,705**

Table 5-5: Current RW Rates Revenues

Meter Size	Current RW Meters / Usage	Current RW Rates[5]
5/8	0	$20.47
3/4	0	$20.47
1	0	$34.13
1 1/2	0	$68.25
2	10	$109.19
3	3	$204.75
4	2	$341.24
6	1	$682.48
8	2	$1,091.97
Total RW Meters	**18**	**$63,061**
RW Usage	247,804 HCF	$1.92 per HCF
RW Usage Revenues		**$475,784**
RW Pump Station Charge	208,262 HCF	$0.39 per HCF
RW Pump Station Rev		**$81,222**
Total RW Revenues		**$620,066**

[5] The revenues calculated took into account the prorates of the prior and the new rates were effective on February 2019

Table 5-6 summarizes the revenues from current rates calculated in Table 5-2, Table 5-3, Table 5-4, and Table 5-5. It also compares the calculated revenues with budgeted revenues for FY 2019 and FY 2020. To match with official documents, the financial plan will use the revenues reported in the budget document for FY 2019 and FY 2020. Starting FY 2021 to FY 2029, the financial plan will use the calculated values. Starting FY 2021, RW usage revenues will match RW pass-through supply costs.

Table 5-6: Revenues from Current Rates Summary

Revenue from Current Rates	Calculated Revenues FY 2020 – FY 2029	FY 2019 Budget	FY 2020 Budget
Water Revenues			
Water Services	$8,620,463	$8,120,000	$8,240,000
Water Usage	$18,065,274	$18,020,000	$19,157,197
Fire Protection	$144,705	$90,000	$125,000
Sale of RW			
RW Services	$63,061		
RW Pump Station Charges	$81,222	$142,623	$144,283
RW Pass-through Usage	$475,784	$375,000	$425,000
Total Revenues, excl. RW Pass-through Usage	**$26,974,725**	**$26,372,623**	**$27,666,480**

5.3 OTHER REVENUES

Table 5-7 summarizes the revenues from current rates, RW pass-through revenues, and other revenues. The recently approved Federal WaterSMART Water and Energy Efficiency Grant of $1.5 million for Advance Metering Infrastructure (AMI) is included in the other operating revenues, assumed to be received in FY 2021 as a one-time grant. The other operating revenues includes Laguna Beach County Water District reimbursement, meter turn on charges, connection charges, water use construction, and delinquency penalty along with other miscellaneous revenues. The non-operating revenues include investment income (i.e. interest incomes) and other miscellaneous non-operating revenues such as sale of scrap materials.

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Table 5-7: Projected Revenues for Water Fund (no Revenue Adjustments)

Water Fund Proforma	FY 2019 Est. Actual	FY 2020 Budget	FY 2021 Projected	FY 2022 Projected	FY 2023 Projected	FY 2024 Projected	FY 2025 Projected	FY 2026 Projected	FY 2027 Projected	FY 2028 Projected	FY 2029 Projected
REVENUES											
Revenues from Current Rates	$26,372,623	$27,666,480	$26,974,725	$26,974,725	$26,974,725	$26,974,725	$26,974,725	$26,974,725	$26,974,725	$26,974,725	$26,974,725
Sale of Water Reclaimed	$375,000	$425,000	$524,399	$526,740	$546,640	$567,709	$589,949	$619,447	$650,419	$682,940	$717,087
Other Operating Revenues	$402,653	$427,653	$1,927,653	$427,653	$427,653	$427,653	$427,653	$427,653	$427,653	$427,653	$427,653
Non-Operating Revenues											
Investment Income	$253,369	$284,380	$232,865	$169,889	$87,164	$0	$0	$0	$0	$0	$0
Other Non-Operating Revenues	$22,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000
TOTAL REVENUES	**$27,425,645**	**$28,813,513**	**$29,669,642**	**$28,109,007**	**$28,046,181**	**$27,980,087**	**$28,002,327**	**$28,031,824**	**$28,062,797**	**$28,095,318**	**$28,129,465**

5.4 OPERATIONS AND MAINTENANCE (O&M) EXPENSES

5.4.1 Purchased Water Supply Costs

Approximately 75 percent of the City's potable water demand is supplied by OCWD and 25 percent from MWDOC. Based on 2018 water consumption, 54.6 percent of water is consumed between July to December and 45.4 percent between January to June. Table 5-8 shows the water supply sources used to meet the projected water sales and assumed 8.75% water loss (estimated by City Staff). Table 5-9 details the projected fixed water supply costs and unit water supply costs from OCWD and MWDOC, as estimated and provided by City Staff. For the purpose of the financial plan, the water supply costs for FY 2019 and FY 2020 are using the budgeted values. The financial plan will use the calculated water supply costs starting FY 2021.

Table 5-8: Projected Water Sales and Water Purchases by Water Supply Sources

	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
Water Sales	13,558 AF	13,558 AF	13,558 AF	13,558 AF	13,558 AF	13,558 AF	13,558 AF	13,558 AF	13,558 AF	13,558 AF	13,558 AF
Water Loss	8.75%	8.75%	8.75%	8.75%	8.75%	8.75%	8.75%	8.75%	8.75%	8.75%	8.75%
Water Demand	**14,858 AF**	**14,858 AF**	**14,858 AF**	**14,858 AF**	**14,858 AF**	**14,858 AF**	**14,858 AF**	**14,858 AF**	**14,858 AF**	**14,858 AF**	**14,858 AF**
Basin Pumping %	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
OCWD	11,144 AF	11,144 AF	11,144 AF	11,144 AF	11,144 AF	11,144 AF	11,144 AF	11,144 AF	11,144 AF	11,144 AF	11,144 AF
MWDOC	3,715 AF	3,715 AF	3,715 AF	3,715 AF	3,715 AF	3,715 AF	3,715 AF	3,715 AF	3,715 AF	3,715 AF	3,715 AF
Jul-Dec	*2,028 AF*	*2,028 AF*	*2,028 AF*	*2,028 AF*	*2,028 AF*	*2,028 AF*	*2,028 AF*	*2,028 AF*	*2,028 AF*	*2,028 AF*	*2,028 AF*
Jan-Jun	*1,687 AF*	*1,687 AF*	*1,687 AF*	*1,687 AF*	*1,687 AF*	*1,687 AF*	*1,687 AF*	*1,687 AF*	*1,687 AF*	*1,687 AF*	*1,687 AF*

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Table 5-9: Projected Water Supply (WS) Costs

	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
OCWD Fixed Cost	$1,190,004	$1,273,304	$1,362,436	$1,457,806	$1,559,852	$1,669,042	$1,785,875	$1,910,886	$2,044,648	$2,187,774	$2,340,918
OCWD Unit Rate ($/AF)	$462	$487	$525	$551	$579	$608	$638	$670	$704	$739	$776
OCWD Purchase (AF)	11,144 AF	11,144 AF	11,144 AF	11,144 AF	11,144 AF	11,144 AF	11,144 AF	11,144 AF	11,144 AF	11,144 AF	11,144 AF
OCWD Variable Cost	$5,148,378	$5,426,970	$5,850,429	$6,142,951	$6,450,098	$6,772,603	$7,111,233	$7,466,795	$7,840,135	$8,232,142	$8,643,749
OCWD Water Cost	**$6,338,382**	**$6,700,274**	**$7,212,865**	**$7,600,757**	**$8,009,951**	**$8,441,645**	**$8,897,109**	**$9,377,681**	**$9,884,783**	**$10,419,915**	**$10,984,667**
Budgeted OCWD Cost	**$6,400,000**	**$7,100,000**									
MWDOC Fixed Cost	$615,730	$631,123	$646,901	$663,074	$679,651	$696,642	$714,058	$731,909	$750,207	$768,962	$788,186
MWDOC Unit Rate											
Jul-Dec	*$1,015*	*$1,051*	*$1,087*	*$1,175*	*$1,234*	*$1,295*	*$1,360*	*$1,428*	*$1,500*	*$1,575*	*$1,653*
Jan-Jun	*$1,051*	*$1,087*	*$1,175*	*$1,234*	*$1,295*	*$1,360*	*$1,428*	*$1,500*	*$1,575*	*$1,653*	*$1,736*
MWDOC Purchase (AF)											
Jul-Dec	*2,028 AF*	*2,028 AF*	*2,028 AF*	*2,028 AF*	*2,028 AF*	*2,028 AF*	*2,028 AF*	*2,028 AF*	*2,028 AF*	*2,028 AF*	*2,028 AF*
Jan-Jun	*1,687 AF*	*1,687 AF*	*1,687 AF*	*1,687 AF*	*1,687 AF*	*1,687 AF*	*1,687 AF*	*1,687 AF*	*1,687 AF*	*1,687 AF*	*1,687 AF*
MWDOC Variable Cost	$3,830,997	$3,964,721	$4,186,068	$4,463,508	$4,686,683	$4,921,018	$5,167,068	$5,425,422	$5,696,693	$5,981,528	$6,280,604
MWDOC Water Cost	**$4,446,727**	**$4,595,844**	**$4,832,969**	**$5,126,582**	**$5,366,334**	**$5,617,660**	**$5,881,126**	**$6,157,331**	**$6,446,900**	**$6,750,490**	**$7,068,790**
Budgeted MWDOC Cost	**$4,900,000**	**$5,000,000**									
Fixed WS Cost	**$1,805,734**	**$1,904,427**	**$2,009,337**	**$2,120,880**	**$2,239,503**	**$2,365,684**	**$2,499,933**	**$2,642,796**	**$2,794,856**	**$2,956,736**	**$3,129,104**
Variable WS Cost	**$8,979,375**	**$9,391,691**	**$10,036,497**	**$10,606,459**	**$11,136,782**	**$11,693,621**	**$12,278,302**	**$12,892,217**	**$13,536,828**	**$14,213,669**	**$14,924,353**
Potable Water Supply	**$10,785,109**	**$11,296,118**	**$12,045,834**	**$12,727,339**	**$13,376,285**	**$14,059,305**	**$14,778,235**	**$15,535,013**	**$16,331,683**	**$17,170,405**	**$18,053,457**

The City provides recycled water to seven customers for the purposes of irrigating parks, schools, center medians and golf courses. Recycled water is purchased from OCWD through the Green Acres Project. The RW supply costs, as projected by City Staff and shown in Table 5-10, are 100% pass-through from OCWD (provided by OCWD on April 16, 2019 up to FY 2025, and forecast by 5% inflationary factors) and collected via the RW water supply usage charges.

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Table 5-10: Projected RW Supply Costs, pass-through from OCWD

	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
RW Sales	569 AF	569 AF	569 AF	569 AF	569 AF	569 AF	569 AF	569 AF	569 AF	569 AF	569 AF
RW Loss	2.80%	2.80%	2.80%	2.80%	2.80%	2.80%	2.80%	2.80%	2.80%	2.80%	2.80%
RW Purchase	**585 AF**	**585 AF**	**585 AF**	**585 AF**	**585 AF**	**585 AF**	**585 AF**	**585 AF**	**585 AF**	**585 AF**	**585 AF**
RW Supply Unit Costs	$838/AF	$867/AF	$896/AF	$900/AF	$934/AF	$970/AF	$1,008/AF	$1,058/AF	$1,111/AF	$1,167/AF	$1,225/AF
RW Supply Costs	**$490,454**	**$507,427**	**$524,399**	**$526,740**	**$546,640**	**$567,709**	**$589,949**	**$619,447**	**$650,419**	**$682,940**	**$717,087**
RW Unit Rate ($/HCF)	**$1.98**	**$2.05**	**$2.12**	**$2.13**	**$2.21**	**$2.29**	**$2.38**	**$2.50**	**$2.62**	**$2.76**	**$2.89**

5.4.2 Projected O&M Expenses

Table 5-11 restates the potable water supply costs (from Table 5-9, except water supply costs for FY 2019 and FY 2020 are based on approved budget) and RW supply costs (Table 5-10) and the budgeted and projected O&M expenses using the inflation factors assumed in Table 5-1. In Table 5-9, FY 2019 and FY 2020 columns represent staff's cost estimate calculations for projected water supply costs, comparing groundwater vs. imported water costs. This differs from the FY 2019 and FY 2020 columns on Table 5-11 as they represent the final approved budget which includes additional budget capacity for additional water consumption. Please refer to Appendix 1 for details on O&M expenses and escalation factors used for each line item.

Table 5-11: Projected Water O&M Expenses

Expenses Used For Cash Flows	FY 2019 *Est. Actual*	FY 2020 *Budget*	FY 2021 *Projected*	FY 2022 *Projected*	FY 2023 *Projected*	FY 2024 *Projected*	FY 2025 *Projected*	FY 2026 *Projected*	FY 2027 *Projected*	FY 2028 *Projected*	FY 2029 *Projected*
Potable WS Costs	$11,300,000	$12,100,000	$12,045,834	$12,727,339	$13,376,285	$14,059,305	$14,778,235	$15,535,013	$16,331,683	$17,170,405	$18,053,457
Fixed Potable WS Costs	$1,805,734	$1,904,427	$2,009,337	$2,120,880	$2,239,503	$2,365,684	$2,499,933	$2,642,796	$2,794,856	$2,956,736	$3,129,104
Variable Potable WS Costs	$9,494,266	$10,195,573	$10,036,497	$10,606,459	$11,136,782	$11,693,621	$12,278,302	$12,892,217	$13,536,828	$14,213,669	$14,924,353
RW Supply Costs	$490,454	$507,427	$524,399	$526,740	$546,640	$567,709	$589,949	$619,447	$650,419	$682,940	$717,087
Salaries & Benefits	$5,443,440	$5,596,886	$5,771,169	$5,951,182	$6,137,126	$6,329,204	$6,527,631	$6,732,626	$6,944,418	$7,163,244	$7,389,349
Other Operating Expenses	$3,313,775	$3,475,373	$3,608,578	$3,747,267	$3,891,683	$4,042,074	$4,198,703	$4,361,845	$4,531,787	$4,708,829	$4,893,284
Conservation Program	$422,422	$420,618	$433,237	$446,234	$459,621	$473,409	$487,612	$502,240	$517,307	$532,826	$548,811
Meter Related	$1,009,927	$705,887	$727,064	$748,876	$771,342	$794,482	$818,316	$842,866	$868,152	$894,197	$921,022
Gen & Admin	$2,888,304	$3,669,933	$3,776,193	$3,885,641	$3,998,372	$4,114,486	$4,234,082	$4,357,267	$4,484,147	$4,614,834	$4,749,441
Capital / Equip Expenses	$14,154	$144,154	$148,479	$152,933	$157,521	$162,247	$167,114	$172,127	$177,291	$182,610	$188,088
AP & CC Adjustments in Sales of Potable Water Rev	$349,560	$360,047	$370,848	$381,974	$393,433	$405,236	$417,393	$429,915	$442,812	$456,097	$469,779
TOTAL OPERATING EXPENSES	**$25,232,035**	**$26,980,324**	**$27,405,799**	**$28,568,185**	**$29,732,021**	**$30,948,151**	**$32,219,036**	**$33,553,346**	**$34,948,017**	**$36,405,982**	**$37,930,320**

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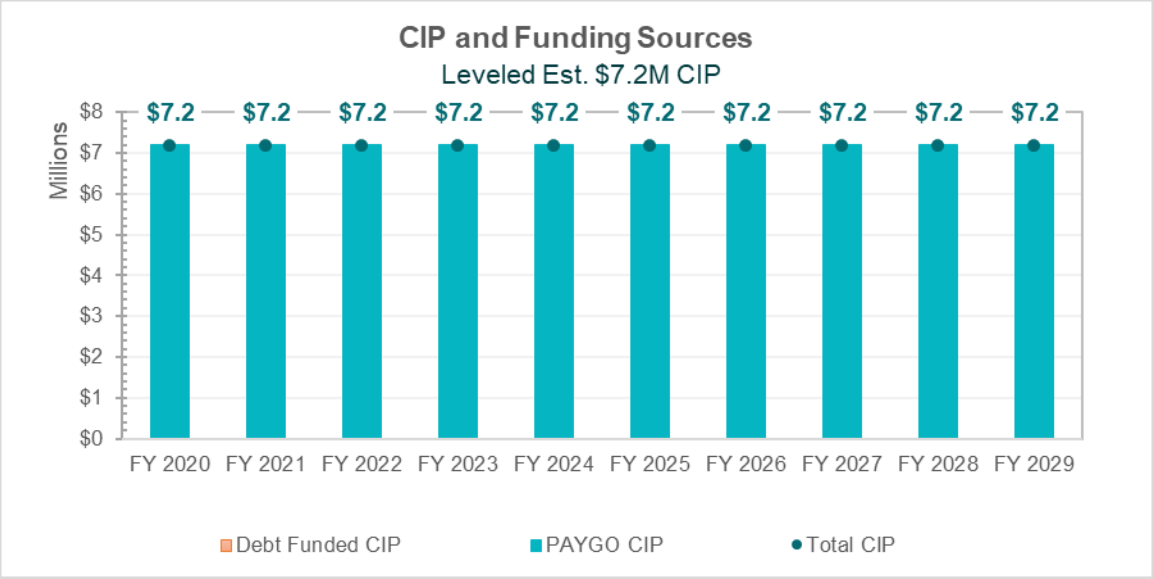
5.5 CAPITAL IMPROVEMENT PLAN (CIP) FUNDING

Provided by the City Staff, the average annual Master Plan CIP of $7.2M was utilized for the Financial Plan (Figure 5-1). No escalation factor was used for the projected annual CIP funding.

Figure 5-1: Estimated Annual CIP Funding



5.6 STATUS QUO FINANCIAL PLAN

Under the status-quo scenario, which does not include revenue adjustments, revenues generated from rates and other miscellaneous revenues (Table 5-7) are inadequate to sufficiently recover the expenses of the Water Fund (Table 5-11) and capital funding (Figure 5-1).

In Figure 5-2, the line represents the projected revenues from current rates without any adjustment. The stacked bars represent the expenditures, such as potable water supply (light blue), recycled water (purple), other O&M expenses (green), and PAYGO CIP (teal). The red bars below the axis signify that the collected revenues are insufficient for operating and capital costs in those years and require drawing on the current Water Fund balances. The current water revenues are insufficient to recover operating and capital costs in all years; thus certain revenue adjustments are warranted. Figure 5-3 shows the forecasted Water Fund ending balances (teal bars) after incorporating the current revenues and expenses (shown in Figure 5-2) and the estimated Water Fund beginning balance as of July 1, 2019. The red line in Figure 5-3 is the recommended minimum target balance. In addition, Water Fund is unable to meet its target balances starting FY 2022. Table 5-12 summarizes numerically the Water Financial Plan under Status Quo scenario.

Figure 5-2: Status Quo Water Financial Plan

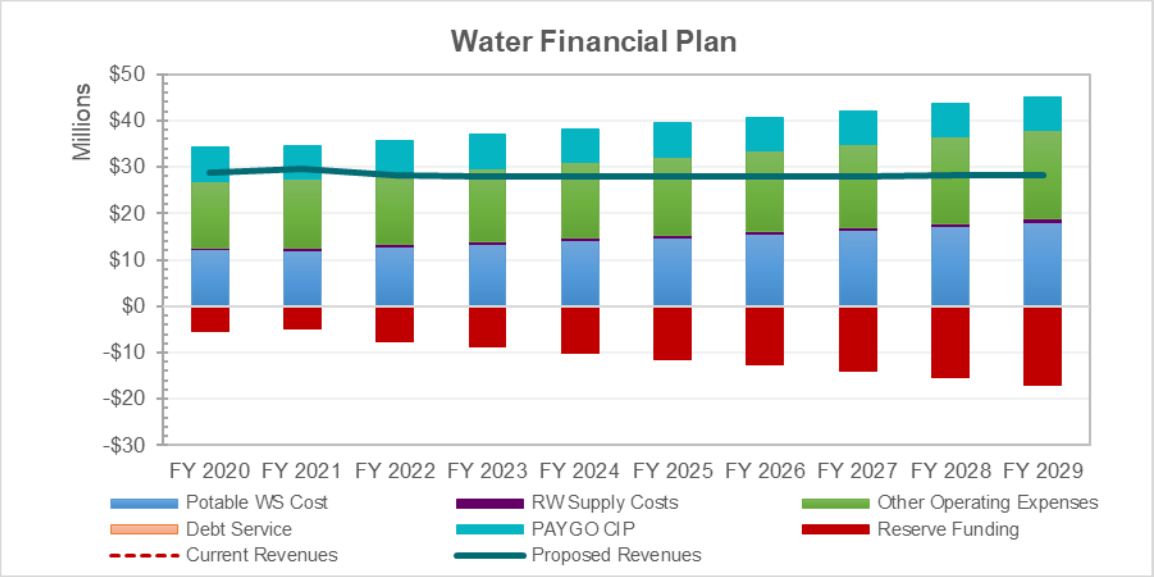


Figure 5-3: Projected Water Fund Ending Balance without Revenue Adjustments

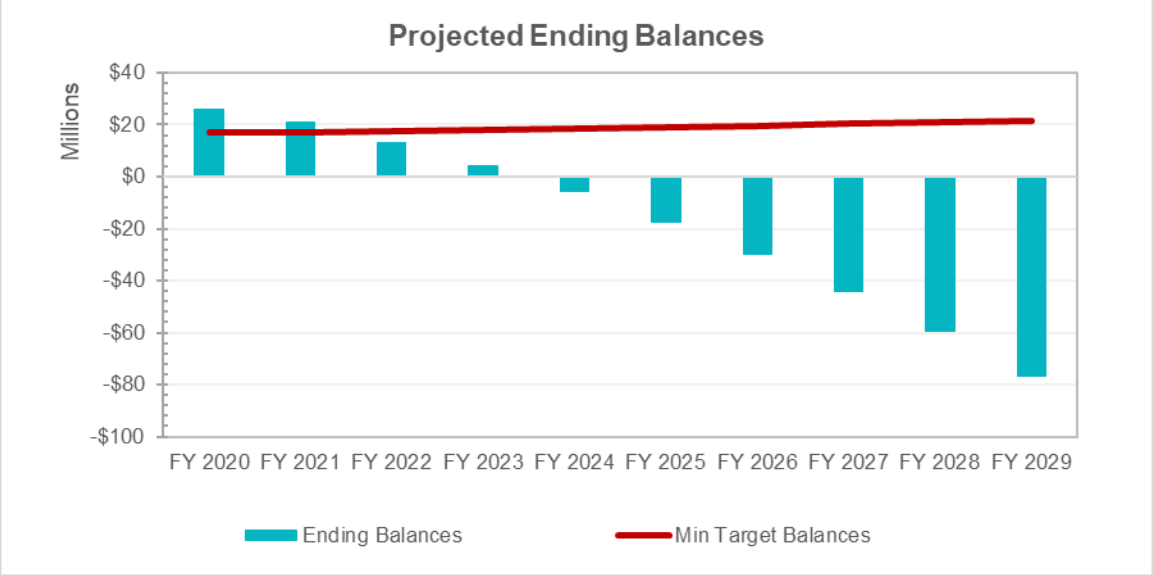


Table 5-12: Status Quo Water Financial Plan

Water Fund Proforma	FY 2019 Est. Actual	FY 2020 Budget	FY 2021 Projected	FY 2022 Projected	FY 2023 Projected	FY 2024 Projected	FY 2025 Projected	FY 2026 Projected	FY 2027 Projected	FY 2028 Projected	FY 2029 Projected
REVENUES											
Revenues from Current Rates	$26,372,623	$27,666,480	$26,974,725	$26,974,725	$26,974,725	$26,974,725	$26,974,725	$26,974,725	$26,974,725	$26,974,725	$26,974,725
Sale of Water Reclaimed	$375,000	$425,000	$524,399	$526,740	$546,640	$567,709	$589,949	$619,447	$650,419	$682,940	$717,087
Other Operating Revenues	$402,653	$427,653	$1,927,653	$427,653	$427,653	$427,653	$427,653	$427,653	$427,653	$427,653	$427,653
Non-Operating Revenues											
Investment Income	$253,369	$284,380	$232,865	$169,889	$87,164	$0	$0	$0	$0	$0	$0
Other Non-Operating Revenues	$22,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000
TOTAL REVENUES	**$27,425,645**	**$28,813,513**	**$29,669,642**	**$28,109,007**	**$28,046,181**	**$27,980,087**	**$28,002,327**	**$28,031,824**	**$28,062,797**	**$28,095,318**	**$28,129,465**
OPERATING EXPENSES											
Fixed Potable WS Costs	$1,805,734	$1,904,427	$2,009,337	$2,120,880	$2,239,503	$2,365,684	$2,499,933	$2,642,796	$2,794,856	$2,956,736	$3,129,104
Variable Potable WS Costs	$9,494,266	$10,195,573	$10,036,497	$10,606,459	$11,136,782	$11,693,621	$12,278,302	$12,892,217	$13,536,828	$14,213,669	$14,924,353
RW Supply Costs	$490,454	$507,427	$524,399	$526,740	$546,640	$567,709	$589,949	$619,447	$650,419	$682,940	$717,087
Salaries & Benefits	$5,443,440	$5,596,886	$5,771,169	$5,951,182	$6,137,126	$6,329,204	$6,527,631	$6,732,626	$6,944,418	$7,163,244	$7,389,349
Other Operating Expenses	$3,313,775	$3,475,373	$3,608,578	$3,747,267	$3,891,683	$4,042,074	$4,198,703	$4,361,845	$4,531,787	$4,708,829	$4,893,284
Conservation Program	$422,422	$420,618	$433,237	$446,234	$459,621	$473,409	$487,612	$502,240	$517,307	$532,826	$548,811
Meter Related	$1,009,927	$705,887	$727,064	$748,876	$771,342	$794,482	$818,316	$842,866	$868,152	$894,197	$921,022
Gen & Admin	$2,888,304	$3,669,933	$3,776,193	$3,885,641	$3,998,372	$4,114,486	$4,234,082	$4,357,267	$4,484,147	$4,614,834	$4,749,441
Capital / Equip Expenses	$14,154	$144,154	$148,479	$152,933	$157,521	$162,247	$167,114	$172,127	$177,291	$182,610	$188,088
AP & CC Adjustments in Sales of Potable Water Rev	$349,560	$360,047	$370,848	$381,974	$393,433	$405,236	$417,393	$429,915	$442,812	$456,097	$469,779
TOTAL OPERATING EXPENSES	**$25,232,035**	**$26,980,324**	**$27,405,799**	**$28,568,185**	**$29,732,021**	**$30,948,151**	**$32,219,036**	**$33,553,346**	**$34,948,017**	**$36,405,982**	**$37,930,320**
NET REVENUES	**$2,193,610**	**$1,833,189**	**$2,263,843**	**-$459,179**	**-$1,685,840**	**-$2,968,065**	**-$4,216,709**	**-$5,521,521**	**-$6,885,221**	**-$8,310,664**	**-$9,800,855**
CAPITAL EXPENDITURE											
Total CIP Expenditures	$9,256,000	$7,200,000	$7,200,000	$7,200,000	$7,200,000	$7,200,000	$7,200,000	$7,200,000	$7,200,000	$7,200,000	$7,200,000
NET CASH CHANGES	**-$7,062,390**	**-$5,366,811**	**-$4,936,157**	**-$7,659,179**	**-$8,885,840**	**-$10,168,065**	**-$11,416,709**	**-$12,721,521**	**-$14,085,221**	**-$15,510,664**	**-$17,000,855**
BEGINNING BALANCES		$31,121,429	$25,754,618	$20,818,461	$13,159,283	$4,273,442	-$5,894,622	-$17,311,331	-$30,032,852	-$44,118,073	-$59,628,737
ENDING BALANCES		**$25,754,618**	**$20,818,461**	**$13,159,283**	**$4,273,442**	**-$5,894,622**	**-$17,311,331**	**-$30,032,852**	**-$44,118,073**	**-$59,628,737**	**-$76,629,592**
Target Reserves		**$17,003,507**	**$17,230,828**	**$17,704,311**	**$18,181,362**	**$18,678,874**	**$19,197,774**	**$19,741,047**	**$20,307,807**	**$20,899,153**	**$21,516,238**
O&M 33% of operating expenses		$8,903,507	$9,043,914	$9,427,501	$9,811,567	$10,212,890	$10,632,282	$11,072,604	$11,532,846	$12,013,974	$12,517,006
Capital 75% of 5-year average CIP		$5,400,000	$5,400,000	$5,400,000	$5,400,000	$5,400,000	$5,400,000	$5,400,000	$5,400,000	$5,400,000	$5,400,000
Rate Stabilization $2,700,000		$2,700,000	$2,786,914	$2,876,809	$2,969,795	$3,065,984	$3,165,492	$3,268,443	$3,374,961	$3,485,179	$3,599,232

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5.7 PROPOSED FINANCIAL PLAN

One of the Study's major objectives is to develop a long-term financial plan ensuring financial sufficiency for the Water Fund's projected operating and capital obligations. Raftelis developed a 10-year Financial Plan Model incorporating the known and forecasted cost increases for operating and capital expenditures. The results were presented and discussed with the Finance Committee and City Council. The proposed revenue adjustments for the Water Fund are shown in Table 5-13 below. The adjustments account for the recent approval of the Federal WaterSMART Water and Energy Efficiency Grant in the amount of $1.5 million for Advance Metering Infrastructure (AMI) along with other forecasts.

Table 5-13: Proposed Water Revenue Adjustments

Water Fund	Revenue Adjustments
FY 2020 – FY 2024	7.4% per year
FY 2025 – FY 2029	2.5% per year

With the proposed revenue adjustments, the Water Financial Plan is summarized in the Figures below. In Figure 5-4, the dashed red line is the projected revenues from current rates without any adjustment, green line represents the projected revenues with the proposed revenue adjustments shown in Table 5-13. The stacked bars represent the expenditures, such as potable water supply (light blue), recycled water (purple), other O&M expenses (green), and PAYGO CIP (teal). The red bars below the axis in FY 2020 to FY 2023 and FY 2028 to FY 2029 signify that the collected revenues are insufficient for operating and capital costs in those years and require drawing on the current Water Fund balances. The current water revenues (red line) are insufficient to recover operating and capital costs in all years, thus revenue adjustments are warranted. Figure 5-5 shows the forecasted Water Fund ending balances (teal bars) after incorporating the revenues with proposed revenue adjustments and projected expenses (shown in Figure 5-4) and the estimated Water Fund beginning balance as of July 1, 2019.

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Figure 5-4: Water Financial Plan

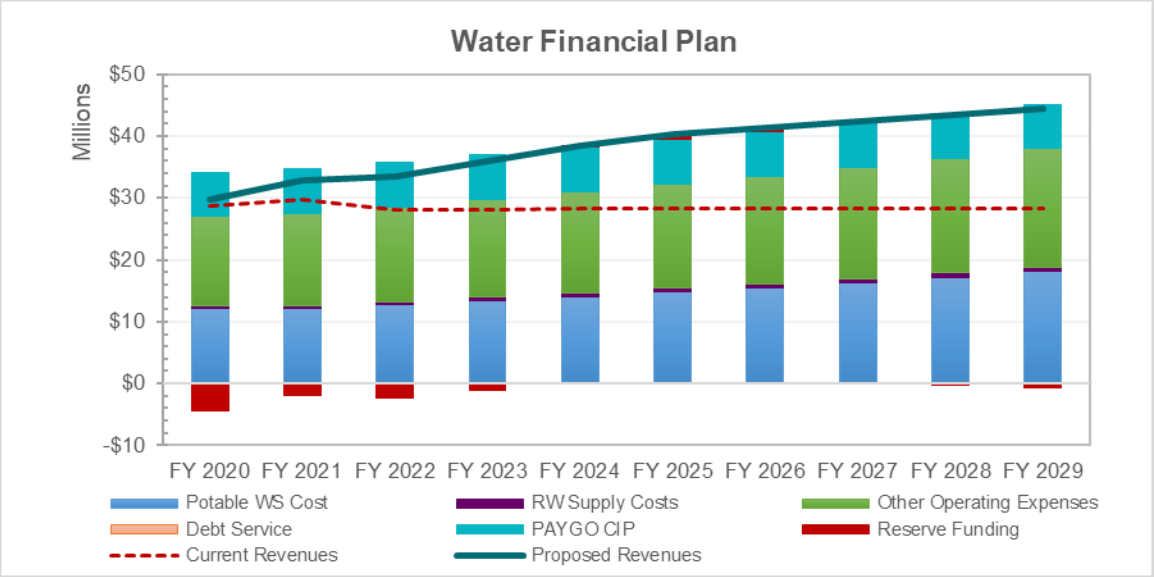

Figure 5-5: Projected Water Fund Ending Balances

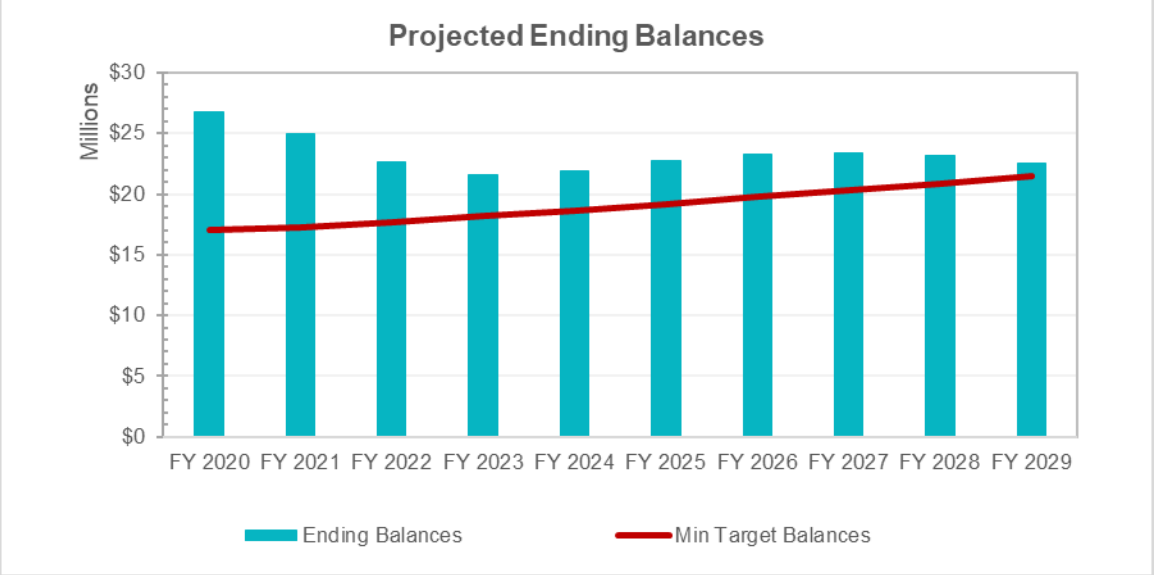

Table 5-14 details numerically the proposed financial plan, incorporating all the projections on revenues generated from rates and other miscellaneous revenues (Table 5-7), proposed revenue adjustments (Table 5-13), expenses of the Water Fund (Table 5-11) and capital funding (Figure 5-1). In the first 4 years, the City will continue to draw on reserves to fund its increased capital funding. Starting FY 2024, the City will start to have positive cash flows to maintain its reserves slightly above the recommended minimum target balances. Raftelis recommends the City review its financial plan annually and conduct comprehensive rate study every 5 years to update with more relevant data.

Table 5-14: Proposed Water Financial Plan

Water Fund Proforma				FY 2019 Est. Actual	FY 2020 Budget	FY 2021 Projected	FY 2022 Projected	FY 2023 Projected	FY 2024 Projected	FY 2025 Projected	FY 2026 Projected	FY 2027 Projected	FY 2028 Projected	FY 2029 Projected
REVENUES														
Revenues from Current Rates				$26,372,623	$27,666,480	$26,974,725	$26,974,725	$26,974,725	$26,974,725	$26,974,725	$26,974,725	$26,974,725	$26,974,725	$26,974,725
Proposed Revenues Adjustments				$0	$1,023,660	$3,068,051	$5,291,217	$7,678,896	$10,243,264	$12,053,020	$13,028,714	$14,028,800	$15,053,888	$16,104,603
FY	**%**	**Effective Month**	**Billing Months at New Rates**											
FY 2020	7.4%	Jan	6		$1,023,660	$1,996,130	$1,996,130	$1,996,130	$1,996,130	$1,996,130	$1,996,130	$1,996,130	$1,996,130	$1,996,130
FY 2021	7.4%	Jan	6			$1,071,922	$2,143,843	$2,143,843	$2,143,843	$2,143,843	$2,143,843	$2,143,843	$2,143,843	$2,143,843
FY 2022	7.4%	Jan	6				$1,151,244	$2,302,488	$2,302,488	$2,302,488	$2,302,488	$2,302,488	$2,302,488	$2,302,488
FY 2023	7.4%	Jan	6					$1,236,436	$2,472,872	$2,472,872	$2,472,872	$2,472,872	$2,472,872	$2,472,872
FY 2024	7.4%	Jan	6						$1,327,932	$2,655,864	$2,655,864	$2,655,864	$2,655,864	$2,655,864
FY 2025	2.5%	Jan	6							$481,824	$963,648	$963,648	$963,648	$963,648
FY 2026	2.5%	Jan	6								$493,870	$987,739	$987,739	$987,739
FY 2027	2.5%	Jan	6									$506,216	$1,012,433	$1,012,433
FY 2028	2.5%	Jan	6										$518,872	$1,037,744
FY 2029	2.5%	Jan	6											$531,844
Total Revenues from Rates & Adjustments				**$26,372,623**	**$28,690,140**	**$30,042,776**	**$32,265,941**	**$34,653,621**	**$37,217,989**	**$39,027,745**	**$40,003,439**	**$41,003,525**	**$42,028,613**	**$43,079,328**
Sale of Water Reclaimed				$375,000	$425,000	$524,399	$526,740	$546,640	$567,709	$589,949	$619,447	$650,419	$682,940	$717,087
Other Operating Revenues				$402,653	$427,653	$1,927,653	$427,653	$427,653	$427,653	$427,653	$427,653	$427,653	$427,653	$427,653
Non-Operating Revenues														
Investment Income				$253,369	$289,524	$258,622	$237,911	$221,046	$217,142	$222,900	$229,882	$233,452	$233,220	$228,764
Other Non-Operating Revenues				$22,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000
TOTAL REVENUES				**$27,425,645**	**$29,842,317**	**$32,763,451**	**$33,468,246**	**$35,858,960**	**$38,440,494**	**$40,278,248**	**$41,290,420**	**$42,325,049**	**$43,382,425**	**$44,462,833**
OPERATING EXPENSES														
Fixed Potable WS Costs				$1,805,734	$1,904,427	$2,009,337	$2,120,880	$2,239,503	$2,365,684	$2,499,933	$2,642,796	$2,794,856	$2,956,736	$3,129,104
Variable Potable WS Costs				$9,494,266	$10,195,573	$10,036,497	$10,606,459	$11,136,782	$11,693,621	$12,278,302	$12,892,217	$13,536,828	$14,213,669	$14,924,353
RW Supply Costs				$490,454	$507,427	$524,399	$526,740	$546,640	$567,709	$589,949	$619,447	$650,419	$682,940	$717,087
Salaries & Benefits				$5,443,440	$5,596,886	$5,771,169	$5,951,182	$6,137,126	$6,329,204	$6,527,631	$6,732,626	$6,944,418	$7,163,244	$7,389,349
Other Operating Expenses				$3,313,775	$3,475,373	$3,608,578	$3,747,267	$3,891,683	$4,042,074	$4,198,703	$4,361,845	$4,531,787	$4,708,829	$4,893,284
Conservation Program				$422,422	$420,618	$433,237	$446,234	$459,621	$473,409	$487,612	$502,240	$517,307	$532,826	$548,811
Meter Related				$1,009,927	$705,887	$727,064	$748,876	$771,342	$794,482	$818,316	$842,866	$868,152	$894,197	$921,022
Gen & Admin				$2,888,304	$3,669,933	$3,776,193	$3,885,641	$3,998,372	$4,114,486	$4,234,082	$4,357,267	$4,484,147	$4,614,834	$4,749,441
Capital / Equip Expenses				$14,154	$144,154	$148,479	$152,933	$157,521	$162,247	$167,114	$172,127	$177,291	$182,610	$188,088
AP & CC Adjustments in Sales of Potable Water Rev				$349,560	$360,047	$370,848	$381,974	$393,433	$405,236	$417,393	$429,915	$442,812	$456,097	$469,779
TOTAL OPERATING EXPENSES				**$25,232,035**	**$26,980,324**	**$27,405,799**	**$28,568,185**	**$29,732,021**	**$30,948,151**	**$32,219,036**	**$33,553,346**	**$34,948,017**	**$36,405,982**	**$37,930,320**
NET REVENUES				**$2,193,610**	**$2,861,992**	**$5,357,652**	**$4,900,060**	**$6,126,938**	**$7,492,342**	**$8,059,212**	**$7,737,074**	**$7,377,032**	**$6,976,444**	**$6,532,512**
CAPITAL EXPENDITURE														
Total CIP Expenditures				$9,256,000	$7,200,000	$7,200,000	$7,200,000	$7,200,000	$7,200,000	$7,200,000	$7,200,000	$7,200,000	$7,200,000	$7,200,000
NET CASH CHANGES				**-$7,062,390**	**-$4,338,008**	**-$1,842,348**	**-$2,299,940**	**-$1,073,062**	**$292,342**	**$859,212**	**$537,074**	**$177,032**	**-$223,556**	**-$667,488**
BEGINNING BALANCES				$33,924,564	$31,121,429	$26,783,421	$24,941,073	$22,641,134	$21,568,072	$21,860,414	$22,719,626	$23,256,700	$23,433,732	$23,210,176
ENDING BALANCES				**$26,862,174**	**$26,783,421**	**$24,941,073**	**$22,641,134**	**$21,568,072**	**$21,860,414**	**$22,719,626**	**$23,256,700**	**$23,433,732**	**$23,210,176**	**$22,542,688**
Target Reserves				**$16,734,972**	**$17,003,507**	**$17,230,828**	**$17,704,311**	**$18,181,362**	**$18,678,874**	**$19,197,774**	**$19,741,047**	**$20,307,807**	**$20,899,153**	**$21,516,238**
O&M	33% of operating expenses			$8,326,572	$8,903,507	$9,043,914	$9,427,501	$9,811,567	$10,212,890	$10,632,282	$11,072,604	$11,532,846	$12,013,974	$12,517,006
Capital	75% of 5-year average CIP			$5,708,400	$5,400,000	$5,400,000	$5,400,000	$5,400,000	$5,400,000	$5,400,000	$5,400,000	$5,400,000	$5,400,000	$5,400,000
Rev Loss	$2,700,000			$2,700,000	$2,700,000	$2,786,914	$2,876,809	$2,969,795	$3,065,984	$3,165,492	$3,268,443	$3,374,961	$3,485,179	$3,599,232

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6. COST OF SERVICE ANALYSIS

This Rate Study conforms to the principles set forth in the enabling statutes and the rates abide by the cost-of-service provisions of Proposition 218.

6.1 PROPORTIONALITY

Demonstrating proportionality when calculating rates is a critical component of ensuring compliance with Proposition 218. For costs that are recovered through the agency's proposed fixed meter charge, the Study spreads the costs either over all accounts or by meter size, depending on the type of expense. As such, customer classes and usage are not considered nor necessary for calculating each customer's fixed charge. Conversely, costs that are determined as variable are allocated among customer classes based on their demand on the system. As stated in the Manual M1, the AWWA Rates and Charges Subcommittee agree with Proposition 218 that "the costs of water rates and charges should be recovered from classes of customers in proportion to the cost of serving those customers." The agency's revenue requirements are, by definition, the cost of providing service. This cost is then used as the basis to develop unit costs for the water components and to allocate costs to the various customer classes in proportion to the water services rendered.

Individual customer demands vary depending on the meter sizes. For example, customers with larger meters impose higher demand and peaking demand on the water system capacity. The concept of proportionality requires that cost allocations consider both the average quantity of water consumed (base) and the peak rate at which it is consumed (peaking). A water system is designed to meet peak demands. The additional costs associated with designing, constructing and maintaining facilities to meet these peak demands must be allocated to those customers whose usage requires facilities to upsize in response to peak demand.

In allocating the costs of service, the industry standard as promulgated by AWWA's M1 Manual is to group customers with similar system needs and demands.

Generally speaking, customers place the following demands on the water system and water supplies:

- The system capacity[6] (for treatment, storage, and distribution) that must be maintained to provide reliable service to all customers at all times
- The number of customers requiring customer services such as bill processing, customer service support, and other administrative services

Joint costs are proportionately shared among all customers in the system based on their service requirements; some specific costs, such as pumping charges, are borne by a subgroup of customers based on the characteristics of that group alone (i.e. elevation zone).

[6] System capacity is the system's ability to supply water to all delivery points at the time when demanded. The time of greatest demand is known as peak demand.

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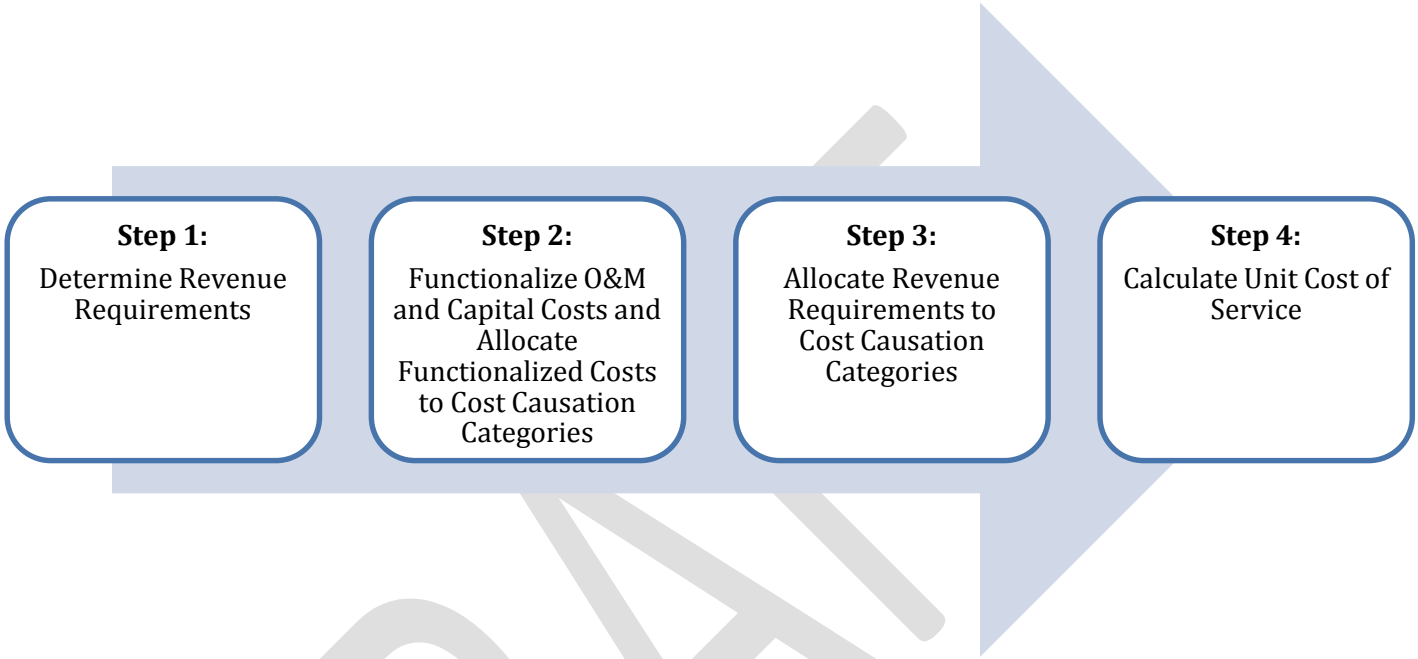
6.2 WATER COST OF SERVICE ANALYSIS

A cost of service analysis distributes a utility's revenue requirements (costs) to each customer class. Figure 6-1 provides a general overview of a cost-of-service analysis. Each step shown below will be described in greater detail in the subsections below.

Figure 6-1: Cost of Service Process



6.2.1 Step 1 – Determine Revenue Requirements

In this Study, water rates are calculated for FY 2019 (known as the Test Year), by calculating water purchase costs and by using the City's FY 2019 budget. Test Year revenue requirements are used in the cost allocation process. According to Government Code 54999.7(c), the City should review the cost of service analysis at least once every five to ten years to ensure that the rates are consistent with the costs of providing service.

The revenue requirement determination is based upon the Department's need to generate annual revenues that meet O&M expenses, debt service needs, reserve funding to achieve target levels, and capital investment. Revenues from sources other than water rates and charges (e.g. revenues from miscellaneous services and one-time sources such as grants) partially offset these costs, which reduces the revenue requirement for the rates. The net revenue required from rates for FY 2019 is calculated below in Table 6-1.

Table 6-1: Revenue Requirement from Current Water and RW Rates for FY 2019

Revenue Requirements @ Current Rates	FY 2019	Notes
O&M Expenses	$25,232,035	Table 5-11
Debt Service	$0	No debt
Rate Funded CIP	$9,256,000	Table 5-14
Reserve Funding	-$7,062,390	Table 5-14
Total Revenue Requirements	**$27,425,645**	
Less Revenue Offset		
Other Operating Revenues	-$402,653	Table 5-7 or 5-14
Non-Operating Revenues	-$275,369	Table 5-7 or 5-14
Total Revenue Offset	**-$678,022**	
Revenue Requirements @ Current Rates	**$26,747,623**	Incl. Water & RW rates

6.2.2 Step 2 – Functionalize Costs and Allocate Functionalized Costs to Cost Causation Categories

To derive the cost to serve each customer class, costs first need to be functionalized. This step involves the arrangement of overall costs into various functions. The water utility costs are categorized into the following functions:

- Water supply – direct water supply costs to produce potable water before distributing to customers, including fixed and variable costs of purchasing water from OCWD and MWDOC
- RW supply – purchased RW costs from OCWD to be pass-through to the RW customers
- RW Pump Station – costs to operate, maintain and replace the pump stations for RW services
- Treatment – costs associated with treating water to potable water standards, excluding power and chemical costs
- Transmission – costs associated with transporting water from the point of treatment through a major trunk to locations within the distribution systems
- Distribution – costs associated with the smaller local service distribution mains transporting water to specific locations within the service area
- Storage – costs associated with water storage within the distribution or transmission systems
- Pumping – cost associated with pumping water from the treatment facilities to the transmission and distribution systems
- Fire protection – costs associated with installing and maintaining fire hydrants
- Meter service – costs associated with providing customer water meters and associated with testing and replacements
- General & Administrative – represents all other costs that do not serve a specific function
- Billing and customer service – billing costs including meter reading, billing and collection costs associated with preparing a water customer bill and processing funds received from water users. Customer service costs include costs associated with administering customer accounts such as processing complaints, responding to customer inquiries, performing rereads, etc.

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» Conservation – costs associated with conservation programs and services offered to the City customers

Raftelis reviewed and functionalized the Water Fund's O&M expenses and asset list. Table 6-2 summarizes the functionalized O&M costs for the Water Fund for test year FY 2019. Table 6-3 shows the fixed asset values of the Water Fund using replacement costs. To reduce rate variability from year to year, allocation of fixed assets to cost causation components is used to approximately tie the capital-related costs to Division functions. Replacement costs, escalated from original costs to current dollars using Engineering News Record – Construction Cost Index (ENR CCI) of Los Angeles, consider changes in the value of money over time, and thus provide more consistent allocation of costs. See Appendices 1 and 2 for details.

Table 6-2: FY 2019 Functionalized O&M Costs

Water Service Functions	FY 2019
Water Supply	$11,300,000
RW Supply	$490,454
RW Pump Station	$10,360
Treatment	$323,053
Transmission	$135,883
Distribution	$207,736
Pumping	$90,000
Storage	$105,977
Meter Services	$1,009,927
Billing	$349,560
G&A	$10,713,571
Conservation	$422,422
Fire Protection	$73,092
Total	**$25,232,035**

Table 6-3: FY 2019 Functionalized Water Assets

Water Service Functions	FY 2019
Water Supply	$6,944,773
RW Pump Station	$1,809,997
Transmission	$103,069,098
Distribution	$103,069,098
Pumping	$8,970,117
Storage	$508,974,120
Meter Services	$18,535,480
G&A	$26,102,423
Fire Protection	$8,293,937
Total	**$785,769,042**

Raftelis used the Base-Extra Capacity method, as described in the AWWA M1 Manual, which consists of a number of cost causation components. Functionalization of costs allows for better allocation of costs to the cost causation components, which include:

- ***Water Supply Costs*** are direct costs incurred to purchase water from OCWD and MWDOC
- ***RW Supply Costs*** are directly pass-through purchased RW costs from OCWD
- **RW Pump Station Costs** are costs to operate, maintain and replace the pump stations for RW services
- ***Base Fixed Costs*** are the operating and capital costs of the water system associated with serving customers at a constant, or average, rate of use.
- ***Extra Capacity Costs*** or peaking costs represent the costs incurred to meet customer peak demands for water in excess of average day usage. Total extra capacity costs are subdivided into costs associated with maximum day and maximum hour demands. The maximum day demand is the maximum amount of water used in a single day in a year. The maximum hour (**Max Hour**) demand is the maximum usage in an hour on the maximum usage day (**Max Day**). Various facilities are designed to meet customer peaking needs. For example, transmission lines or reservoirs (storage) are designed to meet Max Day requirements. Both have to be designed larger than they would be if the same amount of water were being used at a constant rate throughout the year. The cost associated with constructing a larger line or reservoir is based on system wide peaking factors. For example, if the Max Day factor is 2.0, then certain system facilities have to be designed at least twice as large as required to meet average daily demand. In this case, half of the cost would be allocated to Base (or average day demand) and the other half allocated to Max Day. The calculation of the Max Hour and Max Day demands is explained below.
- ***Billing & Customer Service Costs*** include such costs as meter reading, billing, collecting, and customer accounting.
- ***Meter Services Costs or meter service costs*** include maintenance and capital costs associated with servicing meters. These costs are assigned based on meter size or equivalent meter capacity.
- ***General & Administrative Costs*** represent all other costs that do not serve a specific function
- ***Fire Protection*** includes proportional costs to provide fire protection capacity
- ***Conservation*** includes costs associated with conservation programs and service offered for City customers

Peaking costs are further 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 O&M costs associated with those facilities are designed to meet the peaking demands of customers. Therefore, extra capacity costs include the O&M and capital costs associated with meeting peak customer demand. This method is consistent with the AWWA M1 Manual and is widely used in the water industry to perform COS analyses.

After functionalizing expenses, the next step is to allocate the functionalized expenses to cost causation components. To do so, we must identify system-wide peaking factors. The system-wide peaking factors are used to derive the cost component allocation bases (i.e., percentages). Functionalized expenses are then allocated to the cost causation components using these allocation bases. To understand the interpretation of the percentages, we must first establish the base use as the average daily demand during the year.

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The base demand is assigned a value of 1.0. The Max Day and Max Hour values shown in Table 6-4 are extracted from the 2019 Water Master Plan (page ES-3).

Table 6-4: Water System Peaking Factors

	Potable Water	Peaking Factors
1	Average Day Demand	1.00
2	Max Day Demand	1.85
3	Max Hour Demand	2.60

To determine the relative proportion of costs to assign to Supply, Base Delivery, Maximum Day, and Maximum Hour, allocations are calculated based on these factors. Cost components that are solely related to providing average day demand (ADD), are allocated entirely to Base Delivery. Cost components that are designed to meet Max Day peaks, such as reservoirs and transmission facilities, are allocated to both Base Delivery and Max Day factors.

The Max Day factor of the City's system is 1.85, which means that Max Day demand is expected to be 185 percent of the average day capacity. Calculating the Max Day allocation of functional costs to the cost causation components results in the following:

$$Base\ Fixed\ Allocation = \frac{Base\ Fixed}{Max\ Day} = \frac{1}{1.85} \approx 54\%$$

$$Max\ Day\ Allocation = 1 - Base/Max\ Day \approx 46\%$$

Facilities designed for Max Hour peaks, such as distribution system facilities, are allocated similarly. The Max Hour factor is 2.60, so Max Hour facilities are designed to provide 260 percent of the average day capacity. The allocation of Max Hour facilities is shown below:

$$Base\ Fixed\ Alloction = \frac{Base}{Max\ Hour} = \frac{1}{2.60} \approx 38\%$$

$$Max\ Day\ Allocation = \frac{Max\ Day - Base}{Max\ Hour} = \frac{1.85 - 1.00}{2.60} \approx 33\%$$

$$Max\ Hour\ Allocation = 1 - 38\% - 33\% \approx 29\%$$

The results of the allocation are presented below in Table 6-5. These percentages are then applied to the operating and capital improvement expenses to allocate costs amongst Base, Max Day, and Max Hour cost components.

Table 6-5: Allocation of Extra Capacity Functional Costs to Cost Causation Categories

	Peaking Factor	Base	Max Day	Max Hour
Base	1.00	100%		
Max Day	1.85	54%	46%	
Max Hour	2.60	38%	33%	29%

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Water system infrastructure is designed to meet peak demand plus fire protection. A fire protection requirement is needed in the design of distribution and pumping system, thus, a portion of the distribution and pumping system costs are allocated to direct fire protection and the remaining costs are proportionally allocated to base fixed, max day and max hour costs using the max hour ratios shown in Table 6-5. In a typical water system with similar service size with the City, approximately 10% of the water system capacity is reserved for fire protection demand. Therefore, 10% of the distribution and pumping functional costs will be allocated to fire protection cost categories. RW Supply and RW Pump Station are 100% allocated to the corresponding cost categories.

Table 6-6: Allocation of Water Cost Functions to Cost Causation Categories

Water Service Functions	Water Supply	Base Fixed	Max Day	Max Hour	Meter Services	Billing & CS	Gen & Admin	Conservation	Direct Fire Protection
Water Supply	100%								
Treatment		54%	46%						
Transmission		54%	46%						
Distribution		35%	29%	26%					10%
Pumping		35%	29%	26%					10%
Storage		54%	46%						
Meter Services					100%				
Customer Service						100%			
Billing						100%			
G&A							100%		
Conservation								100%	
Fire Protection									100%

Using the allocation factors from Table 6-6 and functional costs from Table 6-2, Table 6-7 summarizes the allocation of FY 2019 O&M expenses to cost causation categories and allocation percentage for operating related costs. Similarly, Table 6-8 summarizes the allocation of Water Fund fixed asset values (by replacement costs as of May 1, 2019) to cost categories and allocation percentage for capital related costs. See Appendices 1 and 2 for details.

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Table 6-7: Results of O&M Cost Allocations

O&M Expenses	FY 2019 A	Allocation % B	% w/o WS & RW Supply C
Water Supply	$11,300,000	44.8%	
RW Supply	$490,454	1.9%	
RW Pump Station	$10,360	0.0%	0.1%
Base Fixed	$408,421	1.6%	3.0%
Max Day	$347,158	1.4%	2.6%
Max Hour	$77,297	0.3%	0.6%
Meter Services	$1,009,927	4.0%	7.5%
Billing & CS	$349,560	1.4%	2.6%
Gen & Admin	$10,713,571	42.5%	79.7%
Conservation	$422,422	1.7%	3.1%
Direct Fire Protection	$102,866	0.4%	0.8%
Total	**$25,232,035**	**100%**	**100%**

Table 6-8: Results of Asset Value Cost Allocations for Capital Cost Allocations

Asset Values	FY 2019 A	Allocation % B	% w/o WS & RW Supply C
Water Supply	$6,944,773	0.9%	
RW Pump Station	$1,809,997	0.2%	0.2%
Base Fixed	$369,616,977	47.0%	47.5%
Max Day	$314,174,430	40.0%	40.3%
Max Hour	$29,087,104	3.7%	3.7%
Meter Services	$18,535,480	2.4%	2.4%
Gen & Admin	$26,102,423	3.3%	3.4%
Direct Fire Protection	$19,497,858	2.5%	2.5%
Total	**$785,769,042**	**100%**	**100%**

6.2.3 Step 3 – Allocate Revenue Requirements to Cost Causation Categories

Table 6-9 shows the calculation of the revenue requirement in Table 6-1 paired with the corresponding allocation percentages for each line. For example, O&M Expenses will be divided across the cost causation categories according to the percentages listed in Table 6-7, Column B.

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Table 6-9: Revenue Requirement from Current Water and RW Rates for FY 2019

	Revenue Requirements @ Current Rates	FY 2019	Cost Causation Category Allocation
1	O&M Expenses	$25,232,035	O&M from Table 6-7 Column B
2	Debt Service	$0	Capital from Table 6-8 Column B
3	Rate Funded CIP	$9,256,000	Capital from Table 6-8 Column B
4	Reserve Funding	-$7,062,390	Capital from Table 6-8 Column C
5	**Total Revenue Requirements**	**$27,425,645**	
6	***Less Revenue Offset***		
7	Other Operating Revenues	-$402,653	O&M from Table 6-7 Column C
8	Non-Operating Revenues	-$275,369	O&M from Table 6-7 Column C
9	**Total Revenue Offset**	**-$678,022**	
10			
11	**Revenue Requirements @ Current Rates**	**$26,747,623**	

Table 6-10 details the result of allocating the various revenue requirements to the aforementioned cost categories. For more detailed calculations, see Appendix 3.

Table 6-10: Revenue Requirement Allocated to Cost Causation Categories

	Cost Categories	Allocation of Revenue Requirement A	Allocation % B
1	Water Supply	$11,381,806	42.6%
2	RW Supply	$490,454	1.8%
3	RW Pump Station	$31,158	0.1%
4	Base Fixed	$1,382,239	5.2%
5	Max Day	$1,174,903	4.4%
6	Max Hour	$151,654	0.6%
7	Meter Services	$1,008,852	3.8%
8	Billing & CS	$331,927	1.2%
9	Gen & Admin	$10,243,382	38.3%
10	Conservation	$401,114	1.5%
11	Direct Fire Protection	$150,134	0.6%
12	**Total**	**$26,747,623**	**100%**

General costs are reallocated proportionally to all cost categories, excluding water supply, RW supply, and RW pump station. This reallocation is shown in Table 6-11. Each category's proportional share of the General and Administrative costs is calculated by dividing that category's total requirement in Column B by the total requirement of all cost categories except Water Supply, and RW Supply shown in Column B, Line 12. The majority of the Water Supply, and RW Supply are direct costs from wholesales, such as OCWD and MWDOC. General costs reflect more of the fixed system costs incurred by the City to provide the services. The resulting percent allocations are in Column C.

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Table 6-11: General Cost Reallocation

	Cost Categories	Allocation of Revenue Requirement	General Cost Reallocation		
			Net Rev	%	Allocated
		A	*B*	*C = B / B12*	*D = A9 x C*
1	Water Supply	$11,381,806	N/A		
2	RW Supply	$490,454	N/A		
3	RW Pump Station	$31,158	$31,158	0.7%	$68,905
4	Base Fixed	$1,382,239	$1,382,239	29.8%	$3,056,747
5	Max Day	$1,174,903	$1,174,903	25.4%	$2,598,235
6	Max Hour	$151,654	$151,654	3.3%	$335,375
7	Meter Services	$1,008,852	$1,008,852	21.8%	$2,231,023
8	Billing & CS	$331,927	$331,927	7.2%	$734,040
9	Gen & Admin	$10,243,382	N/A		
10	Conservation	$401,114	$401,114	8.7%	$887,043
11	Direct Fire Protection	$150,134	$150,134	3.2%	$332,014
12	**Total**	**$26,747,623**	**$4,631,981**	**100%**	**$10,243,382**

The resulting reallocated revenue requirements are shown in Table 6-12, Column C. These allocations will be used to develop category unit costs of service in the Step 4.

Table 6-12: Reallocated Revenue Requirements

	Cost Categories	Revenue Requirement Prior to General Cost Reallocation	General Cost Reallocation	Reallocated Revenue Requirement
		A	*B (Table 6-11)*	*C = A +B*
1	Water Supply	$11,381,806		$11,381,806
2	RW Supply	$490,454		$490,454
3	RW Pump Station	$31,158	$68,905	$100,063
4	Base Fixed	$1,382,239	$3,056,747	$4,438,986
5	Max Day	$1,174,903	$2,598,235	$3,773,138
6	Max Hour	$151,654	$335,375	$487,029
7	Meter Services	$1,008,852	$2,231,023	$3,239,874
8	Billing & CS	$331,927	$734,040	$1,065,967
9	Gen & Admin	$10,243,382	-$10,243,382	$0
10	Conservation	$401,114	$887,043	$1,288,157
11	Direct Fire Protection	$150,134	$332,014	$482,149
12	**Total**	**$26,747,623**	**$0**	**$26,747,623**

6.2.4 Step 4 – Calculate Unit Cost of Service

In Step 4, we then develop unit costs for each cost component. The unit costs are developed by dividing the total cost for each cost component by the total annual service units for each cost component.

The unit costs for volume-related cost components are based on volumetric units of one hundred cubic feet (1 hcf = about 748 gallons). The extra capacity units are determined based on the respective capacity factor, as shown in Table 6-13.

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Table 6-13: Water System Average and Peak Demand

	Potable Water		Notes
FY 2019 Annual Consumption	5,905,925	HCF	Table 5-3
Average Daily Usage	16,180.6	HCF / day	[1]/ 365 days
Max Day Factor	1.85		Table 6-4
Max Day Total Daily Capacity	29,934.1	HCF / day	[2] x [3]
Extra Max Day Capacity	13,753.5	HCF / day	[4] – [2]
Max Hour Factor	2.60		Table 6-4
Max Hour Total Daily Capacity	42,069.6	HCF / day	[2] x [6]
Extra Max Hour Capacity	12,135.5	HCF / day	[7] – [5] – [2]

Table 6-14 illustrates the meter ratios using the meter hydraulic capacity as listed in Table B-1 of the AWWA M1 Manual. These ratios define higher meter sizes in terms of their equivalent capacity to 3/4" meters. For example, a 1" meter has the equivalent capacity of 1.67 3/4" meters (Column D, Line 3). Using these ratios allows costs to be distributed equitably across different meter sizes. To find the total equivalent meters served by the City, we multiply the total meters by meter size by their respective meter capacity ratios. The resulting total equivalent meters are shown in Column E. The total equivalent water meters are shown in Column E, Line 12 and the total equivalent recycled water meters are shown in Column E, Line 20. Their combined total equivalent meters are shown in Column E, Line 35. Total actual meters are shown in Column A, Line 35. The table also lists the total annual bills for all meters in each meter size (Column B), with total bills in Column B, Line 12. Total bills and equivalent meter units (EMUs) will serve as units for developing the per unit costs for each cost category.

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Table 6-14: Meter Ratios and Equivalent Meter Units (EMUs)

	Meter Size	FY 2019 Water Meters A (Table 5-2)	Number of Monthly Bills B =A x 12 bills	Meter Hydraulic Capacity[7] C	Meter Capacity Ratios D =C / 30[8]	Equivalent Meter Units (EMU) E = A x D
	Water					
1	5/8[9]	16,545	198,540	20	1.00	16,545
2	3/4	4	48	30	1.00	4
3	1	7,585	91,020	50	1.67	12,642
4	1 1/2	551	6,612	100	3.33	1,837
5	2	1,430	17,160	160	5.33	7,627
6	3	32	384	435	14.50	464
7	4	51	612	750	25.00	1,275
8	6	15	180	1,600	53.33	800
9	8	8	96	2,800	93.33	747
10	10	0	0	4,200	140.00	0
11	12	1	12	5,300	176.67	177
12	**Total Water**	**26,222**	**314,664**			**42,116**
13						
14	**RW**					
15	2	10	120	160	5.33	53
16	3	3	36	435	14.50	44
17	4	2	24	750	25.00	50
18	6	1	12	1,600	53.33	53
19	8	2	23	2,800	93.33	187
20	**Total RW**	**18**	**216**			**387**
21	**Water & RW**	**26,240**	**314,880**			**42,503 EMUs**
22						
23	**Private Fire**					
24	5/8	6	72			
25	1	10	120			
26	1 ½	0	0			
27	2	20	240			
28	2 ½	2	24			
29	3	1	12			
30	4	181	2172			
31	6	157	1884			
32	8	83	996			
33	10	2	24			
34	**Total PF**	**462**	**5,544**		**1.00**	**462**
35	**Total**	**26,702**	**320,424**			**42,965 EMUs**

[7] AWWA M1 Manual, 6th edition, Table B-1
[8] 30 is the hydraulic capacity for ¾ inch meters

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Each private fire service has a 5/8-in submeter or its own meter equivalent to the fire service size to monitor and detect water flow that requires meter maintenance, thus private fire meters shall also share proportional meter maintenance cost.

Water systems are designed, in the past, to meet fire protection needs – which can place a high demand on the water system over a short period of time. To estimate the costs associated with (and to provide capacity for) fire protection, Raftelis followed the methodology put forth in the AWWA M1 Manual. Raftelis assumed that fire protection requires flows of 4,000 gallons per minute for a minimum of 4 hours, as shown in Table 6-15. This is a typical and reasonable fire demand put forth by the Insurance Services Office. This translates to 960,000 gallons per day (1,283 hcf) for Max Day demand or 4,800,000 gallons (or 6,417 hcf) per day for Max Hour demand.

Table 6-15: Fire Protection Capacity Demand

	Fire Protection Capacity Demand	A	B	C = A / 748 gallons	Notes
1	GPM	4,000	gallons per min		*AWWA M1 Manual*
2	Duration	4	hours		*AWWA M1 Manual*
3	Max Day Demand	960,000	gallons / day	1,283 hcf	*4000gpm x 4hrs x 60min/hr*
4	Max Hour Demand	4,800,000	gallons / day	6,417 hcf	*4000gpm x 24hrs x 60min/hr - 960,000 gallons per day*

To allocate the extra capacity costs for fire protection between public and private fire, we first calculate the potential flow through each size fire connection (or fire demand units). Table 6-16 shows the public fire demand units (Line 3 in Column F) and private fire demand units (Column F, Line 16). The demand factor in Column D is the fire connection (pipeline) diameter raised to the power of 2.63, which is based on the Hazen-Williams equation for flow. The demand factor for public hydrants is a function of the quantity and diameter of the ports on public fire hydrants. The percentages in Table 6-16, Column G, are used to allocate the fire protection costs between private fire connections and the public (hydrants).

[9] For the purpose of this Study and commonly known for the industry, 5/8 inch and ¾ inch meters are treated equally as the standard meter size

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Table 6-16: Public and Private Fire Demand Units

		Connection Size	Port Size	# of Ports	Fire Demand Factors	# of Connections	Fire Demand Units	% Total
		A	B	C	D = A^2.63 + C x B^2.63	E	F = E x D	G = F / F17
1	**Public Hydrants**							
2	6-inch	6.00	2.50	2	133.58	2,636	352,105	
3	**Total Public**					**2,636**	**352,105**	**88.6%**
4								
5	**Private Fire**							
6	5/8-inch	0.625			0.29	6	2	
7	1-inch	1.00			1.00	10	10	
8	1 ½-inch	1.50			2.90	0	0	
9	2-inch	2.00			6.19	20	124	
10	2 ½-inch	2.50			11.13	2	22	
11	3-inch	3.00			17.98	1	18	
12	4-inch	4.00			38.32	181	6,936	
13	6-inch	6.00			111.31	157	17,476	
14	8-inch	8.00			237.21	83	19,688	
15	10-inch	10.00			426.58	2	853	
16	**Total Private**					**462**	**45,129**	**11.4%**
17	**Total**					**3,098**	**397,233**	**100%**

Table 6-17 illustrates the calculation of the allocated public and private fire protection costs. Line One shows the total revenue requirement allocated to the Max Day and Max Hour cost categories in Table 6-12. These costs are then divided by the Max Day and Max Hour extra capacity demand in hcf/day for each respectively. This arrives at the unit cost of service for Max Day and Max Hour (Line 3). These unit costs are then multiplied by the Max Day and Max Hour fire capacity demands to allocate the share of each cost category's revenue requirement to fire capacity demand (Line 6). These are then divided across public and private fire protection according to the percentages derived in Table 6-17. The total private fire protection costs (Column D, Line 8) will be recovered via the stand-by charges from private fireline services.

Table 6-17: Public and Private Fire Capacity Costs

	Fire Capacity Costs		% Fire Capacity	Max Day	Max Hour	Total	Notes
			A (Table 6-16)	B	C	D = B + C	
1	Allocated Costs			$3,773,138	$487,029		*Table 6-12*
2	Extra Capacity Demand	HCF/day		13,753.5	12,135.5		*Table 6-13, [5] & [8]*
3	Unit Cost of Service			**$274.34**	**$40.13**		*[1] / [2]*
4				per hcf	per hcf		
5	Fire Capacity Demand			1,283 hcf	6,417 hcf		*Table 6-15*
6	**Fire Capacity**			**$352,094**	**$257,536**	**$609,630**	*[1] x [3]*
7	Public Fire Protection		88.6%	$312,093	$228,278	**$540,371**	*[A7] x [6]*
8	Private Fire Protection		11.4%	$40,001	$29,258	**$69,259**	*[A8] x [6]*

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Table 6-18 shows the revenue requirement allocations to the different cost categories, now incorporating the direct fire protection allocations calculated above (Row 8). Direct fire protection is also allocated to private fire protection proportionally based on the fire demand shown in Table 6-16. The shown numbers might not add up exactly due to rounding.

Table 6-18: Reallocated FY 2019 Revenue Requirements

	Cost Categories	Revenue Requirement *A (Table 6-12)*	Private Fire Protection Reallocation *B (Table 6-17)*	Reallocated Net Revenue Requirement *C = A - B*
1	Water Supply	$11,381,806		**$11,381,806**
2	RW Supply	$490,454		**$490,454**
3	RW Pump Station	$100,063		**$100,063**
4	Base Fixed	$4,438,986		**$4,438,986**
5	Max Day	$3,773,138	$40,001	**$3,733,138**
6	Max Hour	$487,029	$29,258	**$457,771**
7	Meter Services	$3,239,874		**$3,239,874**
8	Billing & CS	$1,065,967		**$1,065,967**
9	Gen & Admin	$0		**$0**
10	Conservation	$1,288,157		**$1,288,157**
11	Direct Fire Protection	$482,149	$54,776[10]	**$427,373**
12	**Total**	**$26,747,623**	**$124,034**	**$26,623,589**

According to the M1 Manual, the cost-of-service approach to setting water rates results in the proportionate distribution of costs to each customer or customer class based on the proportional costs that each class incurs. A dual set of fees—fixed and variable—is an extension of this cost causation theory. The components of water system costs for regular water services shown in Table 6-19 are recovered through a combination of the fixed service charge and usage charges.

[10] Portion of direct fire protection cost serving private fire services (11.4%, from Table 6-16)

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Table 6-19: FY 2019 Revenues Requirement Allocated to Rate Components

Cost Categories	FY 2019 Net Revenues from Rates *A (Table 6-18)*	Fixed Service Charges *B*	Water Usage Charges *C*	RW Volumetric Charges *D*
Water Supply	**$11,381,806**		$11,381,806	
RW Supply	**$490,454**			$490,454
RW Pump Station	**$100,063**			$100,063
Base Fixed	**$4,438,986**	$88,780	$4,350,206	
Max Day	**$3,733,138**	$3,733,138		
Max Hour	**$457,771**	$457,771		
Meter Services	**$3,239,874**	$3,239,874		
Billing & Customer Service	**$1,065,967**	$1,065,967		
Conservation	**$1,288,157**		$1,288,157	
Direct Fire Protection	**$427,373**	$427,373		
Total	**$26,623,589**	**$9,012,902**	**$17,020,170**	**$590,517**

Table 6-19 shows the portion of each cost component collected from the fixed service charge and the usage charge. The entirety of water supply and conservation costs are recovered from water usage charges. To enhance revenue stability, Raftelis recommends that the City increase its fixed charges to 34 percent of rate revenues (the City currently collects 31 percent from fixed charges). To achieve that, a very small portion of base fixed costs (around 2%) is allocated to fixed service charge component and the remaining 98% will be collected through water usage charges. Meter services and billing and customer service will be collected in the corresponding components of fixed service charges. RW supply costs will be 100% passthrough to RW customers via RW supply rates. Costs associated with the RW pump station will be collected through usage pumped through the pump stations.

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7. WATER RATES DEVELOPMENT

7.1 PROPOSED MONTHLY FIXED SERVICE CHARGES

The monthly fixed service charge recognizes the fact that even when a customer does not use water, the City incurs fixed costs for the maintenance of the meters, the ability or readiness to serve each connection, and/or the billing and customer service provided to each connection.

Table 7-1 shows the calculation of the cost component unit charges that form the components of the fixed service charge. Line 1 lists each component's allocated revenue requirement, derived in Table 6-19. Line 2 defines the units used to allocate these costs equitably across the City's customers. Billing & Customer Service costs are divided by the total meters served as all accounts are served equally by this component. Meter Service and Capacity costs are divided by EMUs because customers' demand on these components is proportional to their meter capacity. Capacity costs include the Max Day and Max Hour, Direct Fire Protection, and a portion of base fixed costs to be recovered by fixed service charges for water meters only (shown in Table 6-19). The calculated rates in Line 4 are rounded up to the nearest cent.

Table 7-1: Development of Unit Monthly Fixed Service Charge

Line No.	Fixed Charge Components	Billing & Customer Service	Meter Service	Capacity
		A	B	C
1	Revenue Requirements (Table 6-19, column B)	$1,065,967	$3,239,874	$4,707,061[11]
2	Monthly Units of Service (Table 6-14 [35])	26,702 Meters[12]	42,965 EMUs[13]	42,116 EMUs[14]
3	Annual Units of Service ([2] x 12 months)	320,424 monthly bills	515,582 EMUs/yr	505,396 EMUs/yr
4	**Monthly Unit Cost** ([1] / [3], rounded up)	**$3.33**	**$6.29**	**$9.32**

The unit cost components derived in Table 7-1 are added together to form the Fixed Service Charge. As described above, all customers pay the same Billing and Customer Service cost (Column A). The Meter Service and Capacity unit costs are multiplied by the meter ratios (Columns B and C) to proportionally escalate these costs according to capacity in comparison to a 3/4 meter, as described earlier. The rate components in Columns C, D, and E are added together in Column F to form the revised Fixed Service Charges by Meter Size in Table 7-3.

[11] Including Base Fixed, Max Day, Max Hour, Direct Fire Protection costs from Table 6-19, column B
[12] Including Water, RW and Private Fire meters
[13] Water and RW meters and 5/8 private submeters
[14] Water meters only

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Private Fire Service charges, shown in Table 7-2, are calculated using the revenue requirements from Table 6-18 and private fire demand units (FDUs) from Table 6-16. These costs are calculated as those in the above table by dividing the Peaking and Direct Fire total costs by the total Fire Demand Units (FDU), resulting in the unit cost of service shown in Line 4.

Table 7-2: Development of Unit Fireline Stand-by Charge

	Private Fire Service Charges	Peaking	Direct Fire
1	Revenue Requirements (Table 6-18)	$69,258	$54,776
2	Units of Service (Table 6-16, [F16])	45,129 FDUs	45,129 FDUs
3	Annual Fire Units ([2] x 12])	541,544 FUs	541,544 FUs
4	**Unit Cost of Service ([1] / [3])**	**$0.128**	**$0.101**

As shown in Table 7-3, Billing and Customer Service is charged equally to potable water customers. In addition, these customers pay the Peaking and Direct Fire costs in proportion to their meter size. These components in Columns C, D, and E are added together to form the revised Private Fire Monthly Fixed Service Charges in Column F in Table 7-3.

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Table 7-3: FY 2019 Revised Monthly Fixed Service Charges (FSC)

Meter Size	FY 2019 No. of Meters A	Meter Ratios B (Table 6-14)	Billing & CS C = $3.33	Meter Service D = $6.29x B	Capacity E =$9.32 x B	FY 2019 Revised FSC F = C + D + E
Water						
5/8	16,545	1.00	$3.33	$6.29	$9.32	**$18.94**
¾	4	1.00	$3.33	$6.29	$9.32	**$18.94**
1	7,585	1.67	$3.33	$10.49	$15.54	**$29.36**
1 ½	551	3.33	$3.33	$20.97	$31.07	**$55.37**
2	1,430	5.33	$3.33	$33.55	$49.71	**$86.59**
3	32	14.50	$3.33	$91.21	$135.14	**$229.68**
4	51	25.00	$3.33	$157.25	$233.00	**$393.58**
6	15	53.33	$3.33	$335.47	$497.07	**$835.87**
8	8	93.33	$3.33	$587.07	$869.87	**$1,460.27**
10	0	140.00	$3.33	$880.60	$1,304.80	**$2,188.73**
12	1	176.67	$3.33	$1,111.24	$1,646.54	**$2,761.11**

Private Fire Meter Size	FY 2019 No of Meters *A*	Fire Demand Ratio[15] *B (Table 6-16)*	Billing & CS *C = $3.33*	Meter Service *D = $6.29*	Peaking *E = $0.128 x B*	Direct Fire *F = $0.101 x B*	FY 2019 Revised *G = C + D + E*
5/8	6	0.29	$3.33	$6.29	$0.04	$0.03	**$9.69**
1	10	1.00	$3.33	$6.29	$0.13	$0.11	**$9.86**
1 ½	0	2.90	$3.33	$6.29	$0.38	$0.30	**$10.30**
2	20	6.19	$3.33	$6.29	$0.80	$0.63	**$11.05**
2 ½	2	11.13	$3.33	$6.29	$1.43	$1.13	**$12.18**
3	1	17.98	$3.33	$6.29	$2.30	$1.82	**$13.74**
4	181	38.32	$3.33	$6.29	$4.91	$3.88	**$18.41**
6	157	111.31	$3.33	$6.29	$14.24	$11.26	**$35.12**
8	83	237.21	$3.33	$6.29	$30.34	$24.00	**$63.96**
10	2	426.58	$3.33	$6.29	$54.56	$43.15	**$107.33**
12	0	689.04	$3.33	$6.29	$88.13	$69.70	**$167.45**

Table 7-4 compares the current FY 2019 fixed charges for fire and potable water customers with the FY 2019 charges revised based on the new cost of service analysis (Column B) and the proposed FY 2020 rates. The proposed FY 2020 charges escalate the FY 2019 revised charges by 7.40 percent. Column D shows the dollar impact of the proposed FY 2020 charges over the current FY 2019 charges. Note that the City currently charges $1.00 per unit for each residential customer with more than 1 dwelling unit. It also charges $0.50 per non-residential unit. Since there are minimal non-residential units and Raftelis recommends no longer assessing these charges on residential and non-

[15] Fire Demand Ratios are different than Meter Capacity Ratios. The Fire Demand Ratios are calculated using the industry standards based on the formulas shown in Table 6-16

residential units, we are not including the minimal revenues generated by the non-residential units in this Study.

Table 7-4: FY 2020 Proposed Monthly Fixed Service Charges (FSC)

Water Proposed Rev Adjustments Meter Size	FY 2019 Current A	FY 2019 Revised B (Table 7-3)	FY 2020 Proposed 7.40% C = B x 1.074	$ Impacts D = C - A
Water				
5/8	$17.27	$18.94	**$20.35**	$3.08
¾	$17.27	$18.94	**$20.35**	$3.08
1	$28.79	$29.36	**$31.54**	$2.75
1 ½	$57.58	$55.37	**$59.47**	$1.89
2	$92.12	$86.59	**$93.00**	$0.88
3	$172.73	$229.68	**$246.68**	$73.95
4	$287.88	$393.58	**$422.71**	$134.83
6	$575.76	$835.87	**$897.73**	$321.97
8	$921.22	$1,460.27	**$1,568.33**	$647.11
10	$1,655.90	$2,188.73	**$2,350.70**	$694.80
12	$2,663.48	$2,761.11	**$2,965.44**	$301.96
Per Dwelling Unit Charge				
Residential	$1.00	N/A	**N/A**	-$1.00
Private Fire **Meter Size**	**FY 2019 Current** A	**FY 2019 Revised** B (Table 7-3)	**FY 2020 Proposed** C = B x 1.074	**$ Impacts** D = C - A
5/8	$3.13	$9.69	**$10.41**	$7.28
1	$5.00	$9.86	**$10.59**	$5.59
1 ½	$7.50	$10.30	**$11.07**	$3.57
2	$10.00	$11.05	**$11.87**	$1.87
2 ½	$12.50	$12.18	**$13.09**	$0.59
3	$15.00	$13.74	**$14.76**	-$0.24
4	$20.00	$18.41	**$19.78**	-$0.22
6	$30.00	$35.12	**$37.72**	$7.72
8	$40.00	$63.96	**$68.70**	$28.70
10	$50.00	$107.33	**$115.28**	$65.28
12	$60.00	$167.45	**$179.85**	$119.85

7.2 PROPOSED WATER USAGE CHARGES

Water usage charges are comprised of those related to usage demand on the system such as water supply costs, water service costs, including remaining base fixed costs, and conservation program costs, as detailed numerically in Table 6-19. The components of the water usage charge are defined in Table 7-5.

Table 7-5: Water Usage Component Descriptions

Rate Component	Description
Water Supply	Recovers water purchase costs (Table 6-19, [C1])
Water Service	Recovers remaining water system costs associated with delivering water, such as remaining base fixed costs (Table 6-19 [C4]) and conservation costs (Table 6-19 [C9])

Table 7-6 shows the water usage charge calculations using the allocated FY 2019 revenue requirements from Table 6-19 and FY 2019 water sales from Table 6-13. The calculated rate is rounded up to the nearest cent. The water usage charge will be assessed to all potable water usage including City parks and non-parks.

Table 7-6: FY 2019 Water Usage Charge Calculations

Line No.		FY 2019 Water Usage Charge	Notes
1	**Allocated Rev Requirements**	**$17,020,170**	*Table 6-19*
2	Units of Service	5,905,925 HCF	*Table 6-13*
3	**Adjusted Unit Cost of Service**	**$2.89**	***[1] / [2], rounded up***

The recommended revised charges are uniform across all customer classes (Column B). As with the Monthly Fixed Service Charges, the revised charges are escalated by 7.40 percent to arrive at the proposed FY 2020 charges. Column D again provides the impacts of the proposed FY 2020 charges over the current FY 2019 charges.

Table 7-7: FY 2020 Proposed Water Usage Charges

Proposed Rev Adjustments	FY 2019 Current	FY 2019 Revised	FY 2020 Proposed 7.40%	$ Impacts
	A	B (Table 7-6)	C = B x 1.074	D = C - A
Potable Water	$3.08	$2.89	**$3.11 / HCF**	$0.03

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7.3 PROPOSED RECYCLED WATER RATES

The Monthly Fixed Service Charges for the Recycled Water utility are calculated similarly to the potable water charges. Table 7-8 shows the Billing & Customer Service and Meter Service components. These customers pay the same Billing & Customer Service component as the potable water customers as the type of water service does not affect these costs. Column D multiplies the Meter Service component by the meter ratio for each meter size in comparison to a 3/4" meter, resulting in the revised FY 2019 Recycled Water Monthly Fixed Service Charges by meter size (Column E).

Table 7-8: FY 2019 Revised Monthly Fixed Service Charges (FSC) for RW Services

RW Meter Size	FY 2019 No. of Meters A (Table 5-5)	Meter Ratios B (Table 6-14)	Billing & CS C = $3.33	Meter Service D = $6.29x B	FY 2019 Revised FSC E = C + D
5/8	0	1.00	$3.33	$6.29	**$9.62**
¾	0	1.00	$3.33	$6.29	**$9.62**
1	0	1.67	$3.33	$10.49	**$13.82**
1 ½	0	3.33	$3.33	$20.97	**$24.30**
2	10	5.33	$3.33	$33.55	**$36.88**
3	3	14.50	$3.33	$91.21	**$94.54**
4	2	25.00	$3.33	$157.25	**$160.58**
6	1	53.33	$3.33	$335.47	**$338.80**
8	2	93.33	$3.33	$587.07	**$590.40**

Table 7-9 compares the current and revised FY 2019 RW charges along with the proposed FY 2020 RW charges and the dollar impact of the FY 2020 charges over the current FY 2019 charges.

Table 7-9: FY 2020 Proposed Monthly Fixed Service Charges (FSC) for RW Services

RW Proposed Rev Adjustments Meter Size	FY 2019 Current A	FY 2019 Revised B (Table 7-8)	FY 2020 Proposed 7.40% C = B x 1.074	$ Impacts D = C - A
5/8	$20.47	$9.62	**$10.34**	-$10.13
¾	$20.47	$9.62	**$10.34**	-$10.13
1	$34.13	$13.82	**$14.85**	-$19.28
1 ½	$68.25	$24.30	**$26.10**	-$42.15
2	$109.19	$36.88	**$39.61**	-$69.58
3	$204.75	$94.54	**$101.54**	-$103.21
4	$341.24	$160.58	**$172.47**	-$168.77
6	$682.48	$338.80	**$363.88**	-$318.60
8	$1,091.97	$590.40	**$634.09**	-$457.88

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RW usage charges are comprised of RW supply costs and RW pump station costs, as detailed numerically in Table 6-19. These components are defined in Table 7-10.

Table 7-10: RW Usage Component Descriptions

Rate Component	Description
RW Supply	Recovers RW purchase costs, 100% pass-through from OCWD
RW Pump Station	Recovers costs associated with operating, maintaining and replacing the pump stations to service certain RW meters

Table 7-11 provides the calculation of the recycled water usage charges. The water units used for the Recycled Water usage charge represent the total recycled water demanded by customers. The units of service for the RW Pump Station costs reflect only the recycled water that passes through the pump station to higher elevation customers.

Table 7-11: FY 2019 RW Usage Charge Calculations

Line No.		FY 2019 RW Charge	FY 2019 RW Pump Station	Notes
1	**Allocated Rev Requirements**	**$490,454**[16]	**$100,063**	*Table 6-19*
2	Units of Service	247,804 HCF	208,262 HCF	*Table 5-5, [B11] & [B13]*
3	**Adjusted Unit Cost of Service**	**$1.98**	**$0.49**	***[1] / [2], rounded up***

Table 7-12 compares the current usage charge to that based on the updated cost of service conducted in this study and the FY 2020 charges, which increase the revised FY 2019 charges by 7.40 percent.

Table 7-12: FY 2020 Proposed RW Usage Charges

Proposed Rev Adjustments	FY 2019 Current	FY 2019 Revised	FY 2020 Proposed 7.40%	$ Impacts
	A	B (Table 7-11)	C	D = C - A
RW Usage *(100% pass-through from OCWD, Table 5-10)*	$1.92	$1.98	**$2.05**	$0.13
RW Pump Station Usage	$0.39	$0.49	**$0.53**[17]	$0.14

[16] Also from Table 5-14, RW supply costs
[17] Increased by the proposed revenue adjustment 7.4% for FY 2020 from the FY 2019 Revised rates

7.4 5-YEAR PROPOSED RATES

Based on the projections of the financial plan and defined in Table 5-13, we propose that the charges increase by 7.4 percent annually through FY 2024 so that the City can meet its O&M and capital costs while maintaining adequate reserves. The revised FY 2019 rates and charges described in the previous section are escalated according to this rate adjustment and shown in Table 7-13, Table 7-14, Table 7-15, and Table 7-16 for Water, Private Fire Protection and RW services, respectively. Note that the City currently charges $1.00 per unit for each residential customer with more than 1 dwelling unit. It also charges $0.50 per non-residential unit. Since there are minimal non-residential units and Raftelis recommends no longer assessing these charges on residential and non-residential units.

Table 7-13: 5-Year Proposed Water Monthly Fixed Service Charges

Monthly Fixed Service Charges Proposed Revenue Adjustments (Table 5-13)	FY 2019 Current	FY 2020 7.4% Proposed	FY 2021 7.4% Proposed	FY 2022 7.4% Proposed	FY 2023 7.4% Proposed	FY 2024 7.4% Proposed
Water Services						
5/8	$17.27	**$20.35**	$21.86	$23.48	$25.22	$27.09
¾	$17.27	**$20.35**	$21.86	$23.48	$25.22	$27.09
1	$28.79	**$31.54**	$33.88	$36.39	$39.09	$41.99
1 ½	$57.58	**$59.47**	$63.88	$68.61	$73.69	$79.15
2	$92.12	**$93.00**	$99.89	$107.29	$115.23	$123.76
3	$172.73	**$246.68**	$264.94	$284.55	$305.61	$328.23
4	$287.88	**$422.71**	$454.00	$487.60	$523.69	$562.45
6	$575.76	**$897.73**	$964.17	$1,035.52	$1,112.15	$1,194.45
8	$921.22	**$1,568.33**	$1,684.39	$1,809.04	$1,942.91	$2,086.69
10	$1,655.90	**$2,350.70**	$2,524.66	$2,711.49	$2,912.15	$3,127.65
12	$2,663.48	**$2,965.44**	$3,184.89	$3,420.58	$3,673.71	$3,945.57
Per Dwelling Unit Charge						
Residential	$1.00	**N/A**	N/A	N/A	N/A	N/A
Non-Residential	$0.50	**N/A**	N/A	N/A	N/A	N/A

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Table 7-14: 5-Year Proposed Private Fire Protection Monthly Service Charges

Proposed Revenue Adjustments (Table 5-13)	FY 2019 Current	FY 2020 7.4% Proposed	FY 2021 7.4% Proposed	FY 2022 7.4% Proposed	FY 2023 7.4% Proposed	FY 2024 7.4% Proposed
Private Fire						
5/8	$3.13	$10.41	$11.19	$12.02	$12.91	$13.87
1	$5.00	$10.59	$11.38	$12.23	$13.14	$14.12
1 ½	$7.50	$11.07	$11.89	$12.77	$13.72	$14.74
2	$10.00	$11.87	$12.75	$13.70	$14.72	$15.81
2 ½	$12.50	$13.09	$14.06	$15.11	$16.23	$17.44
3	$15.00	$14.76	$15.86	$17.04	$18.31	$19.67
4	$20.00	$19.78	$21.25	$22.83	$24.52	$26.34
6	$30.00	$37.72	$40.52	$43.52	$46.75	$50.21
8	$40.00	$68.70	$73.79	$79.26	$85.13	$91.43
10	$50.00	$115.28	$123.82	$132.99	$142.84	$153.42
12	$60.00	$179.85	$193.16	$207.46	$222.82	$239.31

Table 7-15: 5-Year Proposed Water Usage Charges

Proposed Revenue Adjustments (Table 5-13)	FY 2019 Current	FY 2020 7.4% Proposed	FY 2021 7.4% Proposed	FY 2022 7.4% Proposed	FY 2023 7.4% Proposed	FY 2024 7.4% Proposed
Potable Water	$3.08	$3.11	$3.35	$3.60	$3.87	$4.16

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Table 7-16: 5-Year Proposed RW Rates

RW Services Proposed Revenue Adjustments (Table 5-13)	FY 2019 Current	FY 2020 7.4% Proposed	FY 2021 7.4% Proposed	FY 2022 7.4% Proposed	FY 2023 7.4% Proposed	FY 2024 7.4% Proposed
RW Monthly Fixed Service Charges						
5/8	$20.47	$10.34	$11.11	$11.94	$12.83	$13.78
¾	$20.47	$10.34	$11.11	$11.94	$12.83	$13.78
1	$34.13	$14.85	$15.95	$17.14	$18.41	$19.78
1 ½	$68.25	$26.10	$28.04	$30.12	$32.35	$34.75
2	$109.19	$39.61	$42.55	$45.70	$49.09	$52.73
3	$204.75	$101.54	$109.06	$117.14	$125.81	$135.12
4	$341.24	$172.47	$185.24	$198.95	$213.68	$229.50
6	$682.48	$363.88	$390.81	$419.73	$450.80	$484.16
8	$1,091.97	$634.09	$681.02	$731.42	$785.55	$843.69
Volumetric Charge ($/HCF)						
RW Usage Charge *(100% Pass-through from OCWD)*	$1.92	$2.05	$2.12	$2.13	$2.21	$2.29
RW Pump Station Charge	$0.39	$0.53	$0.57	$0.62	$0.67	$0.72

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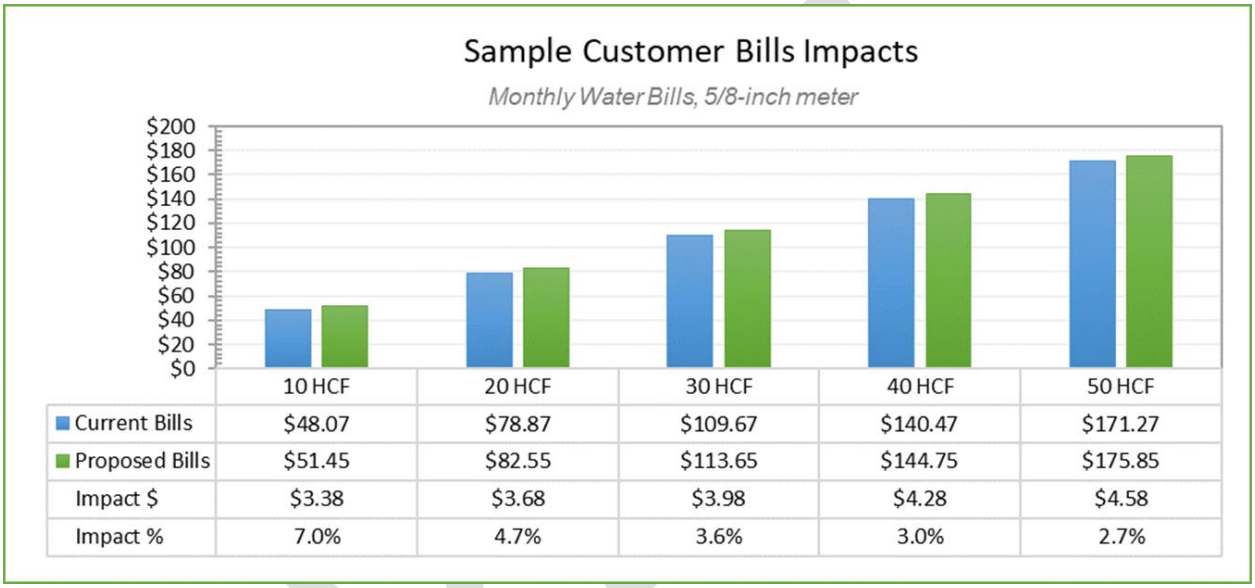
8. CUSTOMER IMPACT ANALYSIS

Before implementing any rate structure recommendations, it is important to understand how the proposed rate structure will impact the City's customers. Customer impact analysis is a powerful tool which can be used to assist elected officials in making informed decisions. Figure 8-1 shows that, under the proposed rates, a typical residential customer with 5/8-inch meters will see an approximate increase of $3.38 to $4.58 in their monthly water bills with usage ranging from 10 hcf to 50 hcf.

Figure 8-1: Typical Residential Customer Bill Impacts



	10 HCF	20 HCF	30 HCF	40 HCF	50 HCF
Current Bills	$48.07	$78.87	$109.67	$140.47	$171.27
Proposed Bills	$51.45	$82.55	$113.65	$144.75	$175.85
Impact $	$3.38	$3.68	$3.98	$4.28	$4.58
Impact %	7.0%	4.7%	3.6%	3.0%	2.7%

APPENDIX

Appendix 1 – O&M Inputs, Forecast and Functionalization and O&M Cost Allocations

Source: FY 2019 and FY 2020 operating budgets for Water Fund provided on May 14, 2019

OBJ		Description	Escalated by	FY 2017 Actual	FY 2018 Actual	FY 2019 Est. Actual	FY 2020 Budget	FY 2021 Projected	FY 2022 Projected	FY 2023 Projected	FY 2024 Projected	FY 2025 Projected	FY 2026 Projected	FY 2027 Projected	FY 2028 Projected	FY 2029 Projected	Functions
		SALARIES															
711001	Salaries & Benefits	SALARIES MISCELLANEOUS	Salary	$2,641,547	$2,671,979	$2,906,645	$2,977,804	$3,052,249	$3,128,555	$3,206,769	$3,286,939	$3,369,112	$3,453,340	$3,539,673	$3,628,165	$3,718,869	G&A
711003	Salaries & Benefits	SALARIES PART TIME	Salary	$66,758	$39,748	$44,536	$102,930	$105,503	$108,141	$110,844	$113,615	$116,456	$119,367	$122,351	$125,410	$128,545	G&A
711004	Salaries & Benefits	SALARIES SEASONAL	Salary	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	G&A
712003	Salaries & Benefits	NIGHT DIFFERENTIAL MISC	Salary	$0	$36	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	G&A
712004	Salaries & Benefits	CERTIFICATION PAY	Salary	$22,979	$22,798	$18,481	$23,995	$24,595	$25,210	$25,840	$26,486	$27,148	$27,827	$28,523	$29,236	$29,966	G&A
712006	Salaries & Benefits	BILINGUAL PAY	Salary	$2,731	$4,190	$1,800	$1,800	$1,845	$1,891	$1,938	$1,987	$2,037	$2,087	$2,140	$2,193	$2,248	G&A
713001	Salaries & Benefits	OVERTIME MISC & 1/2 TIME	Salary	$61,660	$79,870	$60,000	$63,209	$64,789	$66,409	$68,069	$69,771	$71,515	$73,303	$75,136	$77,014	$78,939	G&A
713007	Salaries & Benefits	DUTY PAY	Salary	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	G&A
713008	Salaries & Benefits	CALL BACK PAY	Salary	$75,569	$56,852	$50,000	$51,500	$52,788	$54,107	$55,460	$56,846	$58,268	$59,724	$61,217	$62,748	$64,316	G&A
713009	Salaries & Benefits	STAND BY PAY	Salary	$78,091	$79,313	$82,500	$84,975	$87,099	$89,277	$91,509	$93,797	$96,141	$98,545	$101,009	$103,534	$106,122	G&A
714001	Salaries & Benefits	LUMP SUM PAYMENT	Salary	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	G&A
714006	Salaries & Benefits	PAID COMP/SPILLOVER PAY	Salary	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	G&A
721001	Salaries & Benefits	CAFETERIA ALLOWANCE FULLTIME	Benefits	$631,508	$648,533	$752,490	$741,139	$770,785	$801,616	$833,681	$867,028	$901,709	$937,777	$975,288	$1,014,300	$1,054,872	G&A
721002	Salaries & Benefits	CAFETERIA ALLOWANCE PART TIME	Benefits	$2,158	$5,712	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	G&A
722001	Salaries & Benefits	PENSION MEMBER CONTRIB MISC	Benefits	$262,599	$266,169	$303,322	$295,970	$307,809	$320,122	$332,926	$346,244	$360,093	$374,497	$389,477	$405,056	$421,258	G&A
723002	Salaries & Benefits	PENSION NORMAL COST MISC	Benefits	$156,153	$159,562	$184,642	$218,845	$227,598	$236,702	$246,170	$256,017	$266,258	$276,908	$287,984	$299,504	$311,484	G&A
723004	Salaries & Benefits	RETIREMENT PART TIME/TEMP	Benefits	$1,230	$93	$0	$3,860	$4,014	$4,175	$4,342	$4,515	$4,696	$4,884	$5,079	$5,282	$5,494	G&A
724001	Salaries & Benefits	EE CONTRIBUTION MISC	Benefits	-$321,968	-$346,462	-$386,636	-$388,305	-$403,837	-$419,991	-$436,791	-$454,262	-$472,433	-$491,330	-$510,983	-$531,422	-$552,679	G&A
725001	Salaries & Benefits	PENSION UAL COST MISC	Benefits	$503,978	$612,859	$656,825	$658,779	$685,130	$712,535	$741,037	$770,678	$801,505	$833,566	$866,908	$901,585	$937,648	G&A
725003	Salaries & Benefits	DISCRETIONARY UAL MISC	Benefits	$225,359	$252,308	$229,172	$211,989	$220,469	$229,287	$238,459	$247,997	$257,917	$268,234	$278,963	$290,122	$301,726	G&A
726002	Salaries & Benefits	ANNUAL OPEB PREMIUM	Benefits	$150,535	$151,174	$150,865	$153,840	$159,994	$166,393	$173,049	$179,971	$187,170	$194,657	$202,443	$210,541	$218,962	G&A
727001	Salaries & Benefits	CAR ALLOWANCE	Benefits	$3,059	$0	$4,800	$4,800	$4,992	$5,192	$5,399	$5,615	$5,840	$6,074	$6,316	$6,569	$6,832	G&A
727003	Salaries & Benefits	CELL PHONE STIPEND	Benefits	$18,789	$17,428	$19,680	$18,720	$19,469	$20,248	$21,057	$21,900	$22,776	$23,687	$24,634	$25,620	$26,644	G&A
727004	Salaries & Benefits	RHS $2.50 CONTRIBUTION	Benefits	$43,520	$44,056	$48,208	$52,700	$54,808	$57,000	$59,280	$61,651	$64,117	$66,682	$69,349	$72,123	$75,008	G&A
727005	Salaries & Benefits	HYBRID CONTRIB DEPT DIRECTOR	Benefits	$1,068	$553	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	G&A
727007	Salaries & Benefits	PAYMENT > ARC	Benefits	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	G&A
727012	Salaries & Benefits	LIFE INSURANCE	Benefits	$3,178	$3,342	$3,465	$3,493	$3,632	$3,778	$3,929	$4,086	$4,249	$4,419	$4,596	$4,780	$4,971	G&A
727013	Salaries & Benefits	EMP ASSISTANCE PROGRAM	Benefits	$706	$661	$685	$690	$718	$747	$776	$808	$840	$873	$908	$945	$982	G&A
727014	Salaries & Benefits	OTHER BENEFITS	Benefits	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	G&A
727015	Salaries & Benefits	UNEMPLOYMENT EXPENSE	Benefits	$0	$1,650	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	G&A
727016	Salaries & Benefits	MEDICARE FRINGES	Benefits	$42,278	$43,990	$54,821	$55,902	$58,138	$60,464	$62,882	$65,398	$68,013	$70,734	$73,563	$76,506	$79,566	G&A
727019	Salaries & Benefits	SURVIVOR BENEFIT	Benefits	$0	$4,424	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	G&A
727020	Salaries & Benefits	DEFERRED COMP CITY CONTRIB	Benefits	$0	$0	$0	$4,201	$4,369	$4,543	$4,725	$4,914	$5,111	$5,315	$5,528	$5,749	$5,979	G&A
728001	Salaries & Benefits	WORKERS' COMP ISF MISC	Benefits	$58,056	$58,056	$155,407	$149,901	$155,897	$162,133	$168,618	$175,363	$182,377	$189,673	$197,259	$205,150	$213,356	G&A
728003	Salaries & Benefits	COMPENSATED ABSENCES	Benefits	$91,849	$98,641	$101,732	$104,151	$108,317	$112,649	$117,155	$121,842	$126,715	$131,784	$137,055	$142,537	$148,239	G&A
729001	Salaries & Benefits	PAYROLL ACCRUAL EXPENSE	Benefits	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	G&A
729015	Salaries & Benefits	CONTRA PENSION EXP (GASB 68)	Benefits	-$219,333	-$124,010	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	G&A
729016	Salaries & Benefits	CONTRA OPEB EXP (GASB 75)	Benefits	$0	-$120,716	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	G&A
		SUBTOTAL SALARIES		**$4,604,056**	**$4,732,810**	**$5,443,440**	**$5,596,886**	**$5,771,169**	**$5,951,182**	**$6,137,126**	**$6,329,204**	**$6,527,631**	**$6,732,626**	**$6,944,418**	**$7,163,244**	**$7,389,349**	

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OBJ		Description	Escalated by	FY 2017 Actual	FY 2018 Actual	FY 2019 Est. Actual	FY 2020 Budget	FY 2021 Projected	FY 2022 Projected	FY 2023 Projected	FY 2024 Projected	FY 2025 Projected	FY 2026 Projected	FY 2027 Projected	FY 2028 Projected	FY 2029 Projected	Functions
		OPERATING															
811004	Other Operating Exp	RENTAL/PROP & EQUIP NOC	General	$1,028	$0	$4,000	$4,000	$4,120	$4,244	$4,371	$4,502	$4,637	$4,776	$4,919	$5,067	$5,219	G&A
811008	Other Operating Exp	SERVICES PROF & TECH NOC	General	$102,438	$215,483	$197,063	$150,343	$154,853	$159,499	$164,284	$169,212	$174,289	$179,517	$184,903	$190,450	$196,164	G&A
811027	Other Operating Exp	SERVICES CITY PRINT CONTRACT	General	$0	$0	$0	$20,470	$21,084	$21,717	$22,368	$23,039	$23,730	$24,442	$25,176	$25,931	$26,709	G&A
811040	Other Operating Exp	MUNICIPAL SVCS STATEMENT EXP	General	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	G&A
811045	Conservation Progra	WATER CONSERVATION SUPPORT	General	$106,808	$0	$218,247	$218,247	$224,794	$231,538	$238,484	$245,639	$253,008	$260,598	$268,416	$276,469	$284,763	Conservation
811049	Meter Related	METER READING SERVICES	General	$293,838	$288,914	$310,787	$311,575	$320,922	$330,550	$340,466	$350,680	$361,201	$372,037	$383,198	$394,694	$406,535	Meter Service
811056	Other Operating Exp	SAFETY TRAINING PROGRAM	General	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	G&A
811057	Other Operating Exp	SCADA TRAINING	General	$0	$0	$0	$150,000	$154,500	$159,135	$163,909	$168,826	$173,891	$179,108	$184,481	$190,016	$195,716	G&A
811058	Other Operating Exp	HAZARDOUS MATERIALS REMOVAL	General	$0	$0	$0	$20,000	$20,600	$21,218	$21,855	$22,510	$23,185	$23,881	$24,597	$25,335	$26,095	Treatment
831001	Other Operating Exp	TELECOMM DATALINES	General	$11,751	$18,924	$15,100	$15,100	$15,553	$16,020	$16,500	$16,995	$17,505	$18,030	$18,571	$19,128	$19,702	G&A
831002	Other Operating Exp	UTILITIES TELEPHONE	General	$20,789	$27,119	$19,000	$24,000	$24,720	$25,462	$26,225	$27,012	$27,823	$28,657	$29,517	$30,402	$31,315	G&A
831003	Other Operating Exp	UTILITIES NATURAL GAS	Utilities	$1,708	$1,565	$2,000	$2,000	$2,100	$2,205	$2,315	$2,431	$2,553	$2,680	$2,814	$2,955	$3,103	G&A
831004	Other Operating Exp	UTILITIES ELECTRICITY	Utilities	$1,213,906	$1,107,230	$1,490,000	$1,490,000	$1,564,500	$1,642,725	$1,724,861	$1,811,104	$1,901,660	$1,996,743	$2,096,580	$2,201,409	$2,311,479	G&A
831005	Other Operating Exp	UTILITIES WATER	Utilities	$4,170	$6,905	$14,935	$25,170	$26,429	$27,750	$29,137	$30,594	$32,124	$33,730	$35,417	$37,188	$39,047	G&A
831006	Other Operating Exp	UTILITIES ELECTRIC VEHICLE PRO	General	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	G&A
841007	Other Operating Exp	SUPPLIES OFFICE NOC	General	$4,974	$3,912	$6,225	$5,500	$5,665	$5,835	$6,010	$6,190	$6,376	$6,567	$6,764	$6,967	$7,176	G&A
841014	Other Operating Exp	SUPPLIES JANITORIAL NOC	General	$10,230	$15,856	$9,000	$9,000	$9,270	$9,548	$9,835	$10,130	$10,433	$10,746	$11,069	$11,401	$11,743	G&A
841015	Other Operating Exp	SPECIAL DEPT SUPPLIES NOC	General	$101,721	$34,652	$75,000	$75,000	$77,250	$79,568	$81,955	$84,413	$86,946	$89,554	$92,241	$95,008	$97,858	G&A
841018	Other Operating Exp	TREATMENT CHEMICALS	Chemicals	$107,022	$94,603	$184,286	$140,000	$142,800	$145,656	$148,569	$151,541	$154,571	$157,663	$160,816	$164,032	$167,313	Treatment
841043	Other Operating Exp	CONCRETE MATERIALS	General	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	G&A
841044	Other Operating Exp	TOOLS INSTRUMENTS ETC	General	$7,091	$16,001	$22,500	$22,500	$23,175	$23,870	$24,586	$25,324	$26,084	$26,866	$27,672	$28,502	$29,357	G&A
841046	Other Operating Exp	SPECIAL DEPT EXPENSE NOC	General	$52	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	G&A
841057	Potable WS Costs	IMPORTED WATER EXP	*Calculated*	$3,895,530	$4,588,695	$4,900,000	$5,000,000	$4,832,969	$5,126,582	$5,366,334	$5,617,660	$5,881,126	$6,157,331	$6,446,900	$6,750,490	$7,068,790	Water Supply
841058	Potable WS Costs	GROUNDWATER EXP	*Calculated*	$4,916,003	$5,903,530	$6,400,000	$7,100,000	$7,212,865	$7,600,757	$8,009,951	$8,441,645	$8,897,109	$9,377,681	$9,884,783	$10,419,915	$10,984,667	Water Supply
841059	RW Supply Costs	RECLAIMED WATER EXPENSE OCWD	*Calculated*	$241,898	$431,915	$396,300	$471,300	$524,399	$526,740	$546,640	$567,709	$589,949	$619,447	$650,419	$682,940	$717,087	RW Supply
841060	Other Operating Exp	OTHER AGENCY FEES	General	$222,209	$168,024	$225,000	$225,000	$231,750	$238,703	$245,864	$253,239	$260,837	$268,662	$276,722	$285,023	$293,574	G&A
841062	Other Operating Exp	STATION OPERATIONS	General	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	G&A
841063	Conservation Progra	WATER CNSRV ACTIVITIES	General	$107,481	$115,909	$204,175	$202,371	$208,442	$214,695	$221,136	$227,770	$234,603	$241,642	$248,891	$256,358	$264,048	Conservation
841073	Other Operating Exp	YARD & PROJECT MATERIALS	General	$18,701	$17,950	$25,500	$25,500	$26,265	$27,053	$27,865	$28,700	$29,561	$30,448	$31,362	$32,303	$33,272	G&A
851001	Other Operating Exp	GENERATOR MAINTENANCE & REPAIR	General	$15,374	$12,754	$13,500	$13,542	$13,948	$14,367	$14,798	$15,242	$15,699	$16,170	$16,655	$17,155	$17,669	G&A
851002	Other Operating Exp	VALVE MAINT PROGRAM	General	$71,423	$86,589	$90,000	$90,000	$92,700	$95,481	$98,345	$101,296	$104,335	$107,465	$110,689	$114,009	$117,430	Pumping
851003	Other Operating Exp	AIR VAC MAINT PROGRAM	General	$20,825	$14,729	$0	$20,000	$20,600	$21,218	$21,855	$22,510	$23,185	$23,881	$24,597	$25,335	$26,095	Pumping
851004	Meter Related	WATER SERVICE M&R	General	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	Meter Service
851005	Meter Related	METER VAULT REPLACEMENT	General	$0	$0	$6,000	$6,000	$6,180	$6,365	$6,556	$6,753	$6,956	$7,164	$7,379	$7,601	$7,829	Meter Service
851007	Other Operating Exp	AUTOMOTIVE FUEL/WASH	General	$54,990	$54,636	$60,000	$60,000	$61,800	$63,654	$65,564	$67,531	$69,556	$71,643	$73,792	$76,006	$78,286	G&A
851010	Other Operating Exp	MAINT & REPAIR EQUIP	General	$5,811	$707	$10,000	$10,000	$10,300	$10,609	$10,927	$11,255	$11,593	$11,941	$12,299	$12,668	$13,048	G&A
851013	Other Operating Exp	PRINTER MAINT/SUPPLIES	General	$4,176	$2,813	$5,000	$5,000	$5,150	$5,305	$5,464	$5,628	$5,796	$5,970	$6,149	$6,334	$6,524	G&A
851016	Other Operating Exp	MAINTENANCE & REPAIR BLDG	General	$10,795	$5,425	$44,812	$44,812	$46,156	$47,541	$48,967	$50,436	$51,949	$53,508	$55,113	$56,767	$58,469	G&A
851033	Other Operating Exp	WELLS & PUMP STA MAINT	General	$71,101	$84,516	$105,977	$85,000	$87,550	$90,177	$92,882	$95,668	$98,538	$101,494	$104,539	$107,675	$110,906	Storage
851034	Other Operating Exp	REGULATING STA MAINT	General	$64,821	$53,933	$55,000	$55,000	$56,650	$58,350	$60,100	$61,903	$63,760	$65,673	$67,643	$69,672	$71,763	G&A
851037	Other Operating Exp	MAINTENANCE & REPAIR NOC	General	$148,367	$150,991	$178,500	$175,611	$180,879	$186,306	$191,895	$197,652	$203,581	$209,689	$215,979	$222,459	$229,133	Distribution
851048	Other Operating Exp	BACKFLOW MAINT & REPAIR	General	$15,405	$3,636	$29,236	$25,000	$25,750	$26,523	$27,318	$28,138	$28,982	$29,851	$30,747	$31,669	$32,619	Distribution

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				Actual	Actual	Est. Actual	Budget	Projected	Projected	Projected	Projected	Projected	Projected	Projected	Projected	Projected	
		OPERATING															
851049	Other Operating Exp	MAINTENANCE SCADA	General	$49,115	$46,905	$47,250	$47,237	$48,654	$50,114	$51,617	$53,166	$54,761	$56,403	$58,096	$59,838	$61,634	G&A
851050	Other Operating Exp	SEWER MANHOLE LINING PRGM	General	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	G&A
851055	Meter Related	WATER METER REPL PROGRAM	General	$339,828	$3,863	$501,618	$218,312	$224,861	$231,607	$238,555	$245,712	$253,083	$260,676	$268,496	$276,551	$284,848	Meter Service
851056	Other Operating Exp	FIRE HYDRANT REPL PROGRAM	General	$68,809	$64,369	$73,092	$70,000	$72,100	$74,263	$76,491	$78,786	$81,149	$83,584	$86,091	$88,674	$91,334	Fire Protectior
851057	Other Operating Exp	CATHODIC PROTECTION PRGM	General	$0	$15,000	$23,000	$23,000	$23,690	$24,401	$25,133	$25,887	$26,663	$27,463	$28,287	$29,136	$30,010	G&A
851058	Meter Related	METER & VALVE CVR PRGM	General	$46,636	$56,800	$106,522	$100,000	$103,000	$106,090	$109,273	$112,551	$115,927	$119,405	$122,987	$126,677	$130,477	Meter Service
851059	Meter Related	METER READING EQUIPT IMPR	General	$3,598	$90	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	Meter Service
851060	Other Operating Exp	WATER QLTY MONTOR PRGM	General	$56,355	$50,904	$75,000	$75,000	$77,250	$79,568	$81,955	$84,413	$86,946	$89,554	$92,241	$95,008	$97,858	Treatment
851061	Other Operating Exp	BIG CNYN RSVR MONITOR PRG	General	$0	$147	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	Storage
851062	Other Operating Exp	UTILITIES FAC MAIN PROGM	General	$139,065	$106,140	$135,883	$138,439	$142,592	$146,870	$151,276	$155,814	$160,489	$165,304	$170,263	$175,370	$180,632	Transmission
851063	Other Operating Exp	WATER TREATMENT PROGRAM	General	$50,561	$54,037	$63,767	$60,000	$61,800	$63,654	$65,564	$67,531	$69,556	$71,643	$73,792	$76,006	$78,286	Treatment
851064	Meter Related	COMMERCIAL METER REPL PRG	General	$68,861	$50,145	$85,000	$70,000	$72,100	$74,263	$76,491	$78,786	$81,149	$83,584	$86,091	$88,674	$91,334	Meter Service
851065	Other Operating Exp	NWP COAST REIMBURSEMENT	General	$114	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	G&A
851067	Other Operating Exp	RECYCLE PUMP STATION MAINT	General	$44,302	$54,070	$10,360	$10,360	$10,671	$10,991	$11,320	$11,660	$12,010	$12,370	$12,741	$13,124	$13,517	RW Pump Sta
851072	Other Operating Exp	SEWER FEES: FIXED + USE	General	$0	$280	$3,789	$3,789	$3,903	$4,020	$4,140	$4,265	$4,392	$4,524	$4,660	$4,800	$4,944	G&A
851073	Other Operating Exp	PUMP & MOTOR REPAIR	General	$0	$0	$0	$60,000	$61,800	$63,654	$65,564	$67,531	$69,556	$71,643	$73,792	$76,006	$78,286	Pumping
861001	Gen & Admin	TRAVEL & MEETINGS NOC	General	$4,258	$290	$4,000	$4,000	$4,120	$4,244	$4,371	$4,502	$4,637	$4,776	$4,919	$5,067	$5,219	G&A
861003	Gen & Admin	TRAINING	General	$6,989	$11,541	$22,374	$30,000	$30,900	$31,827	$32,782	$33,765	$34,778	$35,822	$36,896	$38,003	$39,143	G&A
871001	Gen & Admin	CERT & MEMBERSHIP	General	$2,142	$2,492	$3,500	$3,500	$3,605	$3,713	$3,825	$3,939	$4,057	$4,179	$4,305	$4,434	$4,567	G&A
871002	Gen & Admin	ADVERT & PUB RELATIONS	General	$0	$0	$10,000	$10,000	$10,300	$10,609	$10,927	$11,255	$11,593	$11,941	$12,299	$12,668	$13,048	G&A
871003	Gen & Admin	POSTAGE FREIGHT EXPERSS NOC	General	$63,950	$77,892	$81,882	$81,882	$84,338	$86,869	$89,475	$92,159	$94,924	$97,771	$100,705	$103,726	$106,837	G&A
871004	Gen & Admin	PUBLICATIONS & DUES NOC	General	$200	$200	$5,000	$5,000	$5,150	$5,305	$5,464	$5,628	$5,796	$5,970	$6,149	$6,334	$6,524	G&A
871006	Gen & Admin	UNIFORM EXPENSE	General	$12,704	$8,213	$15,000	$15,000	$15,450	$15,914	$16,391	$16,883	$17,389	$17,911	$18,448	$19,002	$19,572	G&A
871017	Gen & Admin	SOFTWARE LICENSE RENEWAL	General	$27,463	$20,346	$38,530	$37,000	$38,110	$39,253	$40,431	$41,644	$42,893	$44,180	$45,505	$46,870	$48,277	G&A
871018	Gen & Admin	HARDWARE/MONITOR/PRINTER	General	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	G&A
871020	Gen & Admin	PC REPLACEMENT	General	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	G&A
871022	Gen & Admin	SERVICE CHARGE ADMINISTRATIVE	General	$1,487,341	$1,487,341	$1,464,671	$2,240,057	$2,307,258	$2,376,476	$2,447,770	$2,521,203	$2,596,839	$2,674,745	$2,754,987	$2,837,637	$2,922,766	G&A
881001	Gen & Admin	EQUIP MAINT ISF	Capital	$264,636	$260,570	$247,579	$225,278	$232,036	$238,997	$246,167	$253,552	$261,159	$268,994	$277,064	$285,375	$293,937	G&A
881003	Gen & Admin	VEHICLE REPLACE ISF	Capital	$220,308	$228,346	$218,170	$218,170	$224,715	$231,457	$238,400	$245,552	$252,919	$260,506	$268,322	$276,371	$284,662	G&A
881004	Gen & Admin	IT ISF OPERATING CHARGE	Capital	$155,847	$118,356	$162,632	$189,770	$195,463	$201,327	$207,367	$213,588	$219,995	$226,595	$233,393	$240,395	$247,607	G&A
881005	Gen & Admin	IT ISF REPLACEMENT CHARGE	Capital	$34,335	$52,815	$31,937	$41,168	$42,403	$43,675	$44,985	$46,335	$47,725	$49,157	$50,631	$52,150	$53,715	G&A
891001	Gen & Admin	GENERAL INSURANCE	General	$211,768	$211,768	$583,029	$441,183	$454,418	$468,051	$482,093	$496,555	$511,452	$526,796	$542,599	$558,877	$575,644	G&A
891012	Gen & Admin	SETTLEMENTS	Non-Inflated	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	G&A
891021	Gen & Admin	OUTSIDE COUNSEL: SPEC LIT	Non-Inflated	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	G&A
891048	Gen & Admin	UNINSURED CLAIMS CHARGE	Non-Inflated	$0	$0	$0	$127,925	$127,925	$127,925	$127,925	$127,925	$127,925	$127,925	$127,925	$127,925	$127,925	G&A
		SUBTOTAL OPERATING		**$15,231,621**	**$16,510,835**	**$19,330,728**	**$20,843,110**	**$21,115,304**	**$22,082,097**	**$23,043,942**	**$24,051,465**	**$25,106,898**	**$26,218,678**	**$27,383,496**	**$28,604,031**	**$29,883,103**	

OBJ		Description	Escalated by	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	Functions
				Actual	Actual	Est. Actual	Budget	Projected	Projected	Projected	Projected	Projected	Projected	Projected	Projected	Projected	
		CAPITAL															
911001	Capital / Equip Expe	OFFICE EQUIPMENT	Capital	$4,877	$516	$5,000	$5,000	$5,150	$5,305	$5,464	$5,628	$5,796	$5,970	$6,149	$6,334	$6,524	G&A
911014	Capital / Equip Expe	WATER CONSERVATION EQUIP	Capital	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	G&A
911024	Capital / Equip Expe	EQUIPMENT N.O.C.	Capital	$20,131	$6,945	$4,154	$134,154	$138,179	$142,324	$146,594	$150,992	$155,521	$160,187	$164,992	$169,942	$175,041	G&A
911039	Capital / Equip Expe	OFFICE FURNITURE/FIXTURES	Capital	$900	$4,758	$5,000	$5,000	$5,150	$5,305	$5,464	$5,628	$5,796	$5,970	$6,149	$6,334	$6,524	G&A
911042	Capital / Equip Expe	CAP AQUISTN EXP REVERSAL	Non-Inflated	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	G&A
991001	Capital / Equip Expe	TRANSFER OUT	Non-Inflated	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	G&A
992702	Capital / Equip Expe	INTRAFUND XFER TO WATER CAPITA	Non-Inflated	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	G&A
		SUBTOTAL CAPITAL		**$25,908**	**$12,219**	**$14,154**	**$144,154**	**$148,479**	**$152,933**	**$157,521**	**$162,247**	**$167,114**	**$172,127**	**$177,291**	**$182,610**	**$188,088**	
	AP & CC Adjustment	AP & CC Adjustments in Sales of Potable Water Rev	General	$280,700	$304,005	$349,560	$360,047	$370,848	$381,974	$393,433	$405,236	$417,393	$429,915	$442,812	$456,097	$469,779	Billing
		TOTAL OPERATING EXPENSES		**$20,142,285**	**$21,559,869**	**$25,137,881**	**$26,944,198**	**$27,405,799**	**$28,568,185**	**$29,732,021**	**$30,948,151**	**$32,219,036**	**$33,553,346**	**$34,948,017**	**$36,405,982**	**$37,930,320**	

O&M Allocations		Water Service Functions													
	FY 2019	Water Supply	RW Supply	RW Pump Station	Treatment	Transmission	Distribution	Pumping	Storage	Meter Services	Customer Service	Billing	G&A	Conservation	Fire Protection
Fixed Potable WS Costs	$1,805,734	$1,805,734													
Variable Potable WS Costs	$9,494,266	$9,494,266													
RW Supply Costs	$490,454		$490,454												
Salaries & Benefits	$5,443,440	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$5,443,440	$0	$0
Other Operating Expenses	$3,313,775	$0	$0	$10,360	$323,053	$135,883	$207,736	$90,000	$105,977	$0	$0	$0	$2,367,674	$0	$73,092
Conservation Program	$422,422	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$422,422	$0
Meter Related	$1,009,927	$0	$0	$0	$0	$0	$0	$0	$0	$1,009,927	$0	$0	$0	$0	$0
Gen & Admin	$2,888,304	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$2,888,304	$0	$0
Capital / Equip Expenses	$14,154	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$14,154	$0	$0
AP & CC Adjustments in Sales of Potable Water Rev	$349,560	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$349,560	$0	$0	$0
Total	**$25,232,035**	**$11,300,000**	**$490,454**	**$10,360**	**$323,053**	**$135,883**	**$207,736**	**$90,000**	**$105,977**	**$1,009,927**	**$0**	**$349,560**	**$10,713,571**	**$422,422**	**$73,092**

O&M Expenses		Water Cost Components										
Water Service Functions	FY 2019	Water Supply	RW Supply	RW Pump Station	Base Fixed	Max Day	Max Hour	Meter Services	Billing & CS	Gen & Admin	Conservation	Direct Fire Protection
Water Supply	$11,300,000	100%										
RW Supply	$490,454		100%									
RW Pump Station	$10,360			100%								
Treatment	$323,053				54%	46%						
Transmission	$135,883				54%	46%						
Distribution	$207,736				35%	29%	26%					10%
Pumping	$90,000				35%	29%	26%					10%
Storage	$105,977				54%	46%						
Meter Services	$1,009,927							100%				
Customer Service	$0								100%			
Billing	$349,560								100%			
G&A	$10,713,571									100%		
Conservation	$422,422										100%	
Fire Protection	$73,092											100%
Total	**$25,232,035**	**$11,300,000**	**$490,454**	**$10,360**	**$408,421**	**$347,158**	**$77,297**	**$1,009,927**	**$349,560**	**$10,713,571**	**$422,422**	**$102,866**
	TRUE	44.8%	1.9%	0.0%	1.6%	1.4%	0.3%	4.0%	1.4%	42.5%	1.7%	0.4%
O&M w/o WS, RW Supply				0.1%	3.0%	2.6%	0.6%	7.5%	2.6%	79.7%	3.1%	0.8%

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Appendix 2 – Asset List and Functionalization and Capital Cost Allocations

Asset List provided by Joshua Rosenbaum 5/1/19 and revised by City Staff in August 2019

Asset	Description	Status	Tag #	Class Code	Location Description	Date Acquired	Acquired Cost	Est. Useful	Depreciation	Acquired Year	Acquired ENR CCI	Current ENR CCI	OC	RC	OCLD	RCLD	Types
00003004	SAW	A	94-05466	41	UTILITIES, WATER MAINTENA	07/01/93	$15,000	7	$15,000	1993	5,210	11,062	$15,000	$31,848	$0	$0	Gen & Admin
00003006	COUNTY RADIO TOWER	A	09-	41	UTILITIES, WATER MAINTENA	06/30/09	$88,459	15	$88,459	2009	8,570	11,062	$88,459	$114,181	$0	$0	Gen & Admin
00003007	HAMMER HEAD PORTABUST w/ FUSION	A	13-00836	41	UTILITIES, WASTEWATER	08/10/12	$31,293	7	$31,293	2012	9,308	11,062	$31,293	$37,190	$0	$0	Gen & Admin
00003501	Water Reducers	A	00003501	72	UTILITIES, ADMINISTRATION	01/01/65	$82,094	75	$82,094	1965	971	11,062	$82,094	$935,246	$0	$0	Water Meters
00003502	Water Meters	A	00003502	72	UTILITIES, ADMINISTRATION	01/01/65	$1,544,913	75	$1,544,913	1965	971	11,062	$1,544,913	$17,600,234	$0	$0	Water Meters
00003503	Water Lines	A	00003503	72	UTILITIES, ADMINISTRATION	06/30/89	$85,114,170	75	$73,988,538	1989	4,615	11,062	$85,114,170	$204,015,807	$11,125,632	$26,667,766	Water Lines (T&D)
00003504	Fire Hydrants	A	00003504	72	UTILITIES, ADMINISTRATION	01/01/65	$728,025	75	$556,615	1965	971	11,062	$728,025	$8,293,937	$171,410	$1,952,768	Fire Hydrants
00003505	Reservoir- Big Canyon	A	00003505	72	UTILITIES, ADMINISTRATION	06/30/59	$35,673,596	75	$35,649,466	1959	797	11,062	$35,673,596	$495,133,399	$24,130	$334,914	Reservoir
00003506	Reservoir - Spyglass	A	00003506	72	UTILITIES, ADMINISTRATION	06/30/72	$418,244	75	$418,244	1972	1,753	11,062	$418,244	$2,639,256	$0	$0	Reservoir
00003507	Reservoir - 16th Street	A	00003507	72	UTILITIES, ADMINISTRATION	06/30/96	$3,800,000	75	$3,800,000	1996	5,620	11,062	$3,800,000	$7,479,644	$0	$0	Reservoir
00003508	Reservoir - Capitalized Interest	A	00003508	72	UTILITIES, ADMINISTRATION	06/30/95	$1,034,462	75	$1,034,462	1995	5,471	11,062	$1,034,462	$2,091,614	$0	$0	Reservoir
00003509	Pumps - 16th Street	A	00003509	72	UTILITIES, ADMINISTRATION	06/30/96	$834,401	75	$480,000	1996	5,620	11,062	$834,401	$1,642,374	$354,401	$697,577	Pumps
00003510	Pumps - Zone 5	A	00003510	72	UTILITIES, ADMINISTRATION	06/30/73	$377,739	75	$377,739	1973	1,895	11,062	$377,739	$2,205,039	$0	$0	Pumps
00003511	Pumps - Zone 4	A	00003511	72	UTILITIES, ADMINISTRATION	06/30/71	$282,709	75	$282,709	1971	1,581	11,062	$282,709	$1,978,069	$0	$0	Pumps
00003512	Pumps - Zone 3	A	00003512	72	UTILITIES, ADMINISTRATION	06/30/71	$376,945	75	$376,945	1971	1,581	11,062	$376,945	$2,637,423	$0	$0	Pumps
00003513	Pumps - Zone 5 (auxiliary)	A	00003513	72	UTILITIES, ADMINISTRATION	06/30/77	$118,114	75	$118,114	1977	2,576	11,062	$118,114	$507,212	$0	$0	Pumps
00003514	Pumps - NB Reclaimed	A	00003514	72	UTILITIES, ADMINISTRATION	06/30/99	$426,000	75	$426,000	1999	6,059	11,062	$426,000	$777,754	$0	$0	RW Pumps
00003515	Pumps - Big Canyon Reclaimed	A	00003515	72	UTILITIES, ADMINISTRATION	06/30/99	$243,000	75	$61,560	1999	6,059	11,062	$243,000	$443,648	$181,440	$331,258	RW Pumps
00003516	Wells - Fountain Valley	A	00003516	72	UTILITIES, ADMINISTRATION	06/30/96	$1,766,990	75	$1,717,857	1996	5,620	11,062	$1,766,990	$3,478,015	$49,133	$96,710	Wells
00003517	Wells - Fountain Valley	A	00003517	72	UTILITIES, ADMINISTRATION	06/30/96	$1,761,271	75	$1,747,256	1996	5,620	11,062	$1,761,271	$3,466,758	$14,015	$27,586	Wells
00003518	Land	A	00003518	19	UTILITIES, ADMINISTRATION	01/01/65	$2,219,450	999	$2,219,450	1965	971	11,062	$2,219,450	$25,284,816	$0	$0	Land
00003519	Warehouse	A	00003519	29	UTILITIES, ADMINISTRATION	06/30/87	$205,793	40	$205,793	1987	4,406	11,062	$205,793	$516,678	$0	$0	Warehouse
00003520	Eastbluff/Bonita Creek Recycled Water -	A	00003520	29	UTILITIES, ADMINISTRATION	06/30/11	$482,603	50	$482,603	2011	9,070	11,062	$482,603	$588,595	$0	$0	RW Pumps
10000194	SERVER	A	15-00483	45	PW, GEN SVC, ADMINISTRATIOI	05/22/15	$11,279	3	$11,279	2015	10,035	11,062	$11,279	$12,434	$0	$0	Gen & Admin
10000195	SERVER	A	15-00482	45	PW, GEN SVC, ADMINISTRATIOI	05/22/15	$11,279	3	$11,279	2015	10,035	11,062	$11,279	$12,434	$0	$0	Gen & Admin
10001237	CITY RADIO TOWER	A	10001237	46	MUNICIPAL OPERATIONS NOC	01/31/17	$68,743	50	$68,743	2017	10,737	11,062	$68,743	$70,824	$0	$0	Gen & Admin
10001238	CITY RADIO TOWER	A	10001238	46	MUNICIPAL OPERATIONS NOC	01/31/17	$21,371	50	$21,371	2017	10,737	11,062	$21,371	$22,018	$0	$0	Gen & Admin
10001253	WIP - LIDO VILLAGE WATER MAIN REPLCI	A	10001253	87	PUBLIC WORKS DPT BAY D, 2NI	06/30/17	$2,060,033	999	$267,397	2017	10,737	11,062	$2,060,033	$2,122,388	$1,792,636	$1,846,897	Water Lines (T&D)
10001779	WIP - BIG CANYON RESERVOIR METER VA	A	10001779	87	PUBLIC WORKS DPT BAY D, 2NI	06/30/18	$1,630,208	999	$1,630,208	2018	11,062	11,062	$1,630,208	$1,630,208	$0	$0	Reservoir

Asset Group	OC	RC	OCLD	RCLD	RC	Water Supply	RW Supply	RW Pump Station	Treatment	Transmission	Distribution	Pumping	Storage	Meter Services	Customer Service	Billing	G&A	Conservation	Fire Protection
Water Meters	$1,627,007	$18,535,480	$0	$0	**$18,535,480**									100%					
Fire Hydrants	$728,025	$8,293,937	$171,410	$1,952,768	**$8,293,937**														100%
Water Lines (T&D)	$87,174,203	$206,138,195	$12,918,268	$28,514,664	**$206,138,195**					50%	50%								
Reservoir	$42,556,510	$508,974,120	$24,130	$334,914	**$508,974,120**								100%						
Pumps	$1,989,908	$8,970,117	$354,401	$697,577	**$8,970,117**							100%							
Wells	$3,528,261	$6,944,773	$63,148	$124,296	**$6,944,773**	100%													
Land	$2,219,450	$25,284,816	$0	$0	**$25,284,816**												100%		
Warehouse	$205,793	$516,678	$0	$0	**$516,678**												100%		
RW	$0	$0	$0	$0	**$0**			100%											
RW Pumps	$1,151,603	$1,809,997	$181,440	$331,258	**$1,809,997**			100%											
Gen & Admin	$247,426	$300,930	$0	$0	**$300,930**												100%		
Total Water Asset Value	**$141,428,186**	**$785,769,042**	**$13,712,797**	**$31,955,476**	**$785,769,042**	**$6,944,773**	**$0**	**$1,809,997**	**$0**	**$103,069,098**	**$103,069,098**	**$8,970,117**	**$508,974,120**	**$18,535,480**	**$0**	**$0**	**$26,102,423**	**$0**	**$8,293,937**

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Asset Functions	RC	Water Supply	RW Supply	RW Pump Station	Base Fixed	Max Day	Max Hour	Meter Services	Billing & CS	Gen & Admin	Conservation	Direct Fire Protection
Water Supply	$6,944,773	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
RW Supply	$0	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
RW Pump Station	$1,809,997	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%
Treatment	$0	0%	0%	0%	54%	46%	0%	0%	0%	0%	0%	0%
Transmission	$103,069,098	0%	0%	0%	54%	46%	0%	0%	0%	0%	0%	0%
Distribution	$103,069,098	0%	0%	0%	35%	29%	26%	0%	0%	0%	0%	10%
Pumping	$8,970,117	0%	0%	0%	35%	29%	26%	0%	0%	0%	0%	10%
Storage	$508,974,120	0%	0%	0%	54%	46%	0%	0%	0%	0%	0%	0%
Meter Services	$18,535,480	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%
Customer Service	$0	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%
Billing	$0	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%
G&A	$26,102,423	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%
Conservation	$0	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%
Fire Protection	$8,293,937	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
Total	**$785,769,042**	**$6,944,773**	**$0**	**$1,809,997**	**$369,616,977**	**$314,174,430**	**$29,087,104**	**$18,535,480**	**$0**	**$26,102,423**	**$0**	**$19,497,858**
	TRUE	1%	0%	0.23%	47%	40%	4%	2%	0%	3%	0%	2%

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Appendix 3 – Revenue Requirements Allocations

Revenue Requirements @ Current Rates	FY 2019	Water Supply	RW Supply	RW Pump Station	Base Fixed	Max Day	Max Hour	Meter Services	Billing & CS	Gen & Admin	Conservation	Direct Fire Protection
O&M Expenses	$25,232,035	$11,300,000	$490,454	$10,360	$408,421	$347,158	$77,297	$1,009,927	$349,560	$10,713,571	$422,422	$102,866
Debt Service	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Rate Funded CIP	$9,256,000	$81,806	$0	$21,320.94	$4,353,919	$3,700,831	$342,633	$218,339	$0	$307,475	$0	$229,676
Reserve Funding	-$7,062,390	$0	$0	$0	-$3,359,500	-$2,855,575	-$264,377	-$168,472	$0	-$237,249	$0	-$177,219
Total Revenue Requirements	**$27,425,645**	**$11,381,806**	**$490,454**	**$31,681**	**$1,402,840**	**$1,192,414**	**$155,553**	**$1,059,795**	**$349,560**	**$10,783,797**	**$422,422**	**$155,323**
Less Revenue Offset												
Pass-through Variable Water Cost Revenues	$0	$0										
Other Operating Revenues	-$402,653	$0	$0	-$310	-$12,235	-$10,399	-$2,315	-$30,253	-$10,471	-$320,933	-$12,654	-$3,081
Non-Operating Revenues	-$275,369	$0	$0	-$212	-$8,367	-$7,112	-$1,584	-$20,690	-$7,161	-$219,482	-$8,654	-$2,107
Total Revenue Offset	**-$678,022**	**$0**	**$0**	**-$523**	**-$20,602**	**-$17,511**	**-$3,899**	**-$50,943**	**-$17,633**	**-$540,415**	**-$21,308**	**-$5,189**
Revenue Requirements @ Current Rates	**$26,747,623**	**$11,381,806**	**$490,454**	**$31,158**	**$1,382,239**	**$1,174,903**	**$151,654**	**$1,008,852**	**$331,927**	**$10,243,382**	**$401,114**	**$150,134**
Gen & Admin Allocation Factors				1%	30%	25%	3%	22%	7%		9%	3%
Allocated Gen & Admin Costs				$68,905	$3,056,747	$2,598,235	$335,375	$2,231,023	$734,040	-$10,243,382	$887,043	$332,014
Adjusted Rev Req	**$26,747,623**	**$11,381,806**	**$490,454**	**$100,063**	**$4,438,986**	**$3,773,138**	**$487,029**	**$3,239,874**	**$1,065,967**	**$0**	**$1,288,157**	**$482,149**

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