

CITY OF CHINO HILLS

WATER AND RECYCLED WATER RATE STUDY

Final Report / December 19, 2017





December 19, 2017

Nadeem Majaj, Public Works Director
City of Chino Hills Public Works Department
14000 City Center Drive
Chino Hills, CA 91709

Subject: Water Rate Study Report

Dear Mr. Majaj,

Raftelis is pleased to provide this Water and Recycled Water Rate Study Report (Study) for the City of Chino Hills (City) Public Works Department (Department) to develop domestic water and recycled water rates with a technically sound methodology which meets the requirements of California Constitution Article XIII D, Section 6 (commonly referred to as "Proposition 218"). In particular, this Study contains thorough details on the following:

- > The legal framework surrounding Proposition 218, particularly with respect to domestic (potable) and recycled water being provided by the same agency.
- > Proposed water budget tier definitions.
- > Equitable cost of service based domestic (potable) and recycled water commodity rates, elevation charges, and monthly fixed charges that meet Proposition 218 requirements.

The Study summarizes the key findings and results related to the implementation of a residential water budget rate structure, development of monthly fixed charges, and commodity and elevation charges for both domestic and recycled water.

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

Sincerely,
RAFTELIS

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

Sanjay Gaur
Vice President

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

Victor Smith
Consultant

Table of Contents

1 1. EXECUTIVE SUMMARY

2 1.1: BACKGROUND OF THE STUDY

2 1.2: OBJECTIVES OF THE STUDY

3 1.3: LEGAL REQUIREMENTS AND RATE SETTING METHODOLOGY

3 1.3.1: California Constitution - Article XIII D, Section 6 (Proposition 218)

4 1.3.2: Cost-Based Rate-Setting Methodology

4 1. Calculate the Revenue Requirement

4 2. Cost of Service Analysis (COS)

4 3. Rate Design and Calculations

4 4. Rate Adoption

5 1.4: RESULTS AND RECOMMENDATIONS

5 1.4.1: Factors Affecting Revenue Adjustments – Domestic Water Utility Fund 500

6 1.4.2: Factors Affecting Rate Adjustments – Recycled Water Financial Plan

6 1.4.3 Proposed Monthly Service Charges

7 1.4.4: Proposed Monthly Fire Service Charges

7 1.4.5: Proposed Commodity Charges

8 1.4.6: Proposed Pumping Charges

8 1.4.7: Proposed Recycled Water Rates

9 2. GENERAL ASSUMPTIONS

10 2.1: INFLATION

10 2.2: PROJECTED WATER DEMAND AND ACCOUNT GROWTH

13 3. RESERVE POLICY

14 3.1: RECOMMENDED POLICIES (DOMESTIC WATER FUND)

15 3.2: RECOMMENDED POLICIES (RECYCLED WATER FUND)

15 4. DOMESTIC WATER FUND 500 FINANCIAL PLAN

16 4.1: DOMESTIC WATER REVENUE REQUIREMENTS

16 4.1.1: Revenues from Current Rates

21 4.1.2: Purchased Water Cost by Source

22 4.1.3: Operations and Maintenance Expenses

22 4.1.4: Projected Domestic Water Capital Improvement Projects

22 4.1.5: Existing Debt Service

23 4.2: STATUS QUO DOMESTIC WATER FINANCIAL PLAN (NO REVENUE ADJUSTMENTS), 2016 STAGE 3 WATER CONSERVATION

24 4.3: PROPOSED DOMESTIC WATER FINANCIAL PLAN

28 4.4: FINANCIAL PLAN INCORPORATING RECYCLED WATER

29 5. RECYCLED WATER ENTERPRISE

30 5.1: RECYCLED WATER REVENUE REQUIREMENTS

30 5.1.1: Recycled Water Revenues from Current Rates

33 5.1.2: Recycled Water Operations and Maintenance Expenses

33 5.1.3: Projected Recycled Water Capital Improvement Projects

33 5.1.4: Existing Recycled Water Debt Service

34 5.2: STATUS QUO RECLAIMED WATER FINANCIAL PLAN (NO REVENUE ADJUSTMENTS)

35 5.3: PROPOSED RECYCLED WATER FINANCIAL PLAN

37 6. WATER COST OF SERVICE ANALYSIS

39 6.1: FUNCTIONALIZATION OF O&M EXPENSES

40 6.2: ALLOCATION OF FUNCTIONALIZED EXPENSES TO DOMESTIC WATER COST COMPONENTS

43 6.3: REVENUE REQUIREMENT - TO BE RECOVERED FROM DOMESTIC WATER RATES

44 6.4: ALLOCATION OF FUNCTIONALIZED EXPENSES TO RATE COMPONENTS

46 7. WATER BUDGET RATE STRUCTURE DEFINITIONS, AND USAGE ANALYSIS

47 7.1: WATER BUDGET DEFINITIONS

48 7.2: PROPOSED WATER BUDGET DEVELOPMENT METHODOLOGY

48 7.2.1: Residential Indoor Budget (Essential Use) Definition

48	7.2.2: Outdoor Budget (Efficient Use) Definition
50	7.3: PROPOSED NEW WATER BUDGET RATE STRUCTURE
50	7.3.1: Residential Indoor Budget (Essential Use) Definition – Tier 1
50	7.3.2: Residential Outdoor Budget (Efficient Use) Definition – Tier 2
50	7.3.3: Inefficient and Excessive Use Definition – Tier 3
51	7.3.1: Agricultural/Commercial/Industrial/Governmental Customers
51	7.4 USAGE ANALYSIS AND USAGE PROJECTIONS
51	7.4.1 Water Budget Usage Analysis
52	7.4.2 Projected Water Budget Use FY 17/18 (Domestic Water)
54	8. WATER RATE DERIVATION AND DESIGN
55	8.1: EXISTING RATE STRUCTURE AND RATES
56	8.2: RATE COMPONENT CALCULATION
57	8.3: PROPOSED DOMESTIC WATER MONTHLY SERVICE CHARGES
61	8.4: PROPOSED MONTHLY FIRE SERVICE CHARGES
63	8.5: PROPOSED RATES FOR COMMODITY CHARGES
63	8.5.1: Unit Cost Components Definitions
63	8.5.1.1: Variable Supply Unit Cost
66	8.5.1.2: Conservation Unit Cost
67	8.5.1.3: Domestic Water Final Commodity Charge Rates Derivation
69	8.6: PROPOSED PUMPING CHARGES
70	8.7: WATER CUSTOMER IMPACTS
72	9. RECYCLED WATER COST OF SERVICE ANALYSIS AND RATE DERIVATION
76	10. APPENDICES
77	10.1: DETAILED DOMESTIC WATER O&M EXPENSES
79	10.2: DETAILED RECYCLED WATER O&M EXPENSES

LIST OF TABLES

- 5 Table 1.1: Utility Revenue Adjustment Plans
- 6 Table 1.2: Current and Proposed Rates for Monthly Service Charges (\$/Meter Size)
- 7 Table 1.3: Current and Proposed Rates for Monthly Fire Service Charges (\$/Fireline)
- 7 Table 1.4: Current and Proposed Rates for Domestic Water Commodity Charges (\$/CCF)
- 8 Table 1.5: Proposed Pumping Rates for Elevation Zones (\$/CCF)
- 8 Table 1.6: Current and Proposed Rates for Recycled Water Commodity Charges (\$/CCF)
- 11 Table 2.1: Account, Water Demand, and Miscellaneous Revenue Growth Assumptions
- 11 Table 2.2: Purchased Water Cost by Sources of Supply (\$/AF)
- 11 Table 2.3: Purchased Water by Sources of Supply (AF)
- 14 Table 3.1: Recommended Domestic Water Fund Reserve Policies
- 16 Table 4.1: Current Rates for the Monthly Service Charges (\$/Meter Size)
- 17 Table 4.2: Current Rates for Monthly Fire Service Charges (\$/Fireline Size)
- 17 Table 4.3: Current Domestic Rates for Commodity Charges, by Tier
- 17 Table 4.4: Current Pumping Charges by Elevation (\$/CCF)
- 18 Table 4.5: Projected Domestic Water Accounts by Meter Size
- 18 Table 4.6: Projected Fire Service Meters by Size
- 19 Table 4.7: Domestic Residential Water Commodity Demand Estimates (CCF)
- 19 Table 4.8: Domestic Non-Residential Water Commodity Demand Estimates (CCF)
- 20 Table 4.9: Domestic Water Usage Estimates by Zone (CCF)
- 20 Table 4.10: Projected Domestic Water Rate Revenues (No Revenue Adjustments)
- 21 Table 4.11: Projected Domestic Water Non-Rate Revenues (No Revenue Adjustments)
- 21 Table 4.12: Purchased Water Cost by Supply Source
- 22 Table 4.13: Projected Domestic Water Fund O&M Expenses
- 22 Table 4.14: Projected Domestic Capital Improvement Plan Spending
- 22 Table 4.15: Existing Annual Debt Service Summary

23	Table 4.16: Status Quo Domestic Water Pro Forma
25	Table 4.17: Proposed Domestic Water Revenue Adjustments
25	Table 4.18: Proposed Domestic Water Financial Plan Pro forma
28	Table 4.19: Proposed Combined Domestic Water and Recycled Water Financial Plan Pro Forma
30	Table 5.1: Current Rates for the Recycled Water Monthly Service Charges (\$/Meter Size)
30	Table 5.2: Current Rates for Recycled Water Commodity Charges
31	Table 5.3: Current Elevation Rates for Recycled Water
31	Table 5.4: Projected Recycled Water Accounts by Meter Size
32	Table 5.5: Recycled Water Demand Estimates by Zone (in CCF)
32	Table 5.6: Projected Recycled Water Rate Revenues (No Revenue Adjustments)
33	Table 5.7: Recycled Water Purchases Cost Calculation
33	Table 5.8: Projected Recycled Water Fund O&M Expenses
33	Table 5.9: Recycled Water Capital Improvement Plan
34	Table 5.10: Status Quo Recycled Water Pro Forma
35	Table 5.11: Proposed Recycled Water Rate Adjustments
35	Table 5.12: Proposed Recycled Water Financial Plan Pro Forma
40	Table 6.1: System-Wide Peaking Factors and Allocation to Cost Causation Components
42	Table 6.2: Allocation of Functionalized Domestic Water O&M and Capital Expenses to Cost Causation Components
43	Table 6.3: Revenue Required from Domestic Water Rates
43	Table 6.4: Budgetary Department Budget Percentages for Domestic Water
45	Table 6.5: Domestic Water Cost Recovery, Cost Components (Values)
45	Table 6.6: Domestic Water Revenue Recovery
50	Table 7.1: City of Chino Hills ET Factors
50	Table 7.2: Proposed Water Budget Factors and Tier Definitions
52	Table 7.3: SFR Usage in Tiers
53	Table 7.4: MFR Usage in Tiers
53	Table 7.5: Residential Usage in Tiers
53	Table 7.6: Usage by New Customer Class
55	Table 8.1: Existing Rates for the Monthly Service Charge
55	Table 8.2: Existing Rate Structure – Domestic Water Commodity Rates

56	Table 8.3: Rate Component Calculation
58	Table 8.4: Meter Equivalencies Calculation
58	Table 8.5: Meter Service Component Calculation
57	Table 8.6: Customer Service Component Calculation
60	Table 8.7: Calculation of Rates for Cost of Service Monthly Service Charges
60	Table 8.8: Proposed Rates for Monthly Service Charges (\$/Meter Size)
61	Table 8.9: Fireline Equivalencies Calculation
61	Table 8.10: Fireline Service Component Calculation
62	Table 8.11: Calculation of Rates for the COS FY 217/18 Monthly Fire Service Charges
62	Table 8.12: Proposed Rates for the Monthly Fire Service Charges (\$/ Fireline Size)
64	Table 8.13: Domestic Water Supply Costs FY 17/18
64	Table 8.14: Water Sources by Cost and Availability
65	Table 8.15: Water Sources Availability for Residential Usage
65	Table 8.16: Water Sources Allocated to Residential Tiers
65	Table 8.17: Residential Tier Supply Cost Calculation
66	Table 8.18: Domestic Water Peaking Factors by Class
66	Table 8.19: Domestic Water Conservation Unit Cost Calculation, Uni- form Classes
67	Table 8.20: Domestic Water Conservation Unit Cost Calculation, Tiers
67	Table 8.21: Proposed Rates for the Commodity Charge (\$/CCF)
68	Table 8.22: Current and Proposed Rates for the Domestic Water Commodity Charge for the Study Period (\$/CCF)
69	Table 8.23: Pumping Charge Calculations by Zone (\$/CCF)
69	Table 8.24: Current and Proposed Pumping Charges for the Study Period (\$/CCF)
73	Table 9.1: Revenue Requirement of Recycled Water Enterprise
73	Table 9.2: Projected Recycled Water Revenue from Monthly Service Charges
74	Table 9.3: Projected Recycled Water Revenue from Pumping Charges
74	Table 9.4: FY 17/18 Recycled Water Commodity Charge Calculation
75	Table 9.5: FY 17/18 Recycled Water Commodity Charges Across Study Period

LIST OF **FIGURES**

- 26** Figure 4.1: Proposed Domestic Water Revenue Adjustments
- 26** Figure 4.2: Proposed Domestic Water Operating Financial Plan
- 27** Figure 4.3: Proposed Domestic Water Ending Fund Balances
- 27** Figure 4.4: Proposed Domestic Water Capital Improvement Program Funding
- 36** Figure 5.1: Proposed Recycled Water Operating Financial Plan
- 36** Figure 5.2: Proposed Recycled Water Capital Improvement Program Funding
- 47** Figure 7.1: Sample Water Budget Tiers
- 47** Figure 7.2: Account Specific Water Budget Tiers
- 51** Figure 7.3: Bill Distribution for Residential Tiers 1-3
- 52** Figure 7.4: Usage Distribution for Residential Tiers 1-3
- 70** Figure 8.1: Bill Impacts - Single Family Residential with 3/4" Meter
- 71** Figure 8.2: Bill Impacts - SFR Customers
- 71** Figure 8.3: Bill Impacts - MFR Customers
- 71** Figure 8.4: Bill Impacts - Non-Residential Customers
- 71** Figure 8.5: Bill Impacts - All Customers

Executive Summary

1.1 BACKGROUND OF THE STUDY

The City of Chino Hills serves domestic (or potable) and recycled water to roughly 21,600 connections in its service area. The population served by the Department is approximately 78,000 domestic water customers, covering roughly 45 square miles. The City acquires its water supply from several sources including: local groundwater, a take or pay agreement with the Chino Basin Desalter Authority (CDA), imported water via Monte Vista Water District (MVWD) and the Water Facilities Authority (WFA), and recycled water purchased from the Inland Empire Utilities Agency (IEUA).

In 2016, the City contracted with Raftelis Financial Consultants, Inc. (Raftelis) to conduct a Water Rate Study (Study) to include a five-year Financial Plan for the domestic water (DW) and recycled water (RW) utilities. This Study presents the financial plans, cost of service analyses, and resulting domestic water and recycled water rates for implementation in July 2018.

This Executive Summary compiles the water and recycled water charges and contains a description of the rate study process, methodology, and results and recommendations for the City's rates. The City's last rate adjustment was effective in July 2014. The City wishes to establish fair and equitable rates that:

- > Proportionately allocate the costs of providing service in accordance with California Constitution Article XIII D, Section 6 (commonly referred to as Proposition 218).
- > Adequately fund each utility's operations and maintenance (O&M), debt service, capital costs, and provide adequate reserve levels for operating cash flow, capital replacement, bond requirements, and unforeseen events.

1.2 OBJECTIVES OF THE STUDY

The major objectives of the Study include the following:

1. Develop financial plans for the domestic and recycled water enterprises to ensure financial sufficiency, meet operations and maintenance (O&M) costs, ensure sufficient funding of the utility's financial reserves, and fund capital improvement projects (CIP). To do so, the analyses contained in this Study make certain assumptions regarding future water usage.
2. Conduct a cost-of-service analysis for the domestic and recycled water utilities.
3. Develop water rates that adequately recover costs, provide revenue stability for recovering fixed costs, and maintain affordable water service, while remaining compliant with the requirements of Proposition 218.

1.3 LEGAL REQUIREMENTS AND RATE SETTING METHODOLOGY

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

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

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

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

Tiered Rates – Budget based water rates are a specific form of a traditional inclining tiered rate structure. “Inclining” tiered rate structures (which are synonymous with “increasing” tiered rate structures and “tiered” rates), when properly designed and differentiated by the cost of providing service. Budget based water rates have gained widespread use, especially in relatively water-scarce regions like Southern California. Tiered rates meet the requirements of Proposition 218 as long as the tiered rates reasonably reflect the proportionate cost of providing service in each tier.

1.3.2: COST-BASED RATE-SETTING METHODOLOGY

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

1. Calculate the Revenue Requirement

The rate-making process starts by determining the test year (rate setting year) revenue requirement, which for this Study is Fiscal Year (FY) 2018 (or alternatively FY 17/18, the Fiscal Year spanning July 1, 2017 through June 30, 2018). The revenue requirement should sufficiently fund the utility’s operations and maintenance (O&M), debt service, capital expenses, and reserve funding.

2. Cost of Service Analysis (COS)

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

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 components. Cost components include variable supply, base, maximum day, maximum hour¹, conservation programs, private fire protection, meter service, and customer servicing and billing costs.
3. Distribute the cost components. Distribute cost components, using unit costs, to customers in proportion to their demands and burdens on the water system. This is described in the M1 Manual published by AWWA.

A COS analysis considers both the average quantity of water consumed (base costs) and the peak rate at which it is consumed (peaking or capacity costs as identified by maximum day and maximum hour demands)². Peaking costs are costs that are incurred during peak times of consumption. There are additional costs associated with designing, constructing, and operating and maintaining facilities to meet peak demands.

3. Rate Design and Calculations

Rates do more than simply recover costs. Within the legal framework and industry standards, properly designed rates should support and optimize a blend of various utility objectives. Rates may also act as a public information tool in communicating these objectives to customers.

4. Rate Adoption

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

1.4 RESULTS AND RECOMMENDATIONS

Table 1.1 shows the proposed revenue adjustments selected by the City and used to calculate the proposed rates. Although Table 1.1 shows anticipated revenue adjustments for FYs 17/18 through 22/23, the City will review and confirm the needed revenue adjustments on an annual basis³. Both domestic water and recycled water rate adjustments are proposed for implementation in July 2018. All future domestic water revenue adjustments (after the first) will take effect in July of each fiscal year, beginning in July 2019. All recycled water revenue adjustments will take effect in July of each fiscal year with the first one effective as of July 2019. The assumptions used in calculating the revenue adjustments are described in more detail in Section 2.

Table 1.1: Utility Revenue Adjustment Plans

Year	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23
Domestic Water Revenue Adjustment	0%	8%	8%	8%	8%	8%
Recycled Water Revenue Adjustment	0%	0%	10%	10%	10%	10%

1.4.1: FACTORS AFFECTING REVENUE ADJUSTMENTS – DOMESTIC WATER UTILITY FUND 500

The following items affect the domestic water fund's revenue requirement (i.e. costs) and thus its water rates. The City's expenses include Operation and Maintenance (O&M) expenses and capital expenses (including debt service).

- > **Capital Funding:** The City has approximately \$18.2 million in capital expenditures, including capitalized expenses, programmed over the five-year rate setting period. These capital expenditures include both capital projects and repair and replacement (R&R) expenses associated with the capital program. These amounts, roughly \$3 million per year, is based on an inflation adjusted estimate of the City's annual capital expenses.
- > **Reserve Funding:** The City has reserve policies for the domestic water fund (further discussed in Section 3.1) to meet cash flow needs, ensure adequate funding of repairs and replacements in the event of asset failure or other unforeseen circumstances or events, and protect ratepayers from rate spikes. Section 3.1 establishes reserve targets and Figure 4 3 shows the reserve balances for the selected Financial Plan. The defined reserve policy is 180 days of cash to meet operating expenses, or roughly \$11.2M in FY 17/18; and the average of the next five years of capital expenses (\$3.4 million in FY 17/18). In addition, the City maintains a Reserve for Water Rate Stabilization (\$440,000 in FY 17/18) and a Reserve for Water Rate Depreciation (\$4.1 million in FY 17/18).
- > **Increasing Water Costs:** The City projects that the per unit cost of purchasing supply will increase approximately 10% per year. Raftelis projects that total supply costs will increase by 46% by FY 22/23 compared to FY 17/18.
- > **Rebounded Water Sales:** Recognizing persistent yet less severe drought conditions throughout California, on May 18, 2016, the SWRCB adopted an emergency water conservation regulation that replaces their February 2016 emergency regulation. In accordance with these measures, the City proactively worked to

¹Collectively maximum day and maximum hour costs are known as peaking costs or capacity costs.

²System capacity is the system's ability to supply water to all delivery points at the time when demanded. Coincidental 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.

³The Council maintains the right to implement rates that are lower than adopted. If it is determined that a rate higher than that adopted is required, the Council will have to adopt new rates and the City will need to re-issue a Proposition 218 notice.

reduce its annual usage significantly from FY 13/14 to FY 16/17. After a historically wet winter in 2016-2017, Governor Jerry Brown lifted the emergency drought conditions on April 7, 2017. Following the lifting of the emergency regulation, the City is expecting a rebound of roughly 22% more demand which it expects will form the basis of a “new normal” of future water demand. This rebound in FY 17/18 still represents a reduction of over 19% from FY 13/14 levels. This anticipated permanent reduction (from FY 13/14) to a new normal going forward will assist the City in achieving its 20 percent overall reduction by 2020 as part of SB X7-7 and is accounted for in the projected revenues for the five-year rate setting period of this Study.

1.4.2: FACTORS AFFECTING RATE ADJUSTMENTS – RECYCLED WATER FINANCIAL PLAN

- > **Capital Projects:** The City has approximately \$2.7 million in capital expenditures over the five-year rate setting period of this Study. The City’s annual recycled water revenue in FY 16/17 was just over \$1.9 million.

- > **Rapidly Increasing Supply Costs:** The City expects IEUA recycled water costs to increase in accordance with recent recycled water supply cost increases, which have been roughly 24% per year. This equates to a doubling in the unit cost of supply roughly every three years.

1.4.3: PROPOSED MONTHLY SERVICE CHARGES

The following four tables show the current rates and the proposed rates for FY 18/19 through FY 22/23. The rates in FY 18/19 were calculated using FY 17/18 as a “test” or rate setting year, and then applying an 8% revenue adjustment. The displayed FY 17/18 rates are the City’s current rates adopted in July of 2015.

Table 1.2 shows the current and proposed rates for the Monthly Service Charge by meter size for the Study period. The proposed rates are inclusive of all users, including domestic water and recycled water customers. The rates for the current and proposed Monthly Service Charges are calculated on the basis of the size of the meter serving a property.

Table 1.2: Current and Proposed Rates for Monthly Service Charges (\$/Meter Size)

Year	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23
	Current	New COS				
Adjustment	Rate	& 8%	8%	8%	8%	8%
5/8 Inch	\$19.79	\$22.11	\$23.88	\$25.80	\$27.87	\$30.10
3/4 Inch	\$29.54	\$31.49	\$34.01	\$36.74	\$39.68	\$42.86
1 Inch	\$49.23	\$50.22	\$54.24	\$58.58	\$63.27	\$68.34
1.5 Inch	\$98.46	\$97.06	\$104.83	\$113.22	\$122.28	\$132.07
2 Inch	\$157.53	\$153.28	\$165.55	\$178.80	\$193.11	\$208.56
3 Inch	\$344.61	\$284.44	\$307.20	\$331.78	\$358.33	\$387.00
4 Inch	\$578.94	\$471.82	\$509.57	\$550.34	\$594.37	\$641.92
6 Inch	\$1,197.00	\$1,174.50	\$1,268.46	\$1,369.94	\$1,479.54	\$1,597.91
8 Inch	\$1,577.32	\$1,689.79	\$1,824.98	\$1,970.98	\$2,128.66	\$2,298.96
10 Inch	\$2,569.78	\$2,720.38	\$2,938.02	\$3,173.07	\$3,426.92	\$3,701.08
12 Inch	\$2,569.78	\$4,032.04	\$4,354.61	\$4,702.98	\$5,079.22	\$5,485.56

1.4.4: PROPOSED MONTHLY FIRE SERVICE CHARGES

The City charges Monthly Fire Service Charges based on meter size of fire service meters. The current and proposed charges are shown in Table 1.3.

Table 1.3: Current and Proposed Rates for Monthly Fire Service Charges (\$/Fireline)

Year	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23
Adjustment	Current Rate	New COS & 8%	8%	8%	8%	8%
4" Fireline	\$98.42	\$53.31	\$57.58	\$62.19	\$67.17	\$72.55
6" Fireline	\$203.49	\$154.86	\$167.25	\$180.63	\$195.09	\$210.70
8" Fireline	\$268.14	\$329.99	\$356.39	\$384.91	\$415.71	\$448.97
10" Fireline	\$436.86	\$593.42	\$640.90	\$692.18	\$747.56	\$807.37

1.4.5: PROPOSED COMMODITY CHARGES

Table 1.4 shows the current and proposed rates for the domestic water Commodity Charge by customer class. Raftelis recommends the following adjustments to the variable rate structure: Single Family Residential (SFR) tiers will be based on a Water Budget Framework, Multi-Family Residential (MFR) tier width will be adjusted from the current widths to those that align more closely with the budget framework. Non-residential customer classes (previously government, non-residential, and agricultural) rates will be combined into one uniform volumetric rate where all usage will be billed at the same rate regardless of prior usage. Construction/Temporary lines will be billed at a uniform volumetric rate as well. These modifications are found in Section 7. The proposed rates in years FY 18/19 and beyond are adjusted by the revenue adjustment amount found in Table 1.1, which are also shown in the first line. The rates for the current and proposed domestic water Commodity Charge are calculated on the basis of the amount of water delivered in hundred cubic feet (CCF).

Table 1.4: Current and Proposed Rates for Domestic Water Commodity Charges (\$/CCF)

Year	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23
Adjustment	Current Rate	New COS & 8%	8%	8%	8%	8%
Residential Tier 1	\$2.08	\$2.23	\$2.41	\$2.61	\$2.82	\$3.05
Residential Tier 2	\$2.37	\$3.07	\$3.32	\$3.59	\$3.88	\$4.20
Residential Tier 3	\$3.31	\$3.30	\$3.57	\$3.86	\$4.17	\$4.51
Non-Residential Single Rate	\$2.48	\$2.66	\$2.88	\$3.12	\$3.37	\$3.64
Construction/Temporary	\$3.00	\$3.24	\$3.50	\$3.78	\$4.09	\$4.42

1.4.6: PROPOSED PUMPING CHARGES

The City also charges pumping rates for customers in two different elevation zones, an intermediate zone and a high zone. The City's low zone does not pay a pumping charge. These charges are escalated according to the adjustment amount found in Table 1.1, which are also shown in the first line of Table 1.5.

Table 1.5: Proposed Pumping Rates for Elevation Zones (\$/CCF)

Year	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23
	Current	New COS				
Adjustment	Rate	& 8%	8%	8%	8%	8%
Intermediate Zone Pumping Charge	\$0.17	\$0.10	\$0.11	\$0.12	\$0.13	\$0.15
High Zone Pumping Charge	\$0.44	\$0.38	\$0.42	\$0.46	\$0.50	\$0.54

1.4.7: PROPOSED RECYCLED WATER RATES

Table 1.6 shows the current and proposed rates for the recycled water Commodity Charges. Raftelis recommends charging a uniform fee for recycled water for all customer classes. The proposed rates in FY 18/19 and beyond are adjusted by the revenue adjustment amount found in Table 1.1. Recycled water customers will pay the same Monthly Service Charges as domestic water customers.

Table 1.6: Current and Proposed Rates for Recycled Water Commodity Charges (\$/CCF)

Year	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23
	Current					
Adjustment	Rate	COS Rate	10%	10%	10%	10%
Recycled Water Rate	\$1.74	\$1.82	\$2.01	\$2.22	\$2.45	\$2.70

A close-up, low-angle shot of a white plastic sprinkler pipe running across a lush green lawn. Water is being sprayed from several nozzles along the pipe, creating a misty, white spray that catches the light. The background is a soft-focus view of the lawn and sky, with a curved path visible in the distance. The overall tone is bright and fresh, emphasizing water and maintenance.

General Assumption

2.1 INFLATION

The Study period is from Fiscal Year (FY) 17/18 to 22/23, with proposed revenue adjustments and rates presented for the same period. Various types of assumptions and inputs are incorporated into the Study based on discussions with and/or direction from City staff. These include the projected number of accounts, annual growth rates in consumption, and inflation factors.

These cost escalation factors used and shown below, show projected increases in various cost categories across the Study period. The factors are applied to expenses for all years after FY 17/18, since Raftelis used budgetary information for expenses for FY 16/17 and FY 17/18. Raftelis worked with City staff to escalate individual budget line items according to appropriate escalation factors. Inflationary factors are discussed in the following paragraph.

A general inflation rate of 3 percent is based on the long-term change in the Consumer Price Index (CPI) for Los Angeles-Riverside-Orange County. Salary inflationary rates were held with CPI at 3%. Municipal benefits tend to outpace general inflation and, therefore, an escalation of 7% is used. Utility costs reflect the price of energy which have been increasing more rapidly in recent years, hence the use of a 10% annual inflator. The chemical cost escalation rate of 5% per year, the water purchase cost escalation factor of 10%, and construction (capital) cost escalation rate of 3% were provided by City staff. The 24% recycled water purchase cost escalation factor was also provided by City staff.

2.2 PROJECTED WATER DEMAND AND ACCOUNT GROWTH

To estimate future water demand, two primary factors are used: account growth and water demand factors. Account growth projects the number of new connections and water usage increases in proportion to account growth. Water demand factor projects year-on-year proportional changes in demand. The water demand factor projects trends in usage from April 2016 to March of 2017, which is the baseline consumption year within the rate model.

It is estimated that the total number of domestic water accounts will grow by 0.43% in FY 18/19, and 0.35% in FY 19/20, and then decrease to 0% by FY 19/20. There is no growth expected in recycled water accounts.

In consideration of the rebound expected from past drought conditions, domestic water usage is expected to rebound by approximately 22% from 2017 levels as the State comes out of drought conditions in FY 18/19. Similarly, recycled water usage is expected to increase 14% relative to FY 17/18 usage in FY 18/19. Following these rebounds, the City expects usage to stabilize at a new normal and does not expect any further adjustments.

In order to predict non-operating revenues, the Study assumes that all non-rate revenues will not increase and interest revenues will be calculated using an interest rate of 1% per year through FY 22/23. Interest rates earned on reserves are based on conservative estimates in a low interest financial environment. These revenue growth assumptions are shown on the following page in Table 2.1.



Table 2.1: Account, Water Demand, and Miscellaneous Revenue Growth Assumptions

Year	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23
Other Revenue	0%	0%	0%	0%	0%	0%
Revenues Interest	1%	1%	1%	1%	1%	1%
Water Account Growths	0.00%	0.43%	0.35%	0.00%	0.00%	0.00%
Recycled Water Account Growths	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Water Demand Factors	122%	100%	100%	100%	100%	100%
Recycled Water Demand Factors	114%	100%	100%	100%	100%	100%

The City acquires water from numerous sources of supply. The supply mix incorporates availability, take-or-pay requirements, maximum allotments or yields, and new sources, and so the mix changes each year. Table 2.2 summarizes the various sources of supply the purchase cost (if any) in FY 17/18 through FY 22/23 for both Recycled Water and Domestic Water. The sources are listed in order of use (priority). The City has a take-or-pay arrangement with the Chino Basin Desalter Authority (CDA) and, therefore, considers CDA water first priority.

Table 2.2: Purchased Water Cost by Sources of Supply (\$/AF)

Year	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23
Chino Basin Desalter	\$900.86	\$990.95	\$1,090.04	\$1,199.05	\$1,318.95	\$1,450.85
City Wells and MVWD City Allotment	\$225.00	\$247.50	\$272.25	\$299.48	\$329.42	\$362.36
MVWD	\$846.00	\$930.60	\$1,023.66	\$1,126.03	\$1,238.63	\$1,362.49
WFA Import	\$829.60	\$912.56	\$1,003.82	\$1,104.20	\$1,214.62	\$1,336.08
IEUA Recycled Water	\$470.00	\$582.80	\$722.67	\$896.11	\$1,111.18	\$1,377.86

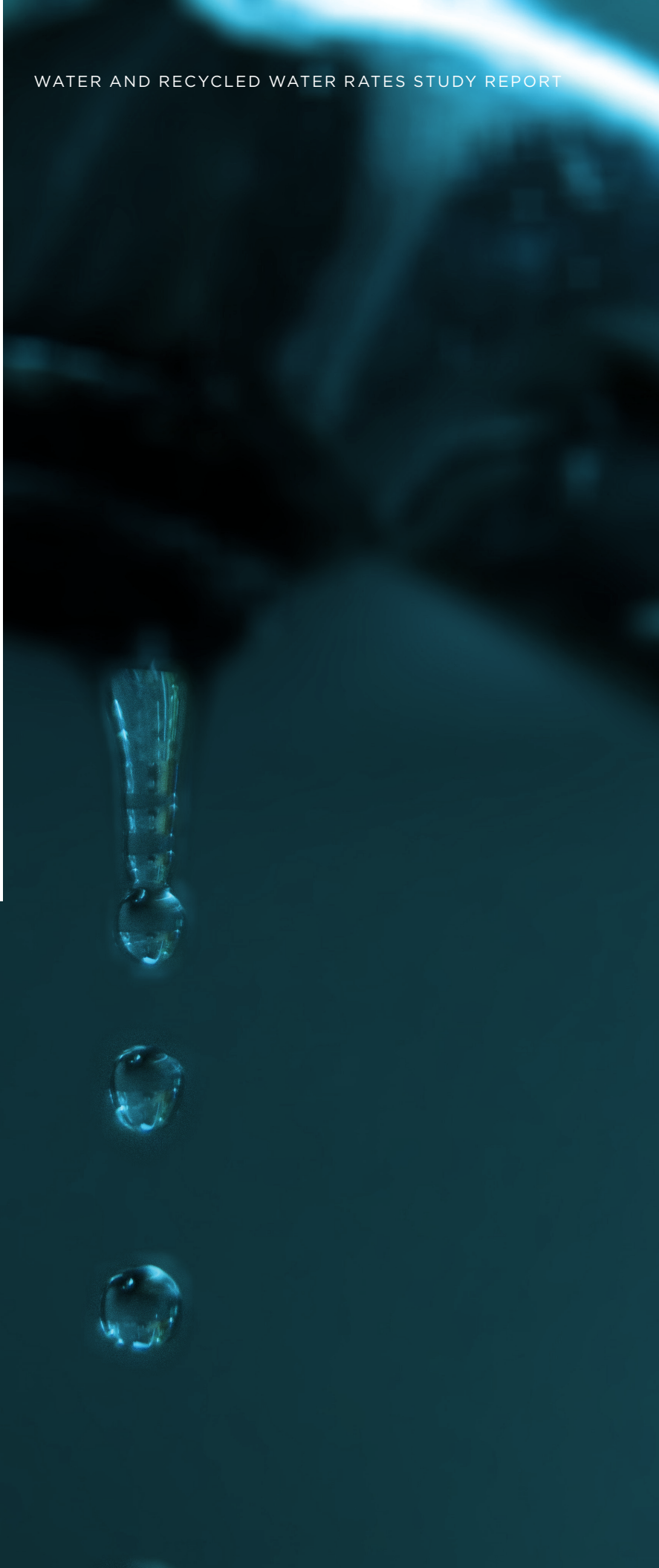
The amount provided by each source (in AF) to meet demand in FY 17/18 through FY 22/23 is shown in Table 2.3.

Table 2.3: Purchased Water by Sources of Supply (AF)

Year	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23
Chino Basin Desalter	4,200 AF	4,200 AF	4,200 AF	4,200 AF	4,200 AF	4,200 AF
City Wells and MVWD City Allotment	2,400 AF	2,400 AF	2,400 AF	2,400 AF	2,400 AF	2,400 AF
MVWD	4,200 AF	4,200 AF	4,200 AF	4,200 AF	4,200 AF	4,200 AF
WFA Import	2,016 AF	2,071 AF	2,116 AF	2,116 AF	2,116 AF	2,116 AF
Total	12,816 AF	12,871 AF	12,916 AF	12,916 AF	12,916 AF	12,916 AF

Table 2.2 shows only those water sources estimated to meet demand over the Study period, a brief description is provided below detailing all sources of water available to the City:

The City receives domestic water from a variety of sources. Approximately 60% of the City's water is distributed through a 42" water transmission line of approximately 7 miles. This transmission line provides water from Water Facilities Authority (WFA) and Monte Vista Water District (MVWD). WFA obtains its water from the state water project through Metropolitan Water District of Southern California (Met). MVWD provides the City with both WFA water, ground water from its own wells, and groundwater from a Chino Hills owned well. The City also receives water from Chino Basin Desalter Authority (CDA). This treated well water is provided under a "take or pay" agreement with the CDA. The CDA extracts and treats brackish groundwater and annually provides 4,200 acre feet of potable water for domestic use in the City. Currently, the City owns 11 wells.





Reserve Policy

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

3.1 RECOMMENDED POLICIES (DOMESTIC WATER FUND)

Table 3.1 details the reserve type, recommended policy, and target level in FY 17/18 for the domestic water utility (Fund 500). Raftelis recommends that the Water Operating Fund have an Operating Reserve equal to 180 days of annual operating expenses, or approximately \$11.2 million. This reserve provides cash flow in case of revenue shortfalls and for working capital. Considerations for billing frequency, seasonal fluctuations in expenditures, and seasonal fluctuations in demand, among others, determine the recommended reserve target.

Appropriate Reserve levels for Replacement of Structures, Equipment & Improvement (also called the Capital Reserve) consider long-term capital improvement project (CIP) expenditures. Generally, an amount equal to one to three years of average CIP, or a multiple of annual system replacement cost depreciation, is appropriate. Raftelis recommends the City maintain the current policy for the Capital Reserve policy of keeping the average of the next five years of projected domestic water and recycled water CIP expenses in reserve, or roughly \$3.4 million in FY 17/18.

A Rate Stabilization Reserve is established for unforeseen emergencies, interruptions, or other challenges impacting revenues (e.g. the recent historic drought). An amount equal to a percentage of annual volumetric rate revenue is set aside to be utilized during revenue shortfalls, to smooth out rate impacts, or to forego implementation of temporary revenue stability charges. Each utility is unique and rate stabilization reserves are influenced by several variables, including water supply reliability, source cost exposure, and revenues from fixed versus variable sources, as well as other factors. This reserve is set to escalate by the water purchase cost escalation factor.

A Water Rate Depreciation Reserve is established to address funding issues arising from costs outpacing water rates. This reserve is set to escalate by the general escalation factor.

3.2 RECOMMENDED POLICIES (RECYCLED WATER FUND)

The recycled water enterprise operates as a part of the Domestic Water Fund, so it does not maintain its own reserve policies. Net revenues from the sale of recycled water are part of the domestic water fund's net revenues.

Table 3.1: Recommended Domestic Water Fund Reserve Policies

Reserve	Recommended Policy	FY 17/18 Target Level
Operating Reserve	180 days of operating budget	\$11.2M
Capital R&R Reserve	100% of 5-year average CIP	\$3.4M
Reserve for Water Rate Stabilization	\$440,000 escalated by 10% annually	\$440k
Reserve for Water Rate Depreciation	\$4,120,000 escalated by 3% annually	\$4.1M

Domestic Water Fund 500 Financial Plan

This section describes the domestic water fund, the City's customer account and water use data, and corresponding financial plan. To develop the financial plan, Raftelis projects annual expenses and revenues, models reserve balances and capital expenditures, and calculates debt service coverage ratios to estimate the amount of additional rate revenue required per year. This section of the Study provides a discussion of O&M expenses, the capital improvement plan, projected revenue under existing rates, and the revenue adjustments required to ensure the fiscal sustainability and solvency of the domestic water utility.

4.1 DOMESTIC WATER REVENUE REQUIREMENTS

A review of a utility's revenue requirements is a key first step in the rate study process. The review involves an analysis of annual operating revenues under the status quo, operation and maintenance (O&M) expenses, transfers between funds, capital expenditures, and reserve requirements. This section of the Study provides a discussion of the projected revenues, O&M expenses, other reserve funding, and revenue adjustments estimated as required to meet the projected revenue requirements during the Study period and ensure the fiscal sustainability and solvency of the water utility.

4.1.1: REVENUES FROM CURRENT RATES

The current rates, last increased in July of 2014, were originally developed in the 2011 Rate Study. The 2011 Rate Study developed rates through FY 15/16, but the City opted not to adopt the proposed rates in that year and did not increase its rates by the proposed 9.94%. The basic

rate structure for the City's domestic water service charges has two components: a fixed charge component (Monthly Service Charge) and a variable volumetric charge component (Commodity Charge). The Monthly Service Charge is determined on the basis of the size of the water meter serving a property and increases with meter size. As described in more detail in Section 8.3, as larger meter sizes generally consume more water on average and tend to have higher rates of peaking, the costs to provide service to these customers are higher. In addition to these two operating revenue sources, the City also assesses pumping charges per CCF of usage on customers in the Intermediate and High pumping zones. The City also collects revenue from Monthly Service Charges for fire service meters, which are collected monthly on the basis of fire service line size. The rates for the current Monthly Service Charges are shown in Table 4.1. Recycled water meters pay the same Monthly Service Charges as potable meters of the same size.

Table 4.1: Current Rates for the Monthly Service Charges (\$/Meter Size)

Year	FY 17/18
5/8" Meters	\$19.79
3/4" Meters	\$29.54
1" Meters	\$49.23
1.5" Meters	\$98.46
2" Meters	\$157.53
3" Meters	\$344.61
4" Meters	\$578.94
6" Meters	\$1,197.00
8" Meters	\$1,577.32
10" Meters	\$2,569.78
12" Meters	\$2,569.78

In addition to the Monthly Service Charges, the City also imposes a fixed Monthly Service Charge on properties where the customer or property owner has installed a private fireline for private fire service protection. The rates for the monthly Fire Protection Charge are established on the basis of the size of the fireline serving a property and are calculated to recover the costs associated with fire service capacity in the water distribution system. The current rates for the Monthly Service Charges for private firelines are shown in Table 4.2. The rates for the Private Fire Protection Charges are discussed in more detail in Section 8.4.

Table 4.2: Current Rates for Monthly Fire Service Charges (\$/Fireline Size)

Year	FY 17/18
4" Fireline	\$98.42
6" Fireline	\$203.49
8" Fireline	\$268.14
10" Fireline	\$436.86

The volumetric component of a customer's water bill is calculated on the basis of the number of units of water delivered to a property, measured in one hundred cubic feet (CCF), multiplied by the rates that vary by customer class and tier. The current tier widths and rates are shown in Table 4.3. The rates in Table 4.3, multiplied by the amount of use in each respective tier, determine the volumetric component of a customer's bill. Tiers are discussed in detail in Section 7. The Residential customer class incorporates both Single Family Residential (SFR) and Multi-Family Residential (MFR) customers. Under the current structure, each class has different tier widths, but pays the same rate per unit of usage as long as that unit is in the same tier.

Table 4.3: Current Domestic Rates for Commodity Charges, by Tier

Year	FY 17/18
Residential Tier 1	\$2.08
Residential Tier 2	\$2.37
Residential Tier 3	\$3.31
Non-Residential	\$2.48
Government	\$2.48
Agriculture	\$2.36
Temporary	\$3.00
Private Fire Protection	\$4.12

The City also assesses per-unit pumping charges on customers in Intermediate and High pumping zones. These charges are shown on a per-unit basis by zone in Table 4.4.

Table 4.4: Current Pumping Charges by Elevation (\$/CCF)

Year	FY 17/18
Intermediate Zone	\$0.17
Higher Zone	\$0.44

Table 4.5 shows the projected number of water accounts by meter size and by fiscal year. The number of accounts is escalated each year based on the growth assumptions identified in Table 2.1. Each customer class meter count is escalated by the account growth factor with the sum of all classes shown at bottom.

Table 4.5: Projected Domestic Water Accounts by Meter Size

Year	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23
5/8" Meters	4,306	4,325	4,341	4,341	4,341	4,341
3/4" Meters	12,164	12,217	12,260	12,260	12,260	12,260
1" Meters	3,872	3,889	3,903	3,903	3,903	3,903
1.5" Meters	403	405	407	407	407	407
2" Meters	507	510	512	512	512	512
3" Meters	65	66	67	67	67	67
4" Meters	71	72	73	73	73	73
6" Meters	14	15	16	16	16	16
8" Meters	25	26	27	27	27	27
10" Meters	1	2	3	3	3	3
Total Meters	21,428	21,527	21,609	21,609	21,609	21,609

Table 4.6 shows estimated fire service meter accounts using the same assumptions as water accounts.

Table 4.6: Projected Fire Service Meters by Size

Year	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23
4" Fireline	12	13	14	14	14	14
6" Fireline	27	28	29	29	29	29
8" Fireline	83	84	85	85	85	85
10" Fireline	8	9	10	10	10	10
Total Firelines	130	134	138	138	138	138

Domestic water demand projections through FY 2023 are shown in Table 4.7 and Table 4.8 on the following page. The water demand and revenue growth assumptions are identified in Table 2.1. Tiered Residential Usage in Table 4.7 is a sum of both SFR and MFR usage in that respective Tier. Domestic water sales revenue is expected to increase in FY 17/18 due to a rebound in consumption following the end of California's historic drought. Due to previous drought conditions, California Governor Brown had issued executive order B-29-15 on April 1, 2015, which mandated a 25 percent reduction in urban water use statewide. The SWRCB determined that the City had to reduce water consumption by 28 percent relative to calendar year (CY) 2013 levels. These reductions were lifted in April of FY 16/17, after the data that this analysis is based on was fully collected. Usage in FY 16/17 is included for reference. As noted above, this usage is a full year's usage, but does not coincide with the full fiscal year of FY 16/17; usage data begins in April of 2016 and ends in March of 2017.

Table 4.7: Domestic Residential Water Commodity Demand Estimates (CCF)

Year	FY 16/17	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23
SFR Tier 1	2,236,523	2,728,559	2,740,292	2,749,884	2,749,884	2,749,884	2,749,884
SFR Tier 2	922,795	1,125,810	1,130,651	1,134,609	1,134,609	1,134,609	1,134,609
SFR Tier 3	359,891	439,068	440,956	442,500	442,500	442,500	442,500
MFR Tier 1	243,013	296,476	297,751	298,794	298,794	298,794	298,794
MFR Tier 2	48,722	59,441	59,697	59,906	59,906	59,906	59,906
MFR Tier 3	13,575	16,562	16,634	16,693	16,693	16,693	16,693
Residential Tier 1	2,479,536	3,025,035	3,038,043	3,048,678	3,048,678	3,048,678	3,048,678
Residential Tier 2	971,517	1,185,251	1,190,348	1,194,515	1,194,515	1,194,515	1,194,515
Residential Tier 3	373,466	455,630	457,590	459,193	459,193	459,193	459,193
Total Residential Usage	3,824,519	4,665,916	4,685,981	4,702,386	4,702,386	4,702,386	4,702,386

Table 4.8: Domestic Non-Residential Water Commodity Demand Estimates (CCF)

Year	FY 16/17	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23
Non-Residential Usage	479,720	585,259	587,776	589,834	589,834	589,834	589,834
Government Usage	59,649	72,772	73,085	73,341	73,341	73,341	73,341
Agricultural Usage	24,501	29,892	30,021	30,127	30,127	30,127	30,127
Temporary/Construction	22,387	27,313	27,430	27,526	27,526	27,526	27,526
Private Fire Protection	543	543	543	543	543	543	543
Total Non-Residential Usage	586,800	715,779	718,855	721,371	721,371	721,371	721,371

Table 4.9 shows Domestic Water usage estimates by zone. Some usage is not assigned a pumping zone (specifically Agricultural, Temporary, and Private Fire Protection). This table shows total usage in CCF and Acre Feet (AF).

Table 4.9: Domestic Water Usage Estimates by Zone (CCF)

Year	FY 16/17	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23
Lower Zone	1,357,631	1,656,310	1,663,430	1,669,253	1,669,253	1,669,253	1,669,253
Intermediate Zone	1,948,190	2,376,794	2,387,016	2,395,372	2,395,372	2,395,372	2,395,372
Higher Zone	1,058,067	1,290,843	1,296,396	1,300,936	1,300,936	1,300,936	1,300,936
Not zoned	47,431	57,748	57,994	58,196	58,196	58,196	58,196
Total (CCF)	4,411,319	5,381,695	5,404,836	5,423,757	5,423,757	5,423,757	5,423,757
Total Water Usage (AF)	10,127	12,355	12,408	12,451	12,451	12,451	12,451

Table 4.10 shows the rate revenue generated in each Study year with projected demand and the current rates. Note that revenues for the entire study period use the FY 17/18 rates initially adopted in FY 14/15 from Table 4.1, Table 4.2, Table 4.3, and Table 4.4. The overall adequacy of water revenues is measured by comparing the projected annual revenue requirement in FY 17/18 to be met from rates with projected revenues under the existing rates. For FY 17/18 the operating revenue total is \$24,270,788, which becomes the revenue requirement for the cost of service analysis in Section 6.

Table 4.10: Projected Domestic Water Rate Revenues (No Revenue Adjustments)⁴

Year	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23
Total Meter Service Revenue	\$10,523,340	\$10,639,927	\$10,748,594	\$10,748,594	\$10,748,594	\$10,748,594
Total Fire Meter Revenue	\$389,113	\$401,196	\$413,279	\$413,279	\$413,279	\$413,279
Total Commodity Charge Revenue	\$12,381,921	\$12,435,159	\$12,478,689	\$12,478,689	\$12,478,689	\$12,478,689
Total Pumping Charge Revenue	\$976,414	\$980,614	\$984,047	\$984,047	\$984,047	\$984,047
Total Operating Revenue	\$24,270,788	\$24,456,896	\$24,624,610	\$24,624,610	\$24,624,610	\$24,624,610

⁴Calculated revenues are derived by multiplying the charges in Table 4-1, 4-2, 4-3, and Table 4-4 by the respective accounts, firelines, demand, and pumping estimates in Table 4-5, 4-6, 4-7, 4-8, and 4-9. For more detail see the 'Revenue' tab of the financial plan model.

The utility also derives revenues from other non-rate sources. These revenues consist of other operating, miscellaneous, and non-operating revenues and are summarized in Table 4.11. All amounts were held static except for revenues From Investments which were increased at 1% annually.

Table 4.11: Projected Domestic Water Non-Rate Revenues (No Revenue Adjustments)⁵

Year	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23
358 Non-Water Fees	\$117,400	\$117,400	\$117,400	\$117,400	\$117,400	\$117,400
360 Penalties	\$180,000	\$180,000	\$180,000	\$180,000	\$180,000	\$180,000
371 From Investments	\$597,600	\$603,576	\$609,612	\$615,708	\$621,865	\$628,084
388 Other	\$54,000	\$54,000	\$54,000	\$54,000	\$54,000	\$54,000
393 Inter-Fund Contributions	\$0	\$0	\$0	\$0	\$0	\$0
Total	\$949,000	\$954,976	\$961,012	\$967,108	\$973,265	\$979,484

4.1.2: PURCHASED WATER COST BY SOURCE

Purchased water costs by supply source are shown in Table 4.12. These costs are calculated by multiplying the Unit costs in Table 2.2 by the total purchases in Table 2.3.

TABLE 4.12: PURCHASED WATER COST BY SUPPLY SOURCE

Year	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23
Chino Basin Desalter	\$3,783,616	\$4,161,978	\$4,578,175	\$5,035,993	\$5,539,592	\$6,093,551
City Wells and MVWD City Allotment	\$540,000	\$594,000	\$653,400	\$718,740	\$790,614	\$869,675
MVWD	\$3,553,200	\$3,908,520	\$4,299,372	\$4,729,309	\$5,202,240	\$5,722,464
WFA Import	\$1,672,515	\$1,890,056	\$2,124,292	\$2,336,721	\$2,570,393	\$2,827,433
Total	\$9,549,331	\$10,554,553	\$11,655,239	\$12,820,763	\$14,102,840	\$15,513,124

⁵Non-rate revenues are provided by the City and inflated by the miscellaneous revenues factor in Table 2-2.

4.1.3: OPERATIONS AND MAINTENANCE EXPENSES

Total projected O&M expenses are shown in Table 4.13. These expenses are summarized by division. Expenses used the City's budgeted FY 17/18 values and projected future expenses using the inflationary assumptions from Section 2.1. More details on this can be found in the Appendix Section 10.1. Note that Chino Basin Desalter costs are considered Fixed Water Costs, since the City pays a fixed amount for the entire 4,200 AF rather than a variable per-unit rate.

Table 4.13: Projected Domestic Water Fund O&M Expenses⁶

Year	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23
Personnel	\$3,530,000	\$3,700,832	\$3,881,334	\$4,072,115	\$4,273,823	\$4,487,150
Operations and Maintenance	\$5,993,100	\$6,186,387	\$6,386,149	\$6,592,613	\$6,806,018	\$7,026,610
Electricity Costs	\$1,000,000	\$1,100,000	\$1,210,000	\$1,331,000	\$1,464,100	\$1,610,510
Variable Water Costs	\$5,765,715	\$6,392,576	\$7,077,064	\$7,784,770	\$8,563,248	\$9,419,572
Fixed Water Costs	\$5,835,716	\$6,419,288	\$7,061,216	\$7,767,338	\$8,544,072	\$9,398,479
Capital Outlay (excl. Inter-Fund Transfers)	\$206,000	\$212,180	\$218,545	\$225,102	\$231,855	\$238,810
Total	\$22,330,531	\$24,011,262	\$25,834,309	\$27,772,938	\$29,883,115	\$32,181,132

4.1.4: PROJECTED DOMESTIC WATER CAPITAL IMPROVEMENT PROJECTS

The City is projecting approximately \$18.2 million in capital expenditures over the rate setting period (FY 17/18 – FY 22/23) for the domestic water enterprise, as shown in Table 4.14. The CIP costs for future years are determined by using the FY 17/18 projected costs and inflating the value by the capital cost inflation factor from Section 2.1, except for in FY 18/19 where staff provided an estimate of \$4.58 million. The City anticipates funding capital improvements exclusively using Pay-As-You-Go (PAYGO) financing.

Table 4.14: Projected Domestic Capital Improvement Plan Spending

Year	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23
Projected CIP Spending	\$2,500,000	\$4,575,000	\$2,652,250	\$2,731,818	\$2,813,772	\$2,898,185

4.1.5: EXISTING DEBT SERVICE

The City has one outstanding long-term debt obligation: a 2012 Water Revenue Bond. Debt service schedules for this obligation were provided by the City. Table 4.15 shows the total debt service payment obligation of the Water Enterprise's outstanding debt for the Study Period.

Table 4.15: Existing Annual Debt Service Summary

Year	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23
2012 Water Revenue Bond Principal	\$1,860,000	\$905,000	\$915,000	\$940,000	\$970,000	\$555,000
2012 Water Revenue Bond Interest	\$379,150	\$304,750	\$291,175	\$277,450	\$239,850	\$201,050
Total Debt Service	\$2,239,150	\$1,209,750	\$1,206,175	\$1,217,450	\$1,209,850	\$756,050

⁶FY 17/18 expenses represent budgeted values provided by the City and are inflated in future years by the respective factors found in Table 2-1. For more detail see the 'O&M' tab of the financial plan model or Appendix Section 10.1.

4.2 STATUS QUO DOMESTIC WATER FINANCIAL PLAN (NO REVENUE ADJUSTMENTS), 2016 STAGE 3 WATER CONSERVATION

Table 4.16 displays the pro forma of the City's domestic water enterprise, less recycled water net revenue, under current rates over the Study period. The pro forma incorporates revenues and expenses to show the overall position of the utility. All projections shown in the table are based upon the City's current rate structure and do not include rate adjustments. The pro forma incorporates the potable water enterprise data shown in the preceding tables of this section. Under the "status-quo" scenario, revenues generated from rates and other miscellaneous revenues are inadequate to achieve reserve targets and fund capital improvement projects over the Study period. Moreover, the status quo pro forma shows that without a rate increase the water enterprise will be in technical default by FY 19/20. The red font indicates negative fund balance or deficient debt coverage.

Table 4.16: Status Quo Domestic Water Pro Forma⁷

Line	Pro Forma Descriptions	FY 17/18 Budgeted	FY 18/19 Projected	FY 19/20 Projected	FY 20/21 Projected	FY 21/22 Projected	FY 22/23 Projected
1	Revenues						
2	Existing Rev from Rates	\$24,270,788	\$24,456,896	\$24,624,610	\$24,624,610	\$24,624,610	\$24,624,610
3	Rev from Rev Adjustments	\$0	\$0	\$0	\$0	\$0	\$0
4	Other Revenues	\$949,000	\$954,976	\$961,012	\$967,108	\$973,265	\$979,484
5	Total Revenues	\$25,219,788	\$25,411,872	\$25,585,622	\$25,591,718	\$25,597,875	\$25,604,094
6	Revenue Requirements						
7	Purchased Water Costs	\$5,765,715	\$6,392,576	\$7,077,064	\$7,784,770	\$8,563,248	\$9,419,572
8	Fixed Water Costs	\$5,835,716	\$6,419,288	\$7,061,216	\$7,767,338	\$8,544,072	\$9,398,479
9	Other O&M Expenses	\$10,729,100	\$11,199,399	\$11,696,029	\$12,220,830	\$12,775,796	\$13,363,081
10	Total	\$22,330,531	\$24,011,262	\$25,834,309	\$27,772,938	\$29,883,115	\$32,181,132
11							
12	Net Revenues	\$2,889,257	\$1,400,610	-\$248,687	-\$2,181,220	-\$4,285,240	-\$6,577,038
13	Debt Proceeds to Fund	\$0	\$0	\$0	\$0	\$0	\$0
14	Water Utilities Fund CIP	\$2,500,000	\$4,575,000	\$2,652,250	\$2,731,818	\$2,813,772	\$2,898,185
15	Current Debt Service	\$2,239,150	\$1,209,750	\$1,206,175	\$1,217,450	\$1,209,850	\$756,050
16	Proposed Debt Service	\$0	\$0	\$0	\$0	\$0	\$0
17	Total Debt Service	\$2,239,150	\$1,209,750	\$1,206,175	\$1,217,450	\$1,209,850	\$756,050
18	Interest On Reserves	\$87,871	\$78,784	\$66,283	\$51,126	\$29,620	\$1,899
19	Net Annual Cash Balance	-\$1,849,893	-\$4,384,140	-\$4,107,112	-\$6,130,488	-\$8,308,862	-\$10,231,274
20	Beginning Reserve Balances	\$30,215,424	\$28,453,403	\$24,148,047	\$20,107,218	\$14,027,856	\$5,748,614
21	Ending Reserve Balance:	\$28,453,403	\$24,148,047	\$20,107,218	\$14,027,856	\$5,748,614	-\$4,480,760
22	Target Balance	\$19,137,379	\$20,066,800	\$21,675,916	\$22,924,442	\$24,290,234	\$25,684,762
23	Coverage Ratio	170%	171%	9%	-180%	-393%	-1008%
24	Days Cash On Hand	465	367	284	184	70	-51

⁷The pro forma combines and summarizes the revenues, operating expenses, capital expenditures, and debt obligation portions of the financial plan model to illustrate the cash flow and reserve balances in a given year.



4.3 PROPOSED DOMESTIC WATER FINANCIAL PLAN

Raftelis proposes that the City adopts 8% revenue adjustments beginning in FY 18/19 and at the beginning of each fiscal year through FY 22/23. The proposed rate revenue that is added to the current rate revenue is shown in line 3 of Table 4.18. Each revenue adjustment is proposed to be implemented in July of that fiscal year.

Table 4.17 on the following page shows the proposed revenue adjustment plan. Although Table 4.17 shows anticipated revenue adjustments for FYs 17/18 through 22/23, the City will review and confirm the required revenue adjustments on an annual basis. The rates presented in Section 8 are based on the proposed Financial Plan below.

Revenue adjustments represent the average increase in rates for the utility as a whole. Actual percentage increases (or decreases) in rates are dependent upon the cost of ser-

vice analysis and are unique to each customer class and meter size.

Revenue adjustments proposed by Raftelis help ensure adequate revenue to fund operating expenses, achieve reserve policy targets, fund the long-term capital program, and comply with existing debt covenants. Revenue adjustments represent the average increase in rates for the utility as a whole.

Table 4.18 on the following page shows the pro forma for the potable water utility with additional revenues from the revenue adjustments in the proposed financial plan. These revenue adjustments allow the enterprise to fund all operating expenses, capital expenditures, and achieve reserve targets during the Study period.

Table 4.17: Proposed Domestic Water Revenue Adjustments

Year	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23
Water Revenue Adjustment	0%	8%	8%	8%	8%	8%

Table 4.18: Proposed Domestic Water Financial Plan Pro forma

Line	Pro Forma Descriptions	FY 17/18 Budgeted	FY 18/19 Projected	FY 19/20 Projected	FY 20/21 Projected	FY 21/22 Projected	FY 22/23 Projected
1	Revenues						
2	Existing Rev from Rates	\$24,270,788	\$24,456,896	\$24,624,610	\$24,624,610	\$24,624,610	\$24,624,610
3	Rev from Rev Adjustments	\$0	\$1,956,552	\$4,097,535	\$6,395,307	\$8,876,900	\$11,557,021
4	Other Revenues	\$949,000	\$954,976	\$961,012	\$967,108	\$973,265	\$979,484
5	Total Revenues	\$25,219,788	\$27,368,424	\$29,683,157	\$31,987,025	\$34,474,775	\$37,161,115
6	Revenue Requirements						
7	Purchased Water Costs	\$5,765,715	\$6,392,576	\$7,077,064	\$7,784,770	\$8,563,248	\$9,419,572
8	Fixed Water Costs	\$5,835,716	\$6,419,288	\$7,061,216	\$7,767,338	\$8,544,072	\$9,398,479
9	Other O&M Expenses	\$10,729,100	\$11,199,399	\$11,696,029	\$12,220,830	\$12,775,796	\$13,363,081
10	Total	\$22,330,531	\$24,011,262	\$25,834,309	\$27,772,938	\$29,883,115	\$32,181,132
11							
12	Net Revenues	\$2,889,257	\$3,357,161	\$3,848,848	\$4,214,087	\$4,591,660	\$4,979,982
13	Debt Proceeds to Fund	\$0	\$0	\$0	\$0	\$0	\$0
14	Water Utilities Fund CIP	\$2,500,000	\$4,575,000	\$2,652,250	\$2,731,818	\$2,813,772	\$2,898,185
15	Current Debt Service	\$2,239,150	\$1,209,750	\$1,206,175	\$1,217,450	\$1,209,850	\$756,050
16	Proposed Debt Service	\$0	\$0	\$0	\$0	\$0	\$0
17	Total Debt Service	\$2,239,150	\$1,209,750	\$1,206,175	\$1,217,450	\$1,209,850	\$756,050
18	Interest On Reserves	\$87,871	\$81,719	\$78,308	\$78,926	\$80,412	\$83,494
19	Net Annual Cash Balance	-\$1,849,893	-\$2,427,589	-\$9,577	\$264,819	\$568,038	\$1,325,747
20	Beginning Reserve Balances	\$30,215,424	\$28,453,403	\$26,107,533	\$26,176,264	\$26,520,009	\$27,168,460
21	Ending Reserve Balance:	\$28,453,403	\$26,107,533	\$26,176,264	\$26,520,009	\$27,168,460	\$28,577,701
22	Target Balance	\$19,137,379	\$20,066,800	\$21,675,916	\$22,924,442	\$24,290,234	\$25,684,762
23	Coverage Ratio	170%	338%	375%	392%	411%	675%
24	Days Cash On Hand	465	397	370	349	332	324

Figure 4.1 through Figure 4.4 display the FY 18/19 through FY 22/23 proposed financial plan in a graphical format. Figure 4.1 shows the proposed revenue adjustments - in percentage terms - as blue bars, as well as the calculated and minimum debt coverage requirements shown as green and red lines, respectively.

Figure 4.1: Proposed Domestic Water Revenue Adjustments

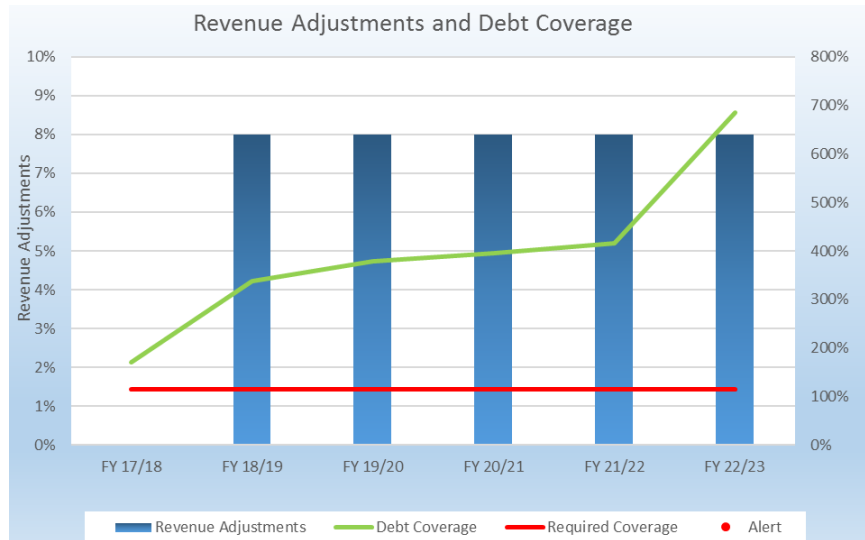


Figure 4.2 illustrates the Operating Financial Plan in a graphical format. It compares existing and proposed revenues with projected expenses. The expenses represent O&M expenses (both water supply costs and other expenses), debt service, and reserve funding. Total revenues at existing and proposed rates are shown by the horizontal red and green lines, respectively. Figure 4.2 shows that current revenue from existing rates, in red, will not meet future total expenses starting in FY 19/20 (inclusive of reserve funding) and shows the need for revenue adjustments.

Figure 4.2: Proposed Domestic Water Operating Financial Plan

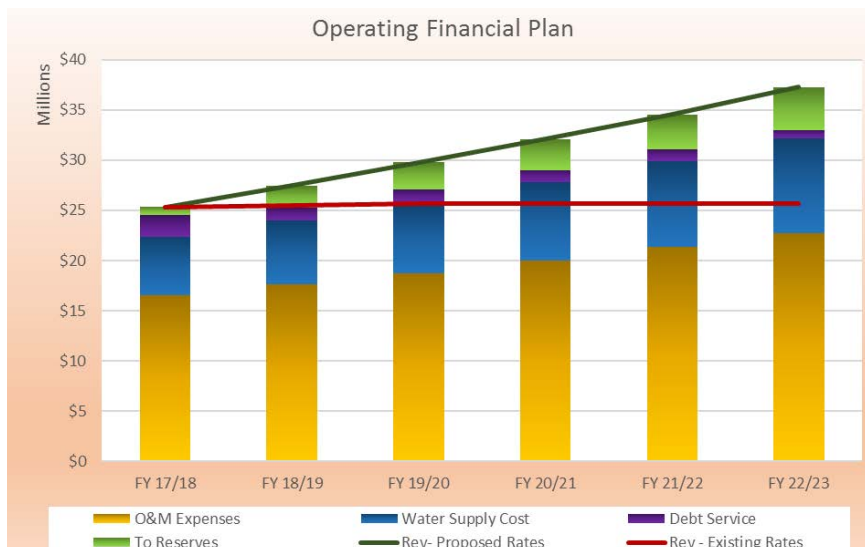


Figure 4.3 shows the domestic water utility’s ending balance by fiscal year. The green bars indicate the ending balance, while the red line indicates the target balance. The green bars remain above the red target line, indicating the utility is meeting its reserves target throughout the study period.

Figure 4.3: Proposed Domestic Water Ending Fund Balances

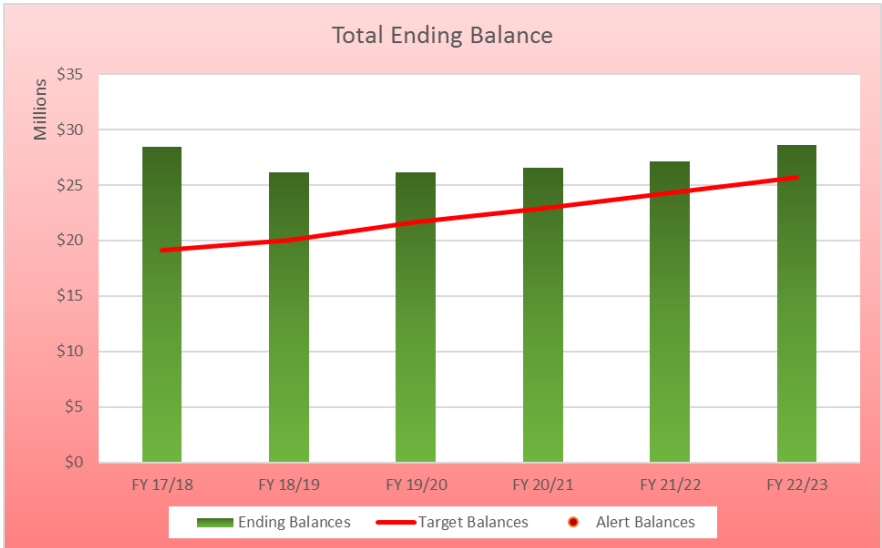
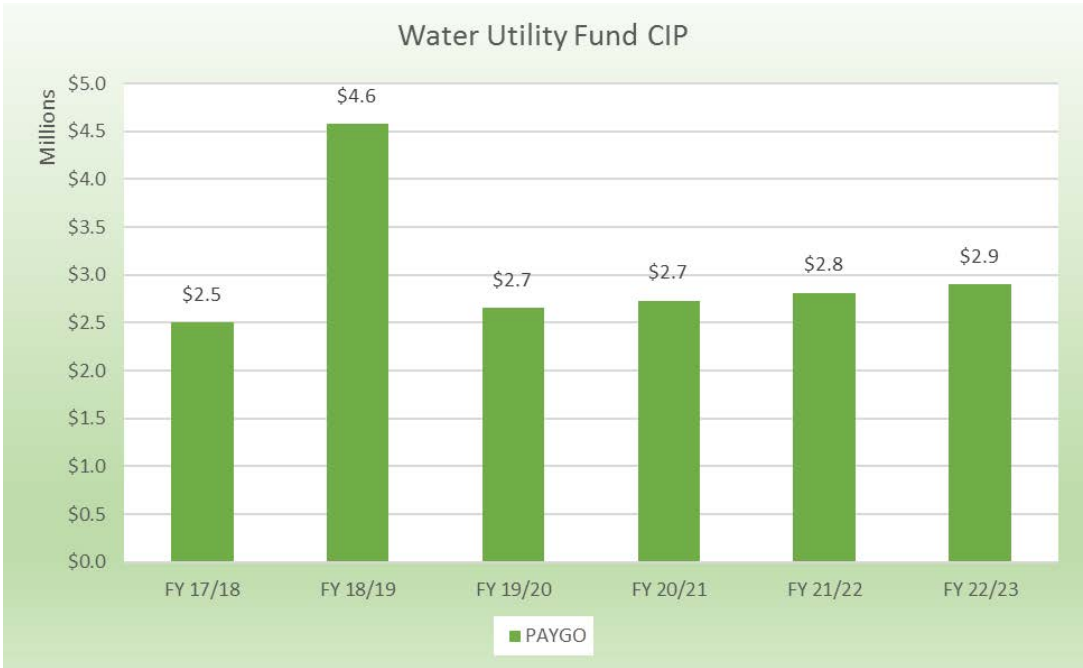


Figure 4.4 shows the total CIP of the water utility, and the corresponding funding source. Since the City is paying for all of its capital using PAYGO, there is only one funding source. The data callouts indicate the total value of CIP in a given year.

Figure 4.4: Proposed Domestic Water Capital Improvement Program Funding



4.4 FINANCIAL PLAN INCORPORATING RECYCLED WATER

Net revenues (revenues less expenses and CIP spending) from the recycled water fund are considered part of the water utility's revenue. This section will show the above pro forma from Table 4.18 and incorporate the additional revenue from the proposed recycled water financial plan. Both the Domestic water and Recycled water financial plans partially affect the other, so this section draws upon the results shown in Section 5.3. The resulting pro forma is shown in Table 4.19.

Table 4.19: Proposed Combined Domestic Water and Recycled Water Financial Plan Pro Forma

Line	Combined Pro Forma Descriptions	FY 17/18 Budgeted	FY 18/19 Projected	FY 19/20 Projected	FY 20/21 Projected	FY 21/22 Projected	FY 22/23 Projected
1	Water Revenues						
	Existing Rev from						
2	Rates	\$24,270,788	\$24,456,896	\$24,624,610	\$24,624,610	\$24,624,610	\$24,624,610
	Rev from Rev						
3	Adjustments	\$0	\$1,956,552	\$4,097,535	\$6,395,307	\$8,876,900	\$11,557,021
4	Other Revenues	\$949,000	\$954,976	\$961,012	\$967,108	\$973,265	\$979,484
5	Total Water Revenues	\$25,219,788	\$27,368,424	\$29,683,157	\$31,987,025	\$34,474,775	\$37,161,115
6	Interest on Reserves Revenue	\$97,505	\$91,267	\$89,255	\$91,586	\$94,251	\$96,823
7	Requirements						
	Purchased Water						
8	Costs	\$5,765,715	\$6,392,576	\$7,077,064	\$7,784,770	\$8,563,248	\$9,419,572
9	Fixed Water Costs	\$5,835,716	\$6,419,288	\$7,061,216	\$7,767,338	\$8,544,072	\$9,398,479
10	Other O&M Expenses	\$10,729,100	\$11,199,399	\$11,696,029	\$12,220,830	\$12,775,796	\$13,363,081
11	Total	\$22,330,531	\$24,011,262	\$25,834,309	\$27,772,938	\$29,883,115	\$32,181,132
12	Net Revenues Debt Proceeds to Fund	\$2,889,257	\$3,357,161	\$3,848,848	\$4,214,087	\$4,591,660	\$4,979,982
13		\$0	\$0	\$0	\$0	\$0	\$0
14	Current Debt Service	\$2,239,150	\$1,209,750	\$1,206,175	\$1,217,450	\$1,209,850	\$756,050
15	Proposed Debt Service	\$0	\$0	\$0	\$0	\$0	\$0
16	Total Debt Service	\$2,239,150	\$1,209,750	\$1,206,175	\$1,217,450	\$1,209,850	\$756,050
17	Recycled Water						
	Net Revenues from						
18	RW	\$912,838	\$737,367	\$672,065	\$558,709	\$382,211	\$124,058
19	RW CIP Spending	\$1,321,138	\$405,305	\$90,627	\$19,696	\$160,891	\$713,023
20	Net Cash Changes from RW	-\$408,300	\$332,062	\$581,438	\$539,012	\$221,320	-\$588,965
21	DW CIP Spending	\$2,500,000	\$4,575,000	\$2,652,250	\$2,731,818	\$2,813,772	\$2,898,185
22	Net Annual Cash Balance	-\$2,258,192	-\$2,095,527	\$571,860	\$803,831	\$789,358	\$736,782
23	Beginning Reserve Balances	\$33,630,785	\$31,470,098	\$29,465,838	\$30,126,954	\$31,022,372	\$31,905,981
24	Ending Reserve Balance:	\$31,470,098	\$29,465,838	\$30,126,954	\$31,022,372	\$31,905,981	\$32,739,586
25	Target Balance	\$19,137,379	\$20,066,800	\$21,675,916	\$22,924,442	\$24,290,234	\$25,684,762
26							
27	Coverage Ratio	170%	338%	375%	392%	411%	675%

Recycled Water Enterprise

This section describes the recycled water operating financial plan, as well as the City's customer accounts and recycled water use data, and corresponding financial plan.

5.1 RECYCLED WATER REVENUE REQUIREMENTS

A review of a utility's revenue requirements is a key first step in the rate study process. The review involves an analysis of annual operating revenues under the status quo, operation and maintenance (O&M) expenses, and capital expenditures. Recycled water revenues are part of the domestic water enterprise fund's overall revenues. This section of the Study provides a discussion of the projected revenues, O&M expenses, and rate adjustments estimated as required to meet the projected revenue requirements for the Study period and ensure the fiscal sustainability and solvency of the enterprise.

5.1.1: RECYCLED WATER REVENUES FROM CURRENT RATES

The current recycled water rates were last increased in July 2014. The rate structure for the City's recycled water service charges has three components: a fixed charge component (Monthly Service Charge), a variable volumetric charge component (Commodity Charge), and

elevation pumping charges. As with domestic water, the Monthly Service Charge is determined on the basis of the size of the water meter serving the property and increases with meter size, as larger meter sizes generally consume more water on average, and tend to have higher rates of peaking; therefore, the costs to provide service to these customers is higher. The recycled water enterprise charges the same rates as the water enterprise. The rates for the current Monthly Service Charges are shown in Table 5.1.

The Commodity Charge component of a customer's recycled water bill is calculated on the basis of the number of units of recycled water delivered to a property, measured in CCF, multiplied by the relevant customer class's uniform rate. The recycled water enterprise currently only has two customer classes: recycled water base rate customers and recycled water temporary service customers. The current rates are shown in Table 5.2 in \$/CCF.

Table 5.1: Current Rates for the Recycled Water Monthly Service Charges (\$/Meter Size)

Meter Size	FY 17/18
5/8" Meters	\$19.79
3/4" Meters	\$29.54
1" Meters	\$49.23
1.5" Meters	\$98.46
2" Meters	\$157.53
3" Meters	\$344.61
4" Meters	\$578.94
6" Meters	\$1,197.00
8" Meters	\$1,577.32
10" Meters	\$2,569.78
12" Meters	\$2,569.78

Table 5.2: Current Rates for Recycled Water Commodity Charges

	FY 17/18
Recycled Water Rate	\$1.74
Temporary Recycled Water Rate	\$2.10

Currently recycled water customers pay reduced elevation charges relative to domestic water customers. These are shown below in Table 5.3.

Table 5.3: Current Elevation Rates for Recycled Water

	FY 17/18
Low Zone	\$0.00
Intermediate Zone Elevation Charge	\$0.12
High Zone Elevation Charge	\$0.31

Table 5.4 shows actual and projected recycled water accounts by meter size. The projected number of accounts is based on the projected account growth assumptions from Table 2.1; there is no growth projected in Table 2.1 so there is no growth shown in the table below.

Table 5.4: Projected Recycled Water Accounts by Meter Size

Year	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23
5/8" Meters	0	0	0	0	0	0
3/4" Meters	0	0	0	0	0	0
1" Meters	10	10	10	10	10	10
1.5" Meters	58	58	58	58	58	58
2" Meters	97	97	97	97	97	97
3" Meters	13	13	13	13	13	13
4" Meters	4	4	4	4	4	4
6" Meters	4	4	4	4	4	4
8" Meters	1	1	1	1	1	1
10" Meters	1	1	1	1	1	1
Total	188	188	188	188	188	188

Recycled water demand projections through FY 22/23 are shown by zone in Table 5.5. The demand growth assumptions are contained in Table 2.1. FY 16/17 usage is shown below for comparison purposes. Recycled water revenues coming from Commodity Charges are expected to remain static after FY 16/17 as there is no additional growth expected.

Table 5.5: Recycled Water Demand Estimates by Zone (in CCF)

Year	FY 16/17	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23
Low Zone	322,562	369,173	369,173	369,173	369,173	369,173	369,173
Intermediate Zone	253,301	289,903	289,903	289,903	289,903	289,903	289,903
High Zone	152,504	174,541	174,541	174,541	174,541	174,541	174,541
Total Base Rate Usage	728,367	833,617	833,617	833,617	833,617	833,617	833,617
Temporary Usage	32,817	37,560	37,560	37,560	37,560	37,560	37,560
Total Recycled Water Use	761,184	871,177	871,177	871,177	871,177	871,177	871,177

Table 5.6 shows the rate revenue generated in each Study year with projected usage and current rates. Note that revenues for FY 17/18 and beyond use FY 17/18 rates from Table 5.1, Table 5.2, and Table 5.3. The estimated rate revenues in FY 17/18 are \$2,063,153. This amount becomes the revenue requirement for the cost of service analysis in Section 9.

The recycled water enterprise has no non-rate revenue.

Table 5.6: Projected Recycled Water Rate Revenues (No Revenue Adjustments)⁸

Year	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23
Fixed Charges	\$446,575	\$446,575	\$446,575	\$446,575	\$446,575	\$446,575
Base Charges	\$1,449,006	\$1,449,006	\$1,449,006	\$1,449,006	\$1,449,006	\$1,449,006
Pumping Charges	\$88,614	\$88,614	\$88,614	\$88,614	\$88,614	\$88,614
Temporary	\$78,959	\$78,959	\$78,959	\$78,959	\$78,959	\$78,959
Total Revenue	\$2,063,153	\$2,063,153	\$2,063,153	\$2,063,153	\$2,063,153	\$2,063,153

⁸Calculated revenues are derived by multiplying the charges in Table 5-1 and 5-2 by the respective accounts and demand estimates in Table 5-3 and 5-4. For more detail see the 'Rev' tab of the financial plan model.

5.1.2: RECYCLED WATER OPERATIONS AND MAINTENANCE EXPENSES

The City purchases recycled water from the Inland Empire Utilities Agency (IEUA). The recycled water enterprise's largest expense is the purchase of IEUA recycled water. The City expects the cost per unit of recycled water to escalate significantly as shown in Table 2.2. The costs for purchasing water are shown below. The recycled water enterprise is assumed to have the same water loss factor as the domestic water utility of 3.6%. These costs as well as purchases to meet customer demand are shown in Table 5.7.

Table 5.7: Recycled Water Purchases Cost Calculation

Year	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23
Recycled Water Usage in AF	2,000 AF	2,000 AF	2,000 AF	2,000 AF	2,000 AF	2,000 AF
Total Required RW With Loss	2,072 AF	2,072 AF	2,072 AF	2,072 AF	2,072 AF	2,072 AF
IEUA Recycled Water Cost (\$/AF)	\$470	\$583	\$723	\$896	\$1,111	\$1,378
Total Purchased RW Costs	\$973,814	\$1,207,530	\$1,497,337	\$1,856,698	\$2,302,305	\$2,854,858

Total projected recycled water O&M expenses are shown in Table 5.8. These expenses are summarized by Department division. Expenses use the City's budgeted FY 17/18 values and future expenses are projected using the inflationary factors from Section 2.1.

Table 5.8: Projected Recycled Water Fund O&M Expenses⁹

Year	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23
Total Purchased RW Costs	\$973,814	\$1,207,530	\$1,497,337	\$1,856,698	\$2,302,305	\$2,854,858
Personnel Costs	\$22,900	\$24,027	\$25,219	\$26,479	\$27,812	\$29,223
Capital Outlay	\$10,000	\$10,300	\$10,609	\$10,927	\$11,255	\$11,593
Other RW Operating Costs	\$143,600	\$155,381	\$168,201	\$181,783	\$196,627	\$212,854
Total O&M Expenses	\$1,150,314	\$1,397,238	\$1,701,366	\$2,075,887	\$2,537,999	\$3,108,529

5.1.3: PROJECTED RECYCLED WATER CAPITAL IMPROVEMENT PROJECTS

The City has programmed approximately \$2.7 million in capital expenditures during the Study period (FY 17/18-22/23) for the recycled water utility, as shown in Table 5.9. The CIP costs for future years are determined by using the projected yearly costs from the City's recent asset management study and inflating the value by the capital cost inflation factor shown in Section 2.1.

TABLE 5.9: RECYCLED WATER CAPITAL IMPROVEMENT PLAN

Year	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23
Recycled Water CIP	\$1,321,138	\$405,305	\$90,627	\$19,696	\$160,891	\$713,023

5.1.4: EXISTING RECYCLED WATER DEBT SERVICE

The recycled water enterprise has no outstanding debt.

⁹FY 17/18 expenses represent budgeted values provided by the City and are inflated in future years by the respective factors found in Table 2-1. For more detail see the 'O&M' tab of the financial plan model or in Appendix Section 10.2.

5.2 STATUS QUO RECLAIMED WATER FINANCIAL PLAN (NO REVENUE ADJUSTMENTS)

Table 5.10 displays the pro forma of the City's recycled water utility under current rates over the Study period to show the overall position of the utility. All projections shown in the table are based upon the City's current rate structure and do not include rate adjustments. The pro forma incorporates the recycled water utility data shown in the preceding tables.

Under the status quo scenario, revenues generated from rates cover operating expenditures through FY 20/21, but the utility will operate at a deficit in later years with the margin increasing each year.

Table 5.10: Status Quo Recycled Water Pro Forma¹⁰

Line	RW Pro Forma Descriptions	FY 17/18 Budgeted	FY 18/19 Projected	FY 19/20 Projected	FY 20/21 Projected	FY 21/22 Projected	FY 22/23 Projected
1	Revenues						
2	Existing Rev from Rates	\$2,063,153	\$2,063,153	\$2,063,153	\$2,063,153	\$2,063,153	\$2,063,153
3	Rev from Rev Adjustments	\$0	\$0	\$0	\$0	\$0	\$0
4	Total Revenues	\$2,063,153	\$2,063,153	\$2,063,153	\$2,063,153	\$2,063,153	\$2,063,153
5	Revenue Requirements						
6	Purchased Water Costs	\$973,814	\$1,207,530	\$1,497,337	\$1,856,698	\$2,302,305	\$2,854,858
7	Other O&M Expenses	\$176,500	\$189,708	\$204,029	\$219,189	\$235,694	\$253,670
8	Total	\$1,150,314	\$1,397,238	\$1,701,366	\$2,075,887	\$2,537,999	\$3,108,529
9	Net Revenues	\$912,838	\$665,915	\$361,787	-\$12,734	-\$474,846	-\$1,045,376
10	Debt Proceeds to Fund	\$0	\$0	\$0	\$0	\$0	\$0
11	RW CIP	\$1,321,138	\$405,305	\$90,627	\$19,696	\$160,891	\$713,023
12	Current Debt Service	\$0	\$0	\$0	\$0	\$0	\$0
13	Proposed Debt Service	\$0	\$0	\$0	\$0	\$0	\$0
14	Total Debt Service	\$0	\$0	\$0	\$0	\$0	\$0
15							
16	Interest On Cash Balance	\$0	\$391	\$407	\$0	\$0	\$0
17	Net Annual Cash Balance	-\$408,300	\$260,610	\$271,160	-\$32,431	-\$635,738	-\$1,758,399

¹⁰The pro forma combines and summarizes the revenues, operating expenses, capital expenditures, and debt obligation portions of the financial plan model to illustrate the cash flow and reserve balances in a given year.

5.3 PROPOSED RECYCLED WATER FINANCIAL PLAN

Raftelis proposes that the City adopt 10% rate adjustments in FY 19/20 through FY 22/23. Raftelis uses the term rate adjustment here rather than revenue adjustment for the following reason: recycled water customers will pay the same meter dependent Monthly Service Charge as water customers. The rate adjustments will only affect the base recycled water rate. The first FY 19/20 rate adjustment is proposed to be implemented in July of 2019 with each subsequent adjustment occurring in July of each fiscal year.

Table 5.11 shows the proposed rate adjustment plan. Although Table 5.11 shows anticipated rate adjustments

for FY 19/20 through FY 22/23, the City will review and confirm the required rate adjustments on an annual basis. The rates presented in Section 9 are based on the proposed rate adjustment plan below.

Table 5.12 shows the pro forma for the recycled water utility with additional revenues from the revenue adjustments in both the water and recycled water proposed financial plans. Proposed revenue and rate adjustments help ensure adequate revenue to fund operating expenses and fund the long- term capital program.

Table 5.11: Proposed Recycled Water Rate Adjustments

Year	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23
Recycled Water Rate Adjustment	0%	0%	10%	10%	10%	10%

Table 5.12: Proposed Recycled Water Financial Plan Pro Forma¹¹

Line	RW Pro Forma Descriptions	FY 17/18 Budgeted	FY 18/19 Projected	FY 19/20 Projected	FY 20/21 Projected	FY 21/22 Projected	FY 22/23 Projected
1	Revenues						
2	Revenue from Current Rates	\$2,063,153	\$2,063,153	\$2,063,153	\$2,063,153	\$2,063,153	\$2,063,153
3	Rev from Rev Adjustments	\$0	\$71,452	\$310,278	\$571,443	\$857,058	\$1,169,434
4	Total Revenues	\$2,063,153	\$2,134,605	\$2,373,431	\$2,634,596	\$2,920,211	\$3,232,587
5	Revenue Requirements						
6	Purchased Water Costs	\$973,814	\$1,207,530	\$1,497,337	\$1,856,698	\$2,302,305	\$2,854,858
7	Other O&M Expenses	\$176,500	\$189,708	\$204,029	\$219,189	\$235,694	\$253,670
8	Total	\$1,150,314	\$1,397,238	\$1,701,366	\$2,075,887	\$2,537,999	\$3,108,529
9	Net Revenues	\$912,838	\$737,367	\$672,065	\$558,709	\$382,211	\$124,058
10	Debt Proceeds to Fund	\$0	\$0	\$0	\$0	\$0	\$0
11	RW CIP	\$1,321,138	\$405,305	\$90,627	\$19,696	\$160,891	\$713,023
12	Current Debt Service	\$0	\$0	\$0	\$0	\$0	\$0
13	Proposed Debt Service	\$0	\$0	\$0	\$0	\$0	\$0
14	Total Debt Service	\$0	\$0	\$0	\$0	\$0	\$0
15							
16	Interest on Cash Balance	\$0	\$498	\$872	\$809	\$332	\$0
17	Net Annual Cash Balance	-\$408,300	\$332,062	\$581,438	\$539,012	\$221,320	-\$588,965

¹¹The revenue from revenue adjustments line is calculated by multiplying the revenue from fixed charges and pumping charges by the water enterprise revenue adjustments and revenue from commodity charges by the recycled water rate adjustments.

Figure 5.1 and Figure 5.2 display the FY 17/18 through FY 22/23 proposed financial plan in a graphical format.

Figure 5.1 illustrates the Operating Financial Plan in a graphical format. It compares existing and proposed revenues with projected expenses. The expenses represent O&M expenses including recycled water supply costs, other operating expenses, and reserve funding. Total revenues at existing and proposed rates are shown by the horizontal red and green lines, respectively. Projected revenue from existing rates does not meet future revenue requirements starting in FY 21/22, showing the need for rate adjustments.

Figure 5.2 shows the total CIP of the recycled water enterprise. The green bars indicate recycled water related capital paid for by PAYGO financing.

Figure 5.1: Proposed Recycled Water Operating Financial Plan

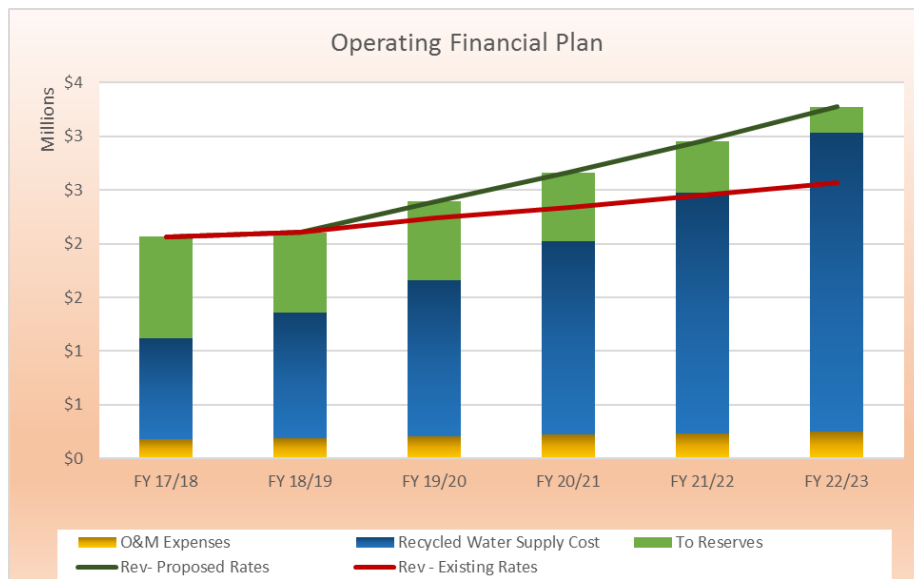
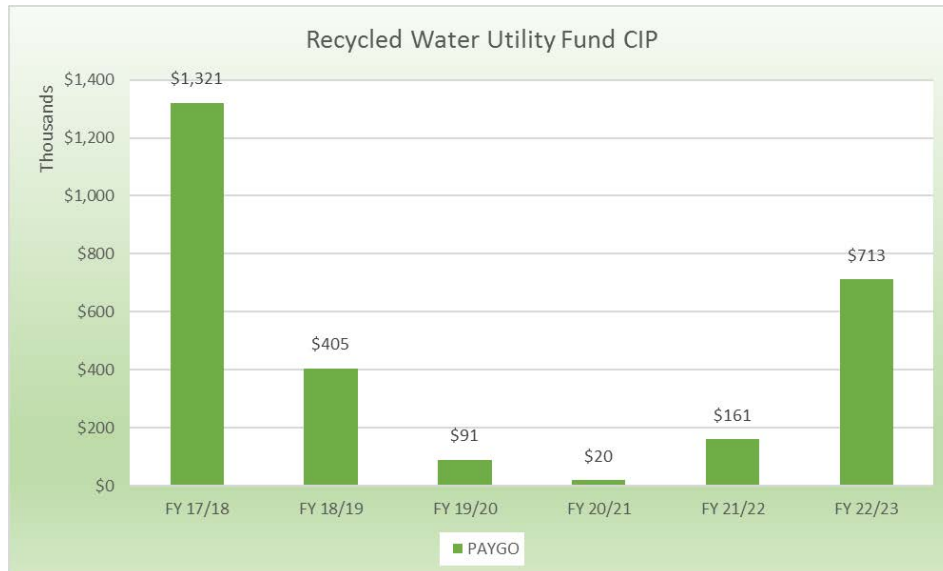


Figure 5.2: Proposed Recycled Water Capital Improvement Program Funding



Water Cost of Service Analysis

The principles and methodology of a cost of service analysis were described in Section 1.3. A cost of service analysis distributes a utility's revenue requirements (costs) to each customer class. After determining a utility's revenue requirements, the next step in a cost of service analysis is to functionalize its O&M costs. The City provided its FY 16/17 budget split up into budgetary units, which were interpreted to be functions (i.e. cost categories). The City's Domestic Water budgetary units include:

1. 500-0950 – Recreation
2. 500-1210 – Utility Customer Service
3. 500-7300 – Engineering
4. 500-8110 – Administration
5. 500-8111 – Distribution
6. 500-8112 – Meter Services
7. 500-8113 – Production
8. 500-8114 – Water Efficiency Program
9. 500-8121 – Storm System
10. 500-8300 – Street Maintenance

The functionalization of costs allows us to better allocate costs to the cost causation components (plainly, cost components)¹². Organizing the costs in terms of end function provides a direct correlation between the cost component and the rate, coupling the cost incurred by the utility and the benefit delivered to the customer and the demand and burden that the customer places on the utility's system and/or water resources. The costs incurred are generally responsive to the specific service requirements or cost drivers imposed on the system and its water resources by its customers. The principal service requirements that drive costs include the annual volume of water consumed, the peak water demands incurred, and the number of customers or meter equivalents in the system. Accordingly, these service requirements are the basis for the selection of the functions utilized in the functional allocation process.

The cost components include:

1. **Supply costs** are related to the purchase of water supplies including raw water and treated water. As explained in Section 2, the City acquires water from numerous sources of supply.
2. **Base** (average) costs vary with the total quantity of water used within the water system under average con-

ditions. These costs may include treatment, pumping, transmission and distribution facilities, and capital costs related to plant investment associated with serving customers at a constant, or average, annual rate of use. Base costs are, therefore, spread over all units of water equally.

3. **Peaking** (maximum day and maximum hour) costs are divided into maximum day and maximum hour demand¹³. The maximum day demand is the maximum amount of water used in a single day in a year. The maximum hour demand is the maximum usage in an hour on the maximum usage day. Different facilities, such as distribution and storage facilities, and the capital and O&M costs associated with those facilities, are designed to meet the peak demands placed on the system by customers. Therefore, extra capacity costs include the O&M and capital costs associated with meeting peak customer demand in excess of an average annual rate of use or base use requirements.
4. **Meters** (Meter Service) costs include maintenance and capital costs related to meters and associated services.
5. **Customer Service** costs are directly associated with serving customers, irrespective of the amount of water used, and generally include meter reading, bill generation, accounting, customer service, and collection expenses.
6. **Fire** (Fire Protection) are costs of providing both public and private fire protection service. They include both direct and indirect capital-related and maintenance costs for fire hydrants and private fire connections, as well as indirect costs for source of supply, treatment, transmission, and distribution of water as these facilities and infrastructure must be upsized to meet fire protection demands placed on the water system.
7. **Conservation** costs include all costs of funding, administering, and executing water conservation and efficiency related programs and services, as well as development of alternative and/or supplemental water supplies.
8. **Elevation** costs are the costs associated with pumping water to intermediate and high elevation zones.

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

¹²This Study uses the Base-Extra Capacity methodology set forth in the M1 Manual for functionalizing and allocating costs.

¹³Collectively, the maximum day and maximum hour cost components are known as peaking costs.

6.1 FUNCTIONALIZATION OF O&M EXPENSES

For the COS process, the City provided Raftelis with its FY 16/17 budget split into its departments. As mentioned above, the budget's departments are:

1. 500-0950 – Recreation
2. 500-1210 – Utility Customer Service
3. 500-7300 – Engineering
4. 500-8110 – Administration
5. 500-8111 – Distribution
6. 500-8112 – Meter Services
7. 500-8113 – Production
8. 500-8114 – Water Efficiency Program
9. 500-8121 – Storm System
10. 500-8300 – Street Maintenance

Functionalizing O&M expenses allows Raftelis to follow the principles of rate setting theory in which the end goal is to allocate the City's O&M expenses to cost causation components. These cost components are the sum of individual expenses contained within the department's operating budget assigned to a given function (e.g. Max Day). These expenses are broken down within the rate model cost of service. This is further explained in Section 6.2.

¹⁴The terms extra capacity, peaking, and capacity costs are used interchangeably.

6.2 ALLOCATION OF FUNCTIONALIZED EXPENSES TO DOMESTIC WATER COST COMPONENTS

After functionalizing expenses, the next step is to allocate the functionalized expenses to cost components. To do so, we must identify system-wide peaking factors which are shown in column B of Table 6.1. The system-wide peaking factors are used to derive the cost causation component allocation bases (i.e., percentages) shown in columns C through E of Table 6.1.

To understand the interpretation of the percentages shown in columns C through E we must first establish the base use as the average daily demand during the year. The system-wide factors for base is the projected average daily usage for FY 17/18. The system-wide factor for Max Day is from actual usage on September 21, 2015 where the City used 15.19 million gallons (MG) of potable water. Max hour is derived by multiplying the max day factor by 1.5, which is an industry standard when hourly use data is not available. Base represents the average day demand throughout the year and is assigned a factor of 1.00. Max Day is the ratio of maximum day demand to base demand (e.g. 15.19 million gallons per day (MGD) max day / 11.44 MGD average day = 1.33). Similarly, max hour is the ratio of maximum hour demand, on the

maximum day, to base demand (22.79 MGD max hour / 11.44 MGD = 1.99).

These factors indicate how much additional capacity is required to meet demand above average daily use. As demand and capacity requirements increase, so must the sizing of facilities and pipelines which incur greater costs to construct, maintain, and replace. Functionalized expenses are then allocated to the cost components using these allocation bases.

As an example, the functionalized expenses that are allocated to the cost components using the maximum day basis attribute 75 percent (1.00/1.33) of the demand (and therefore costs) to base (average daily demand) use and the remaining 25 percent (0.33/1.33) to maximum day (peaking) use. Expenses allocated using the maximum hour basis assume 50 percent (1.00/1.99) of costs are due to base, 16 percent (0.33/1.99) are allocated to max day, and the remaining portion (100%-50%-16%, or, 0.66/1.99) of costs are allocated to the maximum hour cost component. These allocation bases are used to assign the functionalized costs to the cost causation components.

Table 6.1: System-Wide Peaking Factors and Allocation to Cost Causation Components

	A Total Demand (MGD)	B System Wide Factors	C Base	D Max Day	E Max Hour
Base	11.44 MGD	1.00	100%		
Max Day	15.19 MGD	1.33	75%	25%	
Max Hour	22.79 MGD	1.99	50%	16%	33%

Table 6.2, on the following page, shows the allocation basis for the City's O&M costs. The top row of Table 6.2 shows the budgetary heading, the second row shows the cost category basis on which the budgetary heading is allocated, and the leftmost column shows the cost functions. For example, Distribution related costs are allocated 45 percent to base, 15 percent to max day, 30 percent to max hour, and 10 percent to fire protection cost components (a modified allocation based upon the calculation of max day costs distribution in Table 6 1). This means that 45 percent of costs are due to meeting base customer demands, 15 percent of costs are due to meeting max day demands, 30 percent of costs are due to meeting max hour demands, and 10 percent of costs are allocated to public fire protection (and the need to have additional storage within the system for firefighting). Recreation costs are allocated entirely to Base. Utility Customer Service is allocated to Customer Service. Engineering is allocated to Capital, which is allocated based on the results of functionalizing the City's recent 100 Year R&R study. Admin is allocated to Base. Meter Services are allocated to Meter related costs. Supply is allocated 96% to supply and 4% to Elevation, since 4% of the 16/17 budget is related to pumping oriented costs. Water Efficiency Program costs are allocated to the Conservation cost component and the Storm System and Street Maintenance costs are both allocated to Base. For a complete list of the specific allocations please see the Excel model and the tab titled "COS" for Domestic Water Cost of Service.



Table 6.2: Allocation of Functionalized Domestic Water O&M and Capital Expenses to Cost Causation Components

Allocation Basis	500-0950- Recreation	500-1210- Utility Customer Service	500-7300- Engineering	500-8110 - Admin	500-8111 - Distribution	500-8112 - Meter Services	500-8113 - Production	500-8114 - Water Efficiency Program	500-8121- Storm System	500-8300- Street Maint
	Base	Customer Service	Capital	Base	Max Hour	Meters	Supply	Conservation	Base	Base
Base	100%	0%	47%	100%	45%	0%	0%	0%	100%	100%
Max Day	0%	0%	14%	0%	15%	0%	0%	0%	0%	0%
Max Hour	0%	0%	21%	0%	30%	0%	0%	0%	0%	0%
Supply	0%	0%	3%	0%	0%	0%	96%	0%	0%	0%
Elevation	0%	0%	6%	0%	0%	0%	4%	0%	0%	0%
Conservation	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%
Meters	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%
Customer Service	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%
Fire	0%	0%	9%	0%	10%	0%	0%	0%	0%	0%

6.3 REVENUE REQUIREMENT – TO BE RECOVERED FROM DOMESTIC WATER RATES

Table 6.3 shows the revenue requirement derivation with the total revenue required from rates shown in the last line (\$24,270,788). The revenue required from rates represents the total O&M, debt, and reserve funding requirements that are allocated to the cost components. Raftelis calculated the revenue requirement using Fiscal Year 17/18 expenses and rate funded capital. O&M expenses include costs directly related to the supply, treatment, and distribution of water, as well as routine maintenance of system facilities. To arrive at the rate revenue requirement, we subtract revenue offsets (non-rate revenues) and adjustments for annual fund balances (which fund capital and reserves). The result is the total revenue required from rates. This total is the amount that the Monthly Service Charges, Monthly Fire Service Charges, Commodity Charges, and Pumping Charges are designed to collect.

Table 6.3: Revenue Required from Domestic Water Rates

Revenue Requirement	Total
O&M Expense	\$22,330,531
Debt Service	\$2,239,150
Fund Balance	\$650,107
Less Revenue Offsets	-\$949,000
Total Revenue Required from Rates	\$24,270,788

Raftelis applied the percentages of each budgetary heading from the FY 16/17 budget to the FY 17/18 test year budget to functionalize the budget. The FY 17/18 Budget was \$22,330,535 as shown in Table 4.13. The following example is given to demonstrate this process: in FY 16/17 the 500-8111 – Distribution heading accounted for 8.95% of expenses. 8.95% of \$23,330,531 is \$1,999,558. The percentages and calculated FY 17/18 budget amounts for all budget departments is shown in Table 6.4.

Table 6.4: Budgetary Department Budget Percentages for Domestic Water

500-0950 Recreation	500-1210 Utility Customer Service	500-7300 Engineering	500-8110 Admin	500-8111- Distribution	500-8112 - Meter Services	500-8113 - Production	500-8114 - Water Efficiency Program	500-8121 - Storm System	500-8300 - Street Maint
0.01%	3.49%	0.19%	18.17%	8.95%	5.06%	62.93%	0.63%	0.16%	0.40%
\$2,372	\$779,489	\$42,598	\$4,057,821	\$1,999,558	\$1,129,912	\$14,052,125	\$141,261	\$36,278	\$89,116



6.4 **ALLOCATION OF FUNCTIONALIZED EXPENSES TO RATE COMPONENTS**

The cost components shown in Table 6.5, on the following page, are recovered from customers through fixed (Monthly Service Charges and Monthly Fire Service Charges) and variable volumetric (Commodity and Pumping) charges. Table 6.5 shows the total revenue requirement to be collected through rates in the second column from the left. Table 6.5 shows the allocation to cost components in dollars using the percentages from Table 6.2, shown on the following page.

For the final step in the COS of allocating expenses to cost components, the debt service, fund balance, and revenue offsets are allocated. The debt service is allocated according to the Capital allocation basis, in recognition of the fact that the revenue from the bonds that the debt is serving was used for capital spending. The Capital Allocation was calculated by analyzing the City's 100 Year R&R Study and determining what percent of future spending would be driven by which cost component. Fund balance total is allocated in proportion to all allocations done before this process and the revenue offset is allocated using the Supply allocation basis to reduce the cost of Commodity Charges and Pumping Charges.

Table 6.5: Domestic Water Cost Recovery, Cost Components (Values)

Department	Revenue Requirement	Base	Max Day	Max Hour	Supply	Elevation	Conservation	Meters	Customer Service	Fire
500-0950-Recreation	\$2,372	\$2,372	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
500-1210-Utility Customer Service	\$779,489	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$779,489	\$0
500-7300-Engineering	\$42,598	\$20,152	\$6,089	\$8,944	\$1,131	\$2,547	\$0	\$0	\$0	\$3,735
500-8110 - Admin	\$4,057,821	\$4,057,821	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
500-8111 - Distribution	\$1,999,558	\$903,666	\$296,069	\$599,867	\$0	\$0	\$0	\$0	\$0	\$199,956
500-8112 - Meter Services	\$1,129,912	\$0	\$0	\$0	\$0	\$0	\$0	\$1,129,912	\$0	\$0
500-8113 - Production	\$14,052,125	\$0	\$0	\$0	\$13,513,083	\$539,042	\$0	\$0	\$0	\$0
500-8114 - Water Efficiency Program	\$141,261	\$0	\$0	\$0	\$0	\$0	\$141,261	\$0	\$0	\$0
500-8121-Storm System	\$36,278	\$36,278	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
500-8300-Street Maint	\$89,116	\$89,116	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal O&M Expenses	\$22,330,531	\$5,109,405	\$302,158	\$608,812	\$13,514,214	\$541,589	\$141,261	\$1,129,912	\$779,489	\$203,691

Table 6 6: Domestic Water Revenue Recovery¹⁵

Revenue Requirement	Total	Base	Max Day	Max Hour	Supply	Elevation	Conservation	Meters	Customer Service	Fire
O&M Expense	\$22,330,531	\$5,109,405	\$302,158	\$608,812	\$13,514,214	\$541,589	\$141,261	\$1,129,912	\$779,489	\$203,691
Capital Allocation Percentages		47.3%	14.3%	21.0%	2.7%	6.0%	0.0%	0.0%	0.0%	8.8%
Debt Service	\$2,239,150	\$1,059,253	\$320,063	\$470,145	\$59,458	\$133,885	\$0	\$0	\$0	\$196,345
Fund Balance	\$650,107	\$163,221	\$16,464	\$28,549	\$359,156	\$17,873	\$3,738	\$29,897	\$20,625	\$10,585
Less Revenue Offsets	-\$949,000	\$0	\$0	\$0	-\$912,596	-\$36,404	\$0	\$0	\$0	\$0
Total to be Recovered from Proposed Rates	\$24,270,788	\$6,331,879	\$638,685	\$1,107,506	\$13,020,232	\$656,944	\$144,998	\$1,159,809	\$800,114	\$410,621

¹⁵Note that the total revenue recovery amount in Table 6.6 ties to the revenue requirement calculated in Table 6.4.

Water Budget Rate Structure Definitions, and Usage Analysis

The City is considering a water budget rate structure along with the financial plan for this Study. The description of the allocations to individual customers and the development of water budgets is described here for completeness of this Study. The proposed water budget rate structure applies solely to SFR customers of the domestic water enterprise.

7.1 WATER BUDGET DEFINITIONS

The American Water Works Association Journal defines a water budget as “the quantity of water required for an efficient level of water use by that customer” (Source: *American Water Works Association Journal*, May 2008, Volume 100, Number 5). Therefore, each customer has his or her own allocation or water budget as shown in the following figures. Only the City’s domestic water SFR customers will use a water budget rate structure. Figure 7.1 shows a hypothetical construction of water budget tiers. In the example, Tier 1 is defined by the allotment of water for efficient indoor use and Tier 2 is defined by the allotment of water for efficient outdoor use. In the example, the allotments of water in Tiers 3 and 4 are each set to 100 percent of the Outdoor Water Budget (OWB). For example, if the Tier 2 OWB was 12 units, Tier 3 would be 12 units, and Tier 4 would be an additional 12 units. Any use beyond Tier 4 is considered wasteful and falls into Tier 5.

It is worth noting that water budget rate structures are customized for each customer, which results in different tier breaks for different customers. For example, as illustrated by Figure 7.2, the first 9 units consumed by Customer 1 are charged at the Tier 1 rate, whereas Customer 2 has 12 units at the Tier 1 rate for indoor use. The next 12 units (10 – 21 units) consumed by Customer 1 are reserved for outdoor use, which are charged at the Tier 2 rate, and usage from 22 – 32 units falls into Tier 3. Any usage exceeding 33 units will be deemed excessive and charged at the Tier 4 rate. Similarly, for Customer 2, Tier 2 spans from 13 – 32 units, Tier 3 spans from 33 – 51 units, and usage exceeding 52 units will be charged at the Tier 4 rate. Customer 2, with a larger indoor and outdoor water budget (or allotment), represents a residential customer with a larger family and larger irrigated landscape area than Customer 1. Thus, tier breakpoints are established on a parcel basis for purposes of allocating the costs of service.

Figure 7.1: Sample Water Budget Tiers

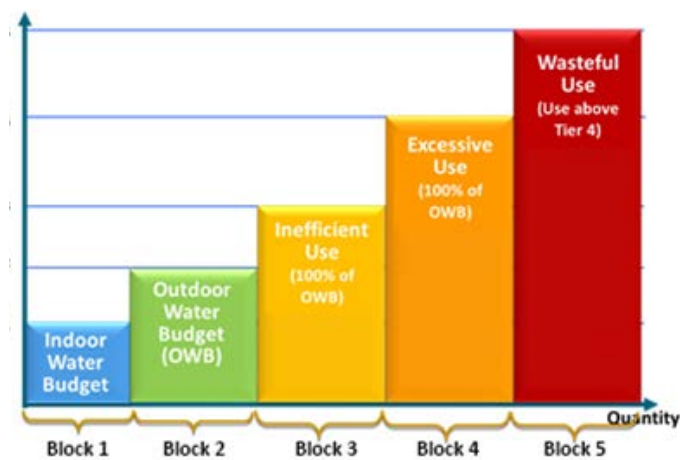
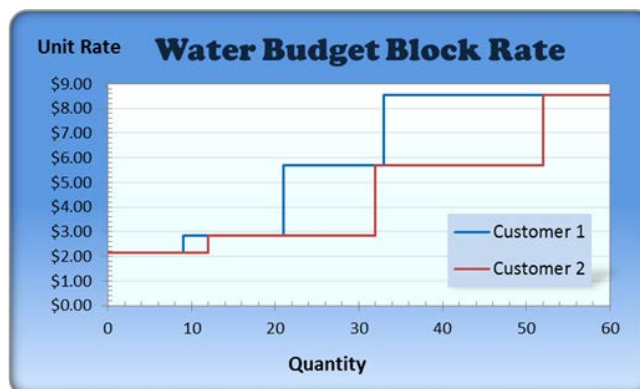


Figure 7.2: Account Specific Water Budget Tiers



7.2 PROPOSED WATER BUDGET DEVELOPMENT METHODOLOGY

The City's current SFR rates are based on static inclining tiers. The following water budget based methodology will replace the current methodology.

7.2.1: RESIDENTIAL INDOOR BUDGET (ESSENTIAL USE) DEFINITION

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

$$IWB = \frac{(GPCD * Household\ Size * Dwelling\ Units * Days\ of\ Service)}{748}$$

Where:

- > GPCD – Gallons per capita per day (efficient use)
- > Household Size – Number of residents per dwelling unit
- > Dwelling Units – The number of dwelling units served by the meter. By way of example, a single family residence is one dwelling unit.
- > Days of Service – The number of days of service varies with each billing cycle for each customer. The actual number of days of service will be applied to calculate the indoor water budget for each billing cycle.
- > 748 is the conversion unit from gallons to a billing unit of one hundred cubic feet (CCF).

7.2.2: OUTDOOR BUDGET (EFFICIENT USE) DEFINITION

The outdoor water budget (OWB) is determined by three main variables: irrigable landscape area, weather data (Evapotranspiration, or ET) and an evapotranspiration adjustment factor (ETAF). The irrigable landscape area is measured as the square footage of landscape surface on a customer's property. The weather data is based on the reference evapotranspiration (ET0), which is the amount of water lost to the atmosphere over a given time period at given specific atmospheric conditions. ET0 is the amount of water (in inches of water) needed for a hypothetical reference crop to maintain its health and appearance; currently the City uses turf grass, a high-water use plant, as its reference crop. The ET Adjustment Factor (ETAF) is a coefficient that adjusts ET0 values based on plant factor and irrigation system efficiency. The formula to calculate an outdoor water budget is as follows:

$$OWB = \left(\frac{Landscape\ Area * ET * ETAF}{1200} \right)$$



Where:

- > ET₀ is measured in inches of water during the billing period based on actual ET measurements taken from California Irrigation Management Information System (CIMIS) Station #78 at Pomona¹⁶.
- > ETAF (% of ET₀) is currently set to 80 percent, which is the standard set in the California Model Water Efficient Landscape Ordinance¹⁷. It is based upon plant factor divided by irrigation efficiency.
- > Landscape Area (or Irrigable Landscape Area) in square feet is the estimated or measured irrigable landscape served by a customer's meter, including pool surface area.
- > Raftelis has proposed a new method for determining landscape area for the City. This method applies a flat percentage to lot sizes with a cap at an upper limit.
- > This percentage is proposed to be 34.3%. This percentage represents the average irrigated area in SFR lot sizes below the fifth quintile (i.e. the average irrigated area of the smallest 80% of lots).
- > The upper limit is proposed to be 3,100 sq ft. This area is the average irrigated area of SFR lots below the 5th quintile, or the bottom 80%.
- > 1,200 is the conversion unit from inch*² to billing unit of hundred cubic feet (CCF).

¹⁶Optionally, the City can use historical averages, or CIMIS data. Raftelis's analysis used the City's adopted ET Factors.

¹⁷California Code of Regulations Title 23, Division 2, Chapter 2.7. Model Water Efficient Landscape Ordinance.

7.3 PROPOSED NEW WATER BUDGET RATE STRUCTURE

During the study, Raftelis, working with City staff and management input, proposed a method of determining the outdoor portion of the water budget allocations. The proposed rationale is detailed in the following subsections, with all proposed factors and definitions shown in a graphical format in Table 7.2. Revisions apply to domestic water SFR customers only.

7.3.1: RESIDENTIAL INDOOR BUDGET (ESSENTIAL USE) DEFINITION – TIER 1

The State of California has targeted 55 gallons per person per day (GPCD) as an efficient indoor use goal. Raftelis recommends using the State targeted daily value of 55 GPCD for both single family and multi-family residential customers. The other major determinant of the residential indoor budget is household size, which we propose to leave at the default size of 4 persons per single family household and 4 persons per multi-family household.

7.3.2: RESIDENTIAL OUTDOOR BUDGET (EFFICIENT USE) DEFINITION – TIER 2

The 2010 California Model Water Efficient Landscape Ordinance (MWELO) uses 80 percent ETAF for existing landscapes, which reflects the amount of water for cool season turf grass. Raftelis recommends that the City use the ETAF used for determining outdoor allocations of 80 percent. Raftelis used the City's adopted monthly ET factors to determine Daily ET factors in inches per day, these were calculated by dividing the monthly ET factor by the number of days in the month. Monthly and Daily ET Factors are shown below in Table 7.1.

7.3.3: INEFFICIENT AND EXCESSIVE USE DEFINITION – TIER 3

All use in excess of Tier 2 is considered to be unsustainable or inefficient and excessive. Proposed budget details and tier definitions are summarized in Table 7.2.

Table 7.1: City of Chino Hills ET Factors

Month	July	August	September	October	November	December
Monthly ET	7.3	7.1	5.9	4.2	2.6	2
Days	31	31	30	31	30	31
Daily ET	0.24	0.23	0.20	0.14	0.09	0.06
Month	January	February	March	April	May	June
Monthly ET	2.1	2.9	3.9	4.5	5.7	6.5
Days	31	29	31	30	31	30
Daily ET	0.07	0.10	0.13	0.15	0.18	0.22

Table 7.2: Proposed Water Budget Factors and Tier Definitions

Variable	Proposed
SFR Household Size	4
MFR Household Size	4
GPCD	55
ETAF	80%
Inefficient and Excessive Use	>100% TWB

7.3.1: AGRICULTURAL/COMMERCIAL/INDUSTRIAL/GOVERNMENTAL CUSTOMERS

All other customers will be aggregated into two uniform usage rates: one for agricultural, commercial, industrial, and governmental customers, one for temporary, construction, street sweep, and fire flow customers.

7.4 USAGE ANALYSIS AND USAGE PROJECTIONS

7.4.1: WATER BUDGET USAGE ANALYSIS

Section 7.3 contains recommendations to begin using water budget allocations. A summary of the recommendations are as follows:

1. Use the new standard of 55 GPCD for use in residential Tier 1 budgets;
2. Use the ETAF of 80 percent for residential Tier 2;
3. Use 34.3% of lot size and an upper limit of 3,100 sq ft to determine landscape area;
4. Consider any usage beyond Tier 2 Inefficient and Excessive

The tier definitions are used to allocate supply differentiated costs and conservation program costs and other costs of providing service to each tier. The cost of service is then used to determine a unit price for each tier.

Figure 7.3 compares the distribution of residential bills for the current water budget allocations to the proposed allocations. Under the revised water budget allocations, approximately 72 percent of users stay within Tier 2 (efficient essential indoor use plus efficient outdoor use) versus 92 percent in the current allocation. Since the proposed allocations reduce the indoor budget slightly, and the outdoor budget more significantly, more customers will fall into Tier 3 (inefficient and excessive use). Note, the comparisons in Figure 8-3 and beyond utilize an account's historical water use. Predicting future water use relies on several factors and is difficult to determine and no attempt is made here to forecast changes by customer.

Figure 7.3: Bill Distribution for Residential Tiers 1-3

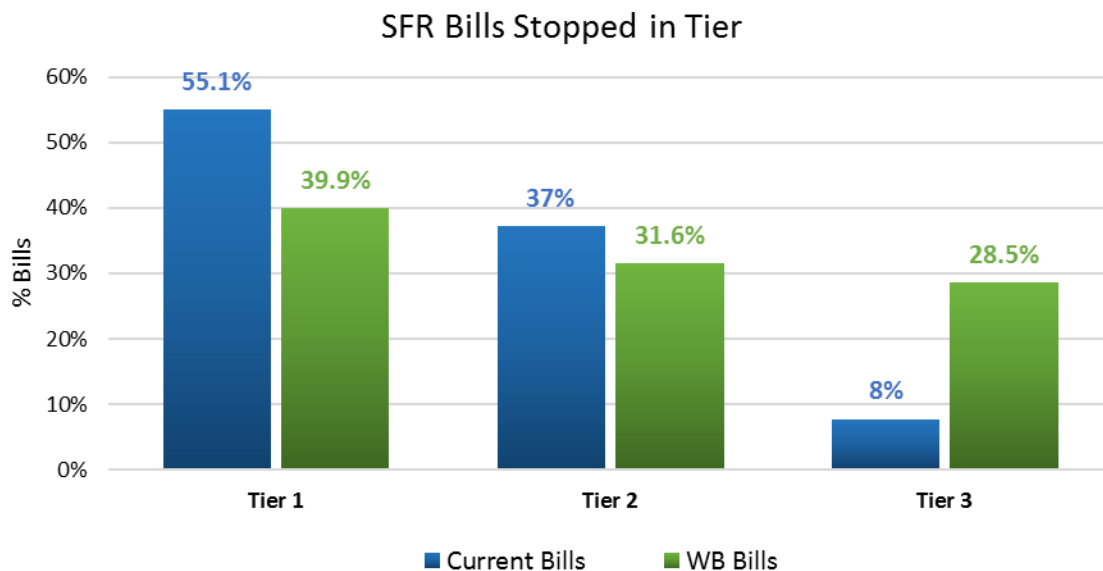
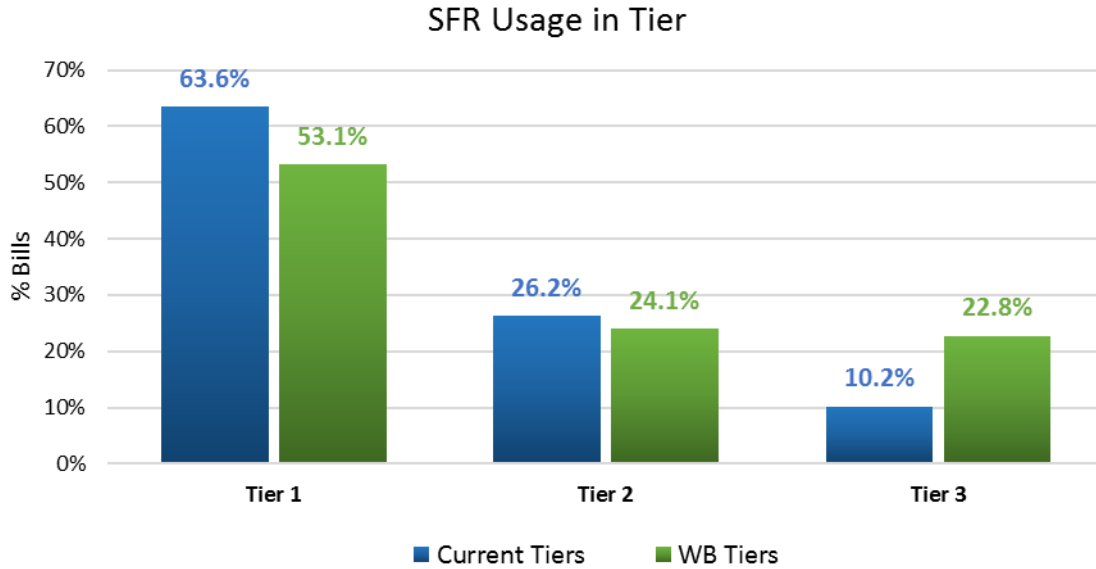


Figure 7.4 shows the usage distribution that results from the water budget tiers applied retroactively to FY 16/17 usage trends. These percentages will be applied to the projected residential usage in FY 17/18 to project total SFR usage in tiers.

Figure 7.4: Usage Distribution for Residential Tiers 1-3



7.4.2: PROJECTED WATER BUDGET USE FY 17/18 (DOMESTIC WATER)

Using the proposed residential tier definitions, projected usage for FY 17/18 is shown in Table 7.3. Table 7.5 contains the potable water sales projections for all residential domestic water customers for FY 17/18 (4,665,916 CCF). Table 7.6 summarizes total potable demand which includes sales from uniform rates (construction/fire protection). Values are rounded to the nearest CCF.

Using the analysis above, Raftelis determined the percentage of SFR usage that would fall into each tier. Applying these percentages to total SFR usage yields the usage in each new budget based tier as shown in Table 7.3.

Table 7.3: SFR Usage in Tiers

	% Usage in Tiers	Total Usage
Tier 1	53.1%	2,281,794
Tier 2	24.1%	1,033,981
Tier 3	22.8%	977,662
Total		4,293,437

Multi-Family Residential (MFR) usage was also re-tiered. The first tier for MFR usage was adjusted to be more in line with SFR usage, with the first tier at 9 CCF, which is roughly equivalent to the amount used by four people using 55 GPCD for one month. The second tier is set to 4 CCF, which is the budget allocation for roughly 1000 square feet of irrigation for summer months (July to September). These tiers result in the tier usage distribution for MFR customers that is shown below in Table 7.4.

Table 7.4: MFR Usage in Tiers

Tier	Total Usage
MFR Tier 1	311,911
MFR Tier 2	21,428
MFR Tier 3	39,140
Total	372,479

Adding these two usage distributions together results in the projected Residential tiered usage for FY 17/18. This is shown in Table 7.5.

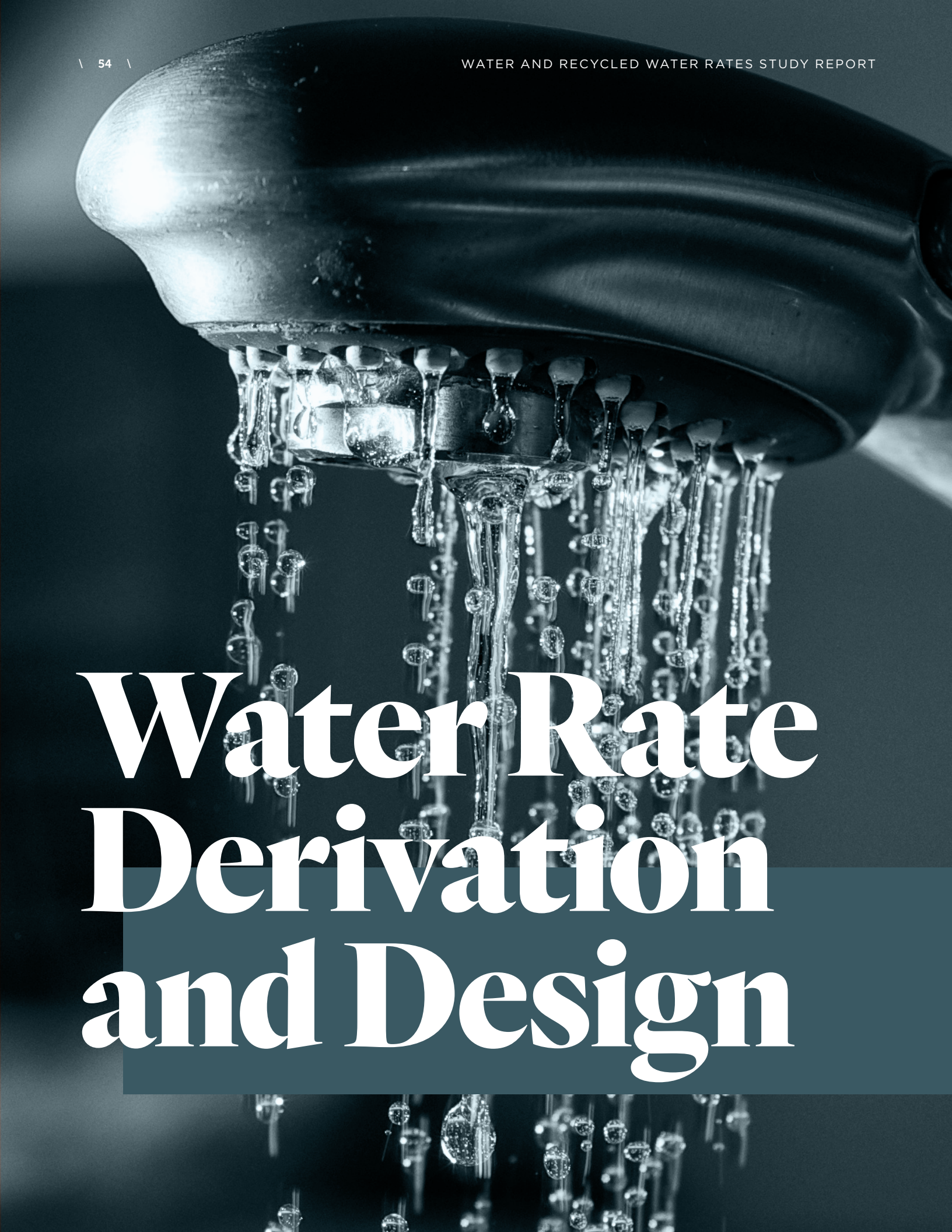
Table 7.5: Residential Usage in Tiers

Tier	Total Usage
Residential Tier 1	2,593,705
Residential Tier 2	1,055,409
Residential Tier 3	1,016,802
Total	4,665,916

As part of the tier restructuring, Raftelis also proposes unifying non-residential usage rates. The Non-Residential, Government, and Agriculture class are combined into a Non-Residential Single Rate (shown below in bold and italic). Moreover, fireflows were added to the Construction/Temporary class to create a single class for temporary usage. The Non-Residential Single Rate customer class indicated below will be referred to as Non-Residential going forward.

Table 7.6: Usage by New Customer Class

Customer Class	Total Usage
Residential	4,665,916
Non-Residential	585,259
Government	72,772
Agriculture	29,892
<i>Non-Residential Single Rate</i>	<i>687,923</i>
Construction/Temporary/Fire	27,856
Total	5,381,695



Water Rate Derivation and Design

8.1 EXISTING RATE STRUCTURE AND RATES

As explained in Section 4.1.1 of this Study, the rate structure for the City's water service charges currently (generally) has two components: a fixed Monthly Service Charge component and a variable volumetric Commodity Charge component. Additionally, the City may assess volumetric Pumping charges if the property is in the Intermediate or High elevation zone and Monthly Fire Service Charges if the property possesses a private fireline. The rates for the Monthly Service Charge increases are determined on the basis of the size of the water meter serving a property. As described below, larger meter sizes generally consume more water on average and tend to have higher rates of peaking; therefore, the costs to provide service to these customers are higher. A typical single-family home with a 3/4" meter currently has a Monthly Service Charge of \$29.54. The current rates for the Charge are shown Table 8.1.

The rates for the current Commodity Charges are calculated on the basis of the amount of water delivered in CCF. The current unit rates within each tier are shown in Table 8.2. Residential rates apply to both Single Family Residences (SFR) and Multi-Family Residences (MFR), such as duplexes, triplexes, and condominium or apartment complexes. Non-Residential applies to non-residential accounts, such as offices, warehouses, and manufacturing facilities. Agriculture rates apply to agricultural customers such as farms and dairies. Government applies to usage from government buildings, school buildings, and park irrigation. Temporary refers to water used in construction projects (dust and debris abatement), street sweeping. Private Fire Protection applies to fireflow.

Table 8.1: Existing Rates for the Monthly Service Charge

Year	Current Charge
5/8" Meters	\$19.79
3/4" Meters	\$29.54
1" Meters	\$49.23
1.5" Meters	\$98.46
2" Meters	\$157.53
3" Meters	\$344.61
4" Meters	\$578.94
6" Meters	\$1,197.00
8" Meters	\$1,577.32
10" Meters	\$2,569.78
12" Meters	\$2,569.78

Table 8.2: Existing Rate Structure – Domestic Water Commodity Rates

Year	Current Charge
Residential Tier 1	\$2.08
Residential Tier 2	\$2.37
Residential Tier 3	\$3.31
Non-Residential	\$2.48
Government	\$2.48
Agriculture	\$2.36
Temporary	\$3.00
Private Fire Protection	\$4.12

8.2 RATE COMPONENT CALCULATION

Table 8.3 shows the final Rate Component Calculation. Before determining the final cost-of-service based rates, Raftelis calculated the total of each Rate Component to be recovered. The Cost Component totals are taken from Table 6.6. Rate Components can consist of more than one cost component. For example, the Metering Rate Component consists of the Meters, Base, Max Day, and Max Hour Cost Components. All rate components under the grey header are to be recovered using Monthly Service Charges or Monthly Fire Service Charges. All costs under the dark blue header are to be recovered using Commodity and Elevation Pumping Charges.

Table 8.3: Rate Component Calculation

Cost Component	Total	Variable			Fixed		
		Supply	Conservation	Elevation	Meter Service	Customer Service	Fire
Base	\$6,331,879				100%		
Max Day	\$638,685				100%		
Max Hour	\$1,107,506				100%		
Supply	\$13,020,232	100%					
Elevation	\$656,944			100%			
Conservation	\$144,998		100%				
Meters	\$1,159,809				100%		
Customer Service	\$800,114					100%	
Fire	\$410,621						100%
Rate Component Totals	\$24,270,788	\$13,020,232	\$144,998	\$656,944	\$9,237,879	\$800,114	\$410,621



8.3 PROPOSED DOMESTIC WATER MONTHLY SERVICE CHARGES

Utilities invest in, and continuously maintain, facilities to provide capacity to meet all levels of water consumption, including peak demand plus fire protection. These costs must be recovered regardless of the amount of water used during a given period. Thus, peaking costs, along with base delivery costs and fixed water system costs to meet average demand, can be considered fixed water system costs. For the City, all base and peaking related costs will be recovered by fixed charges. Commodity Charges will recover the costs of Supply and Conservation, while Pumping charges will recover the Elevation rate component.

There are two components that comprise the Monthly Service Charges: meter servicing costs and customer service costs. The Monthly Service Charge recognizes the fact that even when a customer does not use any water, the City incurs fixed costs in connection with operating and maintaining the system for each connection at all times.

Meter Services Component

The meter services component collects servicing-related costs as well as all of the base and peaking related costs. Larger meters are more expensive to maintain and replace and have the potential to demand more capacity, or, in other words, exert greater peaking characteristics compared to smaller meters. The potential capacity demanded

(peaking) is proportional to the potential flow through each meter size as established by the American Water Works Association (AWWA) hydraulic capacity ratios. For example, the flow through a 4" meter is 25 times that of a 5/8" meter and therefore the meter capacity component of the Monthly Service Charge should be 25 times that of the 5/8" meter.

Allocating base costs by meter size is a common way to provide greater revenue stability, especially in light of decreasing water sales revenues during a drought, from permanent conservation and reduced demand, or other water shortage circumstances.

In order to create parity across the various meter sizes, each meter size is assigned a factor relative to a 5/8" meter based on its rated maximum capacity in gallons per minute (GPM). The 5/8" meter has a value of 1.00 which corresponds to 20 GPM. This establishes the "base" meter size. A given meter size's ratio of meter servicing costs relative to the base (that of a 5/8" meter) determines the meter equivalency. Summation of all meter equivalencies for a given size yields total equivalent meters. For this study, Raftelis calculated the capacity ratios of each meter size using standard AWWA hydraulic capacity ratios and estimated meter counts for FY 17/18.

Table 8.4 shows total domestic meter equivalencies used for this Study. The total equivalent meters calculation is completed by multiplying the number of meters of a specific size by their respective capacity ratio. The total number of equivalent meters within the City is determined to be 44,393. The equivalencies calculation is used for both potable and recycled meters as the proposed Monthly Service Charge will be the same for both services. Note that this table has a 12" meter which appeared in Table 4.5 as a 10" meter. The total bills column is the result of multiplying the total meters column by 12, since the City bills monthly. The EDU Total is the result of multiplying the number in the total meters column by the relevant capacity ratio (total meter equivalencies). The annual billed EDUs column is the result of multiplying the total in EDU Total by 12.

Table 8.4: Meter Equivalencies Calculation

	A	B	C	D	E	F
Meter Size	Total Meters	Total Annual Bills	Rated Capacity	Capacity Ratio	EDU Total	Annual Billed EDUS
Source	Table 4.5	A x 12	AWWA M1	C/20	A x C	D x 12
5/8"	4,306	51,672	20	1.0	4,306	51,672
3/4"	12,164	145,968	30	1.5	18,246	218,952
1"	3,872	46,464	50	2.5	9,680	116,160
1.5"	403	4,836	100	5.0	2,015	24,180
2"	507	6,084	160	8.0	4,056	48,672
3"	65	780	300	15.0	975	11,700
4"	71	852	500	25.0	1,775	21,300
6"	14	168	1250	62.5	875	10,500
8"	25	300	1800	90.0	2,250	27,000
10"	0	0	2900	145.0	0	0
12"	1	12	4300	215.0	215	2,580
Total	21,428	257,136			44,393	532,716

Table 8.5 shows the calculation of the meter service component. The meter service component of the Monthly Service Charge is calculated by dividing the total Meter Service Rate Component (inclusive of meter servicing costs, base costs, and peaking costs) from Table 8.3 by the total number of equivalent meters in Table 8.4. The cost is rounded up to the nearest penny and is calculated as \$17.35 per equivalent meter.

Table 8.5: Meter Service Component Calculation

	Row	Source	Total
Total Meter Service Rate Component	1	Table 8.3	\$9,237,879
Total Annual Billed EDUs	2	Table 8.4	532,716
Total Charge	3	Row 1/Row 2	\$17.35

Billing and Customer Service Component

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

Table 8.6 shows the customer service component calculation. To calculate the customer component the total Customer Service Rate Component from Table 8.3 is divided by the total annual bills prepared by the City (from Table 8.4) to determine the monthly customer service charge component of \$3.12. This number is rounded up to the nearest penny.

Table 8.7 shows the calculation of the proposed FY 17/18 rates for the Monthly Service Charges. The rates of the Meter Service Charges calculated below are for both potable water meters and recycled water meters. The Monthly Service Charges will remain harmonized moving forward. Ultimately the rates will be the same for the two enterprises with the rate itself dictated by the domestic water enterprise. For example, if the proposed total rev-

enue adjustment is 12 percent for recycled water and 6 percent for potable water, the rates for the Monthly Service Charge for both will increase by 6 percent and the recycled Commodity Charges will increase by 12 percent. Hence, the recycled water enterprise's adjustments will be termed "Rate Adjustments" rather than revenue adjustments.

The proposed rates are the sum of the meter services component and the billing and customer service component (shown as customer service component) calculated above. The customer component is uniform for all meter sizes. The meter services component is the cost per equivalent meter calculated in Table 8.5 multiplied by the respective meter ratio in Table 8.4. Comparisons in rates are relative to existing rates implemented in July 2014. The 5/8" meter experiences an increase of \$0.68 relative to the current charge. The most common meter size, 3/4", shows a 1% decrease. All other meters (except for the reclassified 12" meter which previously paid the 10" meter rate) experience a decrease in dollar terms ranging from \$2.73 for a 1" meter to \$142.07 for a 4" meter.

Table 8.6: Customer Service Component Calculation

	Row	Source	Total
Total Customer Service Rate Component	1	Table 8.3	\$800,114
Total Annual Bills	2	Table 8.4	257,136
Total Charge	3	Row 1/Row 2	\$3.12

Table 8.7: Calculation of Rates for Cost of Service Monthly Service Charges

	A	B	C	D	E	F
Meter Size	Proposed Customer Service Charge	Proposed Meter Service Charge	Total Proposed COS Charge	Current Rate	Difference	Percent Increase
Source	Table 8.6	Table 8.5 x Capacity Ratio	A + B	Table 8.1	C-D	E/D
5/8"	\$3.12	\$17.35	\$20.47	\$19.79	\$0.68	3%
3/4"	\$3.12	\$26.03	\$29.15	\$29.54	-\$0.39	-1%
1"	\$3.12	\$43.38	\$46.50	\$49.23	-\$2.73	-6%
1.5"	\$3.12	\$86.75	\$89.87	\$98.46	-\$8.59	-9%
2"	\$3.12	\$138.80	\$141.92	\$157.53	-\$15.61	-10%
3"	\$3.12	\$260.25	\$263.37	\$344.61	-\$81.24	-24%
4"	\$3.12	\$433.75	\$436.87	\$578.94	-\$142.07	-25%
6"	\$3.12	\$1,084.38	\$1,087.50	\$1,197.00	-\$109.50	-9%
8"	\$3.12	\$1,561.50	\$1,564.62	\$1,577.32	-\$12.70	-1%
10"	\$3.12	\$2,515.75	\$2,518.87	\$2,569.78	-\$50.91	-2%
12"	\$3.12	\$3,730.25	\$3,733.37	\$2,569.78	\$1,163.59	45%

Table 8.8 shows proposed rates for the five-year schedule of the Monthly Service Charges for the Study period. The rates for the Monthly Service Charge are increased uniformly by a percentage increase in subsequent years – that is, relative to existing rates – by the selected financial plan. All rates are rounded up to the nearest penny. The calculated Monthly Service Charges apply to both potable water customers and recycled water customers. The FY 17/18 COS Rate is shown for informational purposes, but will not be implemented. The FY 18/19 rates will be implemented on July 1, 2018.

Table 8.8: Proposed Rates for Monthly Service Charges (\$/Meter Size)

Meter Size	FY 17/18 COS Rate	FY 18/19 July 1, 2018	FY 19/20 July 1, 2019	FY 20/21 July 1, 2020	FY 21/22 July 1, 2021	FY 22/23 July 1, 2022
5/8"	\$20.47	\$22.11	\$23.88	\$25.80	\$27.87	\$30.10
3/4"	\$29.15	\$31.49	\$34.01	\$36.74	\$39.68	\$42.86
1"	\$46.50	\$50.22	\$54.24	\$58.58	\$63.27	\$68.34
1.5"	\$89.87	\$97.06	\$104.83	\$113.22	\$122.28	\$132.07
2"	\$141.92	\$153.28	\$165.55	\$178.80	\$193.11	\$208.56
3"	\$263.37	\$284.44	\$307.20	\$331.78	\$358.33	\$387.00
4"	\$436.87	\$471.82	\$509.57	\$550.34	\$594.37	\$641.92
6"	\$1,087.50	\$1,174.50	\$1,268.46	\$1,369.94	\$1,479.54	\$1,597.91
8"	\$1,564.62	\$1,689.79	\$1,824.98	\$1,970.98	\$2,128.66	\$2,298.96
10"	\$2,518.87	\$2,720.38	\$2,938.02	\$3,173.07	\$3,426.92	\$3,701.08
12"	\$3,733.37	\$4,032.04	\$4,354.61	\$4,702.98	\$5,079.22	\$5,485.56

8.4 PROPOSED MONTHLY FIRE SERVICE CHARGES

Table 8.9 shows the derivation of the Monthly Fire Service Charges. Total fire protection costs are allocated to private and public fire protection in proportion to the potential demand of each. The total private fire costs are determined to be \$410,621 (see Table 8.3). This becomes the numerator for the service cost component to determine the cost per fireline equivalency. Table 8.9 shows the fireline equivalencies calculation. Firelines use a different formula from Monthly Service Charges. Fire demand units are calculated by raising the diameter of the connection to a fire demand factor, which is 2.63. The total number of equivalent firelines is 26,566.

Table 8.9: Fireline Equivalencies Calculation

A	B	C	D	E
Connection Size	Fire Demand Factor	Number of Connections	Total Equivalent Firelines	Annual Equivalent Firelines
Source	$A^{2.63}$	Table 4.6	$B \times C$	$D \times 12$
4"	38.32	12	460	5,518
6"	111.31	27	3,005	36,065
8"	237.21	83	19,688	236,258
10"	426.58	8	3,413	40,952
Total Count/ Equivalencies		130	26,566	318,792

Table 8.10 shows the calculation of the fireline service component. Dividing the total private fireline costs (\$410,621) by total equivalent lines (318,792) gives the monthly cost per equivalent meter of \$1.29.

Table 8.10: Fireline Service Component Calculation

	Row	Source	Total
Total Fire Service Rate Component	1	Table 8.3	\$410,621
Total Annual Equivalent Firelines	2	Table 8.9	318,792
Total Charge per Equivalent Fireline	3	Row 1/Row 2	\$1.29

Table 8.11 shows the derivation of the monthly rates for the Monthly Fire Service Charges. The cost per equivalent line (\$1.29) is multiplied by the respective fireline ratio to obtain the fireline service component. The rates for the Private Fire Protection Charge are lower than the current rates as a result of the updated cost of service and respective cost allocations.

Table 8.11: Calculation of Rates for the COS FY 217/18 Monthly Fire Service Charges

Connection Size	Fire Demand Factor	Monthly Fire Service Charge	Current Fire Service Charge
Source	Table 8.9	A x Table 8.10	Table 4.2
4"	38.32	\$49.36	\$98.42
6"	111.31	\$143.38	\$203.49
8"	237.21	\$305.54	\$268.14
10"	426.58	\$549.46	\$436.86

Table 8.12 shows proposed rates for the Private Fire Protection Charges for the Study period. The rates for the Monthly Fire Service Charges are increased by a uniform percentage in subsequent years – that is, relative to existing rates – by the selected financial plan. The FY 17/18 COS Rate is shown for informational purposes, but will not be implemented. All rates are rounded up to the nearest penny.

Table 8.12: Proposed Rates for the Monthly Fire Service Charges (\$/Fireline Size)

Meter Size	FY 17/18 COS Rate	FY 18/19 July 1, 2018	FY 19/20 July 1, 2019	FY 20/21 July 1, 2020	FY 21/22 July 1, 2021	FY 22/23 July 1, 2022
4"	\$49.36	\$53.31	\$57.58	\$62.19	\$67.17	\$72.55
6"	\$143.38	\$154.86	\$167.25	\$180.63	\$195.09	\$210.70
8"	\$305.54	\$329.99	\$356.39	\$384.91	\$415.71	\$448.97
10"	\$549.46	\$593.42	\$640.90	\$692.18	\$747.56	\$807.37

8.5 PROPOSED RATES FOR COMMODITY CHARGES

8.5.1: UNIT COST COMPONENTS DEFINITIONS

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

1. Variable Supply Costs (Variable Supply Cost Component)
2. Conservation Costs (Conservation Component)

Variable Supply are costs related to the purchase and production of water to meet customer demand. The City maintains numerous sources of supply (detailed in Table 2 2 and Table 2 3) with disparate costs. These variable supply costs form the foundation of the rate components for each tier within the water budget rate structure.

Conservation Costs cover water conservation and efficiency programs and efforts. The City implemented several conservation programs during the recent drought. These programs are targeted to high volume water users. Therefore, conservation costs are allocated to Tier 3 for residential customers where water consumption is considered excessive or unsustainable and for which conservation programs are designed to promote water use curtailment. For non-residential customers, conservation costs are calculated by use of weighted peaking factors.

8.5.1.1: Variable Supply Unit Cost

The variable supply cost is the cost to supply and deliver

water from various sources. The water supply cost components in Table 8 13 are based on FY 17/18 water supply costs from the respective sources. The water supply rate component is the sum of the purchased water unit cost and treatment costs as well as other production and supply related capital costs. These additional costs are applied to the sources of supply in proportion to that source's full cost. For example, Chino Basin Desalter Authority (CDA) costs account for 39.62% of purchased water costs, so 39.62% of the Supply rate component is allocated to water purchased from CDA, totaling \$5,158,848. Following this logic, 32.77% of the City's total supply was purchased from CDA, the City is projected to provide 5,381,154 CCF of domestic water in FY 17/18, so CDA water accounts for 1,763,479 CCF of sold water, which excludes water losses. The per unit cost of CDA water is found by dividing the cost allocated to CDA water by the amount sold, resulting in \$2.93/CCF.

The blended water supply unit cost is calculated using the variable water supply costs shown in Table 8 13. The total Supply Rate Component (\$13,020,233) which comprises costs from the four sources that constitute the blended rate, as well as other production costs is divided by water available (5,381,154 CCF) to arrive at the unit cost of \$2.42 per CCF. The blended rate calculated in Table 8.13 includes all sources of supply. Non-residential customers pay the blended supply rate. Construction/Temporary/Fire customers pay the highest unit rate, representing the marginal cost of additional water purchases.

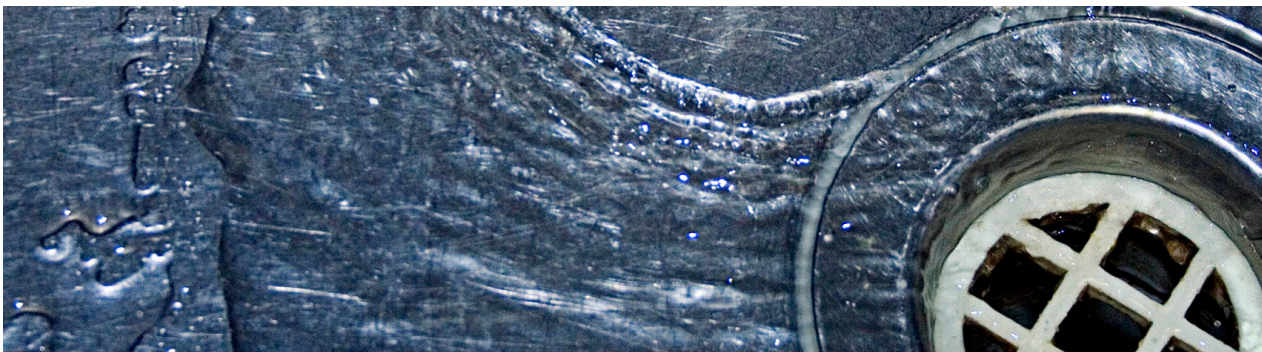


Table 8.13: Domestic Water Supply Costs FY 17/18

Supply Charge			
Total Supply Rate Component			\$13,020,233
Percentage of Cost by Source	Cost in Table 4.12	Percentage of total purchased water cost	Percentage applied to Rate Component
Chino Basin Desalter	\$3,783,616	39.62%	\$5,158,849
City Wells and MVWD City Allotment	\$540,000	5.65%	\$736,274
MVWD	\$3,553,200	37.21%	\$4,844,684
WFA Import	\$1,672,515	17.51%	\$2,280,425
Percentage of Supply by Source	Supply in Table 2.3	Percentage of total supply	Percentage applied to total sales
Chino Basin Desalter	4,200 AF	32.77%	1,763,657 CCF
City Wells and MVWD City Allotment	2,400 AF	18.73%	1,007,804 CCF
MVWD	4,200 AF	32.77%	1,763,657 CCF
WFA Import	2,016 AF	15.73%	846,576 CCF
Total	12,816 AF		5,381,695 CCF
Cost by Source of Supply	Allocated portion of supply rate component	Total sales	Unit cost per CCF
Chino Basin Desalter	\$5,158,849	1,763,657	\$2.93
City Wells and MVWD City Allotment	\$736,274	1,007,804	\$0.73
MVWD	\$4,844,684	1,763,657	\$2.75
WFA Import	\$2,280,425	846,576	\$2.69
Blended Rate	\$13,020,232	5,381,695	\$2.42

Residential tiered usage pays a differentiated supply cost. Lower tiers are first allocated the cheapest sources of water, higher tiers pay for the highest cost water. Table 8.14 shows water sources by cost (in \$/CCF) and each source's availability from Table 8.13.

Table 8.14: Water Sources by Cost and Availability

Source	Available Supply HCF	Cost per CCF
	Table 8.13	Table 8.13
City Wells and MVWD City Allotment	1,007,804	\$0.73
WFA Import	846,578	\$2.69
MVWD	1,763,657	\$2.75
Chino Basin Desalter	1,763,657	\$2.93

Residential usage accounts for 86.7% of the City's total usage, so 86.7% of the amount indicated is available supply for residential usage. Table 8.15 shows the water available for residential supply, by source.

Table 8.15: Water Sources Availability for Residential Usage

Source	Total Residential Available Supply
	Table 8.14 A x 86.7%
City Wells and MVWD City Allotment	873,763
WFA Import	733,981
MVWD	1,529,086
Chino Basin Desalter	1,529,086
Total	4,665,916

To determine tiered supply costs, these sources of supply are allocated to each tier in order of cost. For example: Tier 1's proposed demand requires 2,593,705 CCF. In order to fill this demand, Tier 1 is allocated all of the City Wells and MVWD City Allotment (873,763 CCF) as well as all of the WFA Import Allocation (733,981 CCF), with the remainder met by a portion of the MVWD allocation (985,961 CCF). This is shown below in Table 8.16. Tier 2 demand is supplied by the remaining WFA Import Allocation (543,125 CCF) and a portion of Chino Basin Desalter water (512,283 CCF). Tier 3 demand is met exclusively with Chino Basin Desalter water.

Table 8.16: Water Sources Allocated to Residential Tiers

Residential Tier	Annual Tiered Usage	City Wells and MVWD City Allotment	WFA Import	MVWD	Chino Basin Desalter
Tier 1	2,593,705 CCF	873,763 CCF	733,981 CCF	985,961 CCF	0 CCF
Tier 2	1,055,409 CCF	0 CCF	0 CCF	543,125 CCF	512,284 CCF
Tier 3	1,016,802 CCF	0 CCF	0 CCF	0 CCF	1,016,802 CCF
Total	4,665,916 CCF	873,763 CCF	733,981 CCF	1,529,086 CCF	1,529,086 CCF

Table 8.17 shows the calculation for tiered supply rates. These costs are calculated by multiplying the percentage of tiered use met by a source of supply (Table 8.16 values related as percentages) by the cost per CCF of that source (from Table 8.14) and summing for each source that supplies that tier. For example, Tier 2's rate is calculated by adding 51% of MVWD water × \$2.75 to 49% of Chino Basin Desalter water × \$2.93. These rates are rounded up to the nearest penny.

Table 8.17: Residential Tier Supply Cost Calculation

Residential Tier	% City Wells and MVWD City Allotment	% WFA Import	% MVWD	% Chino Basin Desalter	Supply Rate
Tier 1	34%	28%	38%	0%	\$2.06
Tier 2	0%	0%	51%	49%	\$2.84
Tier 3	0%	0%	0%	100%	\$2.93
Cost per CCF	\$0.73	\$2.69	\$2.75	\$2.93	

8.5.1.2: Conservation Unit Cost

Conservation costs are allocated according to peaking factors. Raftelis used a “unit less” weighted peaking factor to allocate these costs. The weighted peaking factors are calculated by customer class by multiplying the class’s peaking factor by its annual usage. Peaking factors are calculated by dividing the maximum month of use by the average month of use. Table 8.18 provides customer class peaking factors. For each customer class, Raftelis determined the average use within the class throughout the year. Next, Raftelis identified the maximum use period for the class during the year. Dividing the maximum and average gives a factor of max/average. The percentage of peak in Column F represents the share of each classes’ weighted peak units to the total.

Table 8.18: Domestic Water Peaking Factors by Class

Customer Class	A Total FY 17/18 Usage Table 7.6	B FY 16/17 Max Month	C FY 16/17 Average Month	D Peaking Factor B/C	E Weighted Peaking Units A x D	F Percentage of Peak F/ F Total
Single Family Residential	4,293,437	357,904	283,138	1.26	5,427,180	77.5%
Multi-Family Residential	372,479	28,410	24,572	1.16	430,651	6.2%
Non-Residential Single Rate	687,923	141,583	92,248	1.53	1,055,826	15.1%
Construction/Temporary/Fire	27,856	9,541	3,046	3.13	85,541	1.2%
Total	5,381,695				6,999,198	

Table 8.19 shows the unit cost calculation for non-tiered customer classes. The allocated Conservation cost is calculated by multiplying the total Conservation rate component costs by the Percentage of Peak for that class. For non-tiered classes, the rate is calculated by dividing the allocated Conservation cost for that class by the total FY 17/18 annual usage. Unit costs are rounded to the nearest whole penny.

Table 8.19: Domestic Water Conservation Unit Cost Calculation, Uniform Classes

Customer Class	A Weighted Peaking Units Table 8.18	B Percentage of Peak Table 8.18	C Allocated Conservation Costs Table 8.3 x B	D Total FY 17/18 Usage Table 7.6	E Rate C / D
SFR	5,427,180	77.5%	\$112,404	4,293,437	<i>Allocated to Tiers</i>
MFR	430,651	6.2%	\$8,919	372,479	<i>Allocated to Tiers</i>
Non-Residential	1,055,826	15.1%	\$21,868	687,923	\$0.04
Construction/Temporary/Fire	87,242	1.2%	\$1,807	27,856	\$0.07
Total	7,000,899		\$144,998	5,381,695	

Residential Conservation costs are allocated solely to Tier 3. Note that the Residential Conservation costs are the sum of the SFR and MFR costs shown in Table 8.19.

Table 8.20: Domestic Water Conservation Unit Cost Calculation, Tiers

Residential Tier	A	B	C
	Annual Usage	Allocated Conservation Costs	Unit Rate
Source	Table 7.5	Table 8.19	A / B
Tier 1	2,593,705		
Tier 2	1,055,409		
Tier 3	1,016,802	\$121,324	\$0.12

The City's water conservation programs offer a variety of solutions to reduce water use for all customers served by the City. Water conservation offsets the demand for potable water and, therefore, is a low-cost source of water supply available to all water utilities. Consequently, it is in the best interest of rate payers for the City to offer and implement an assortment of water conservation programs. These programs ensure reliable future water supply for all rate payers and the community.

8.5.1.3: Domestic Water Final Commodity Charge Rates Derivation

To determine the rates for the domestic water Commodity Charge, the components described above are added together. The resulting summation constitutes the final rates. The proposed cost-of-service based rates are shown in bold in Column C of Table 8.21.

Table 8.21: Proposed Rates for the Commodity Charge (\$/CCF

Customer Class and Tier	A	B	C
	Supply Cost	Conservation Cost	Total Rate
Source	Table 8.13 Table 8.17	Table 8.19 Table 8.20	A + B
Tier 1	\$2.06	\$0.00	\$2.06
Tier 2	\$2.84	\$0.00	\$2.84
Tier 3	\$2.93	\$0.12	\$3.05
Non-Residential	\$2.42	\$0.04	\$2.46
Construction/Temporary/Fire	\$2.93	\$0.07	\$3.00

Table 8.22 shows proposed rates for the domestic water Commodity Charge for the Study period. The Commodity Charge is increased “across the board” in subsequent years – that is, relative to the proposed COS based rates – by the selected financial plan. The FY 17/18 COS Rate is shown for informational purposes, but will not be implemented. Beginning July 1, 2018, and each July 1 thereafter for the study period, the Commodity Charge rates will increase to collect an additional 8% per year in additional revenue. All rates are rounded up to the nearest penny.

Table 8.22: Current and Proposed Rates for the Domestic Water Commodity Charge for the Study Period (\$/CCF)

Customer Class and Tier	Current Rate	FY 17/18 COS Rate	FY 18/19 July 1, 2018	FY 19/20 July 1, 2019	FY 20/21 July 1, 2020	FY 21/22 July 1, 2021	FY 22/23 July 1, 2022
Tier 1	\$2.08	\$2.06	\$2.23	\$2.41	\$2.61	\$2.82	\$3.05
Tier 2	\$2.37	\$2.84	\$3.07	\$3.32	\$3.59	\$3.88	\$4.20
Tier 3	\$3.31	\$3.05	\$3.30	\$3.57	\$3.86	\$4.17	\$4.51
Non-Residential Construction/Temporary/Fire	\$2.48	\$2.46	\$2.66	\$2.88	\$3.12	\$3.37	\$3.64
	\$3.00	\$3.00	\$3.24	\$3.50	\$3.78	\$4.09	\$4.42



8.6 PROPOSED PUMPING CHARGES

The final rate component for the Domestic water enterprise are the Pumping Charges. The City charges two Pumping charges, the Intermediate zone charge and the High zone charge. Table 8.23 shows the derivation of the Pumping Charges. To calculate this charge, Raftelis used City provided information showing costs to operated pump stations that served both Intermediate and High elevation zones. Pumping unit costs were determined by dividing the total cost to operate pumps serving each area by the total pumped to each area. The Elevation rate component was greater than the total pumping cost, and the remainder was divided equally to all units pumped as the pumping Unit Cost of Capital. The final charges at the bottom are rounded up to the nearest penny.

Table 8.23: Pumping Charge Calculations by Zone (\$/CCF)

Elevation Rates	Row	Source	Total
Total Elevation Rate Component	1	Table 8.3	\$656,944
Total Pumping to Intermediate	2	Table 4.9	2,376,794 CCF
Total Pumping to High	3	Table 4.9	1,290,843 CCF
Cost to Pump to Intermediate	4	From City	\$132,442
Cost to Pump to High	5	From City	\$406,600
Unit Cost for Intermediate	6	Row 4 / Row 2	\$0.06
Unit Cost for High	7	Row 5 / Row 3	\$0.31
Capital Cost to be Recovered	8	Row 1 – (Row 4 + Row 5)	\$117,901
Total Pumping	9	Row 2 + Row 3	3,667,637
Unit Cost of Capital	10	Row 8 / Row 9	\$0.03
Charge for Intermediate Pumping	11	Row 6+ Row 10	\$0.09
Charge for High Pumping	12	Row 7 + Row 10	\$0.35

Table 8.24 shows proposed rates for the Pumping Charges for the Study period. The Pumping Charge is increased “across the board” in subsequent years – that is, relative to the proposed rates – by the selected financial plan. The FY 17/18 COS Rate is shown for informational purposes, but will not be implemented. Beginning July 1, 2018, and each July 1 thereafter for the study period, the Pumping Charge rates will increase to collect an additional 8% per year in additional revenue. All rates are rounded up to the nearest penny.

Table 8.24: Current and Proposed Pumping Charges for the Study Period (\$/CCF)

Elevation Rates	Current Rate	FY 17/18 COS Rate	FY 18/19 July 1, 2018	FY 19/20 July 1, 2019	FY 20/21 July 1, 2020	FY 21/22 July 1, 2021	FY 22/23 July 1, 2022
Charge for Intermediate Pumping	\$0.17	\$0.09	\$0.10	\$0.11	\$0.12	\$0.13	\$0.15
Charge for High Pumping	\$0.44	\$0.35	\$0.38	\$0.42	\$0.46	\$0.50	\$0.54



8.7 WATER CUSTOMER IMPACTS

The rate model calculates water customer impacts for all classes and meter sizes. Customer impacts from the proposed new rates are shown in Figure 8.1. A SFR customer who has a 3/4" meter and uses 5 CCF of water within their total new water budget will experience a \$2.70 increase in their monthly bill. This is due to both an increase in the Tier 1 water usage rate and an increase in the Monthly Service Charge. Figure 8.2 through Figure 8.5 shows customer impacts by service class in percentage terms. The model calculates each bill at the current rates and again at the proposed rates and determines the dollar change. Note that the impacts shown are for FY 18/19, the implementation year that includes an additional 8% revenue increase.

Figure 8.1: Bill Impacts - Single Family Residential with 3/4" Meter

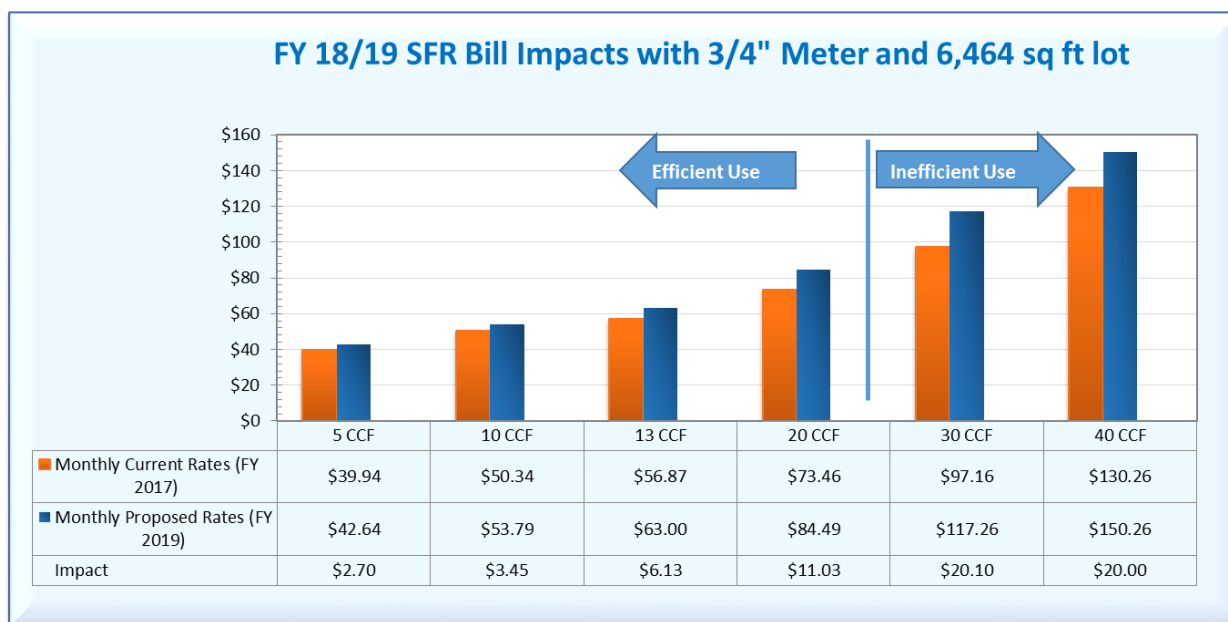


Figure 8.2: Bill Impacts – SFR Customers

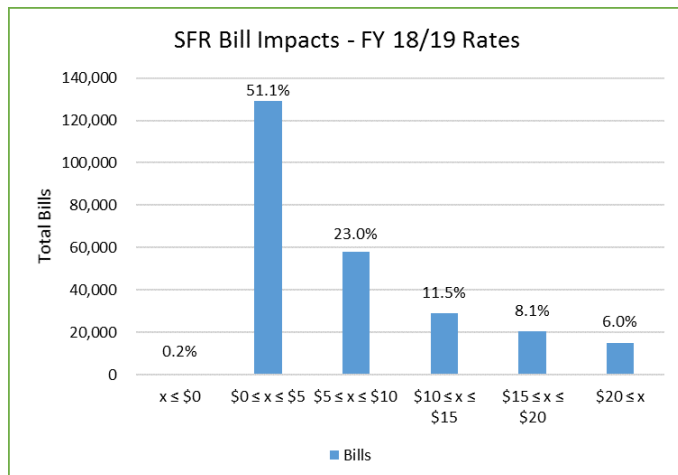


Figure 8.3: Bill Impacts – MFR Customers

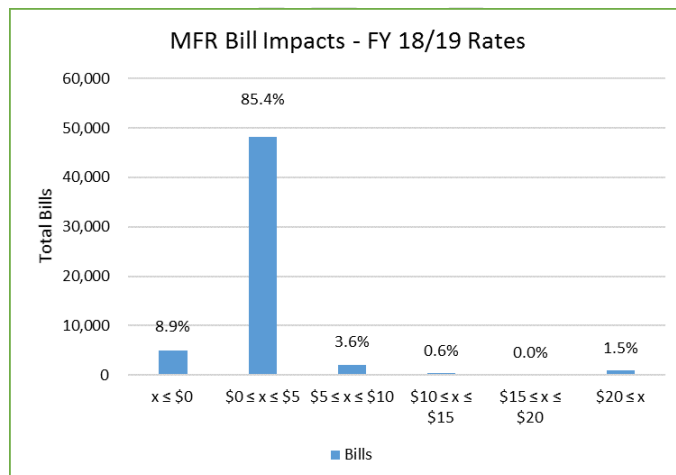


Figure 8.4: Bill Impacts – Non-Residential Customers

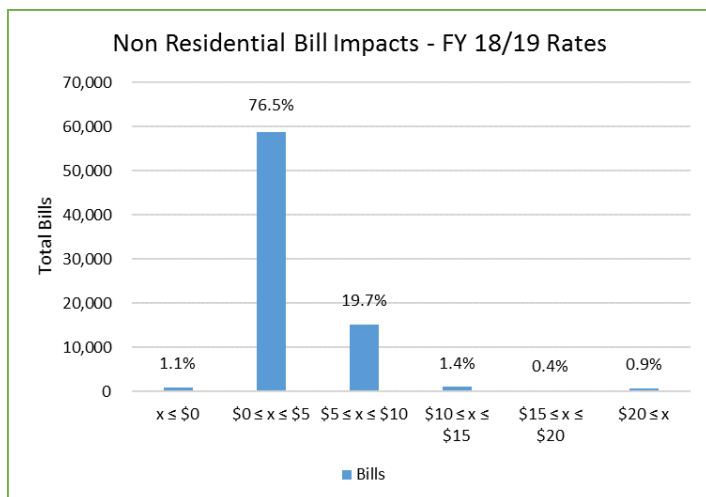
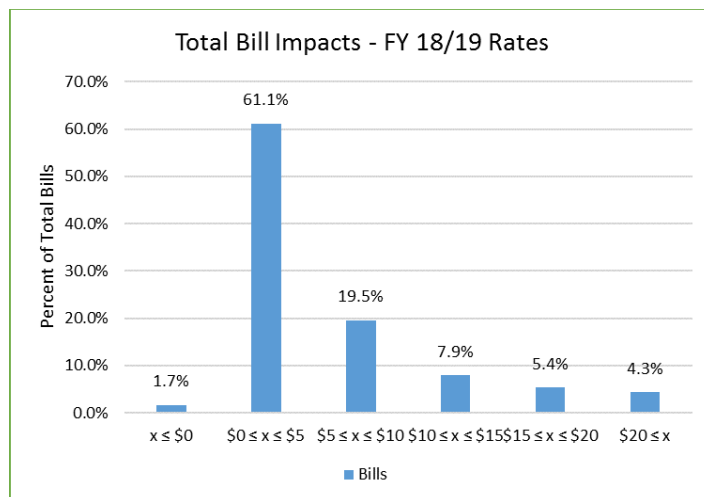


Figure 8.5: Bill Impacts – All Customers



Recycled Water Cost of Service Analysis and Rate Derivation

The principles and methodology of a cost of service analysis were described in Section 1.3. A cost of service analysis distributes a utility's revenue requirements (costs) to each customer class. The Recycled Water cost of service is highly simplified relative to the Domestic Water cost of service analysis. The Recycled Water enterprise will charge the same Monthly Service Charges and Pumping Charges as the Domestic Water enterprise and will charge a uniform rate for all sold Recycled Water. Since these rates have already been established in Section 8, and since we have estimates of both accounts by meter size and pumping needs in FY 17/18, the cost per unit of recycled water can be calculated by subtracting these projected revenues from the revenue requirement and dividing the remainder by the estimated usage for FY 17/18.

Table 9.1 shows the total revenue requirement for the Recycled Water Enterprise in FY 17/18.

Table 9.1: Revenue Requirement of Recycled Water Enterprise

Revenue Requirement	Source	Total
O&M Expense	Table 5.8	\$1,150,314
Debt Service		\$0
Fund Balance	Table 5.12	\$912,838
Less Revenue Offsets		\$0
Total Revenue Required from Rates		\$2,063,153

Table 9.2 shows projected revenue in FY 17/18 using the fixed charges derived in Table 8.7 and recycled water accounts by meter size shown in Table 5.4.

Table 9.2: Projected Recycled Water Revenue from Monthly Service Charges

Meter Size Source:	Meter Rates Table 8.7	RW Meters Table 5.4	Revenue
5/8"	\$20.47	0	\$0
3/4"	\$29.15	0	\$0
1"	\$46.50	10	\$5,580
1.5"	\$89.87	58	\$62,550
2"	\$141.92	97	\$165,195
3"	\$263.37	13	\$41,086
4"	\$436.87	4	\$20,970
6"	\$1,087.50	4	\$52,200
8"	\$1,564.62	1	\$18,775
10"	\$2,518.87	1	\$30,226
Subtotal		188	\$396,582

Table 9.3 shows projected revenue in FY 17/18 using the pumping charges derived in Table 8.23 and recycled water pumping totals shown in Table 5.5.

Table 9.3: Projected Recycled Water Revenue from Pumping Charges

Pumping Zone Source	Pumping Rates Table 8.23	Quantity Pumped Table 5.5	Revenue
Intermediate	\$0.09	289,903 CCF	\$26,091
High	\$0.35	174,541 CCF	\$61,089
Total		464,444 CCF	\$87,181

Table 9.4 shows the calculation for determining the Recycled Water Commodity Charge. This rate is calculated by subtracting the Monthly Service Charge Revenue from Table 9.2 and the Pumping Revenue from Table 9.3 from the total revenue requirement in Table 9.1 and dividing the remainder by projected recycled water sales in FY 17/18. This results in a proposed recycled water commodity charge of \$1.82 / CCF.

Table 9.4: FY 17/18 Recycled Water Commodity Charge Calculation

Category	Row	Source	Calculation
Revenue Requirement	1	Table 9.1	\$2,063,153
Less Monthly Service Charge Revenue	2	Table 9.2	\$396,582
Less Pumping Revenue	3	Table 9.3	\$87,181
Remaining Revenue Requirement	4	Row 1 - Row 2 – Row 3	\$1,579,390
Total Recycled Water Sales	5	Table 5.5	871,177 CCF
Recycled Water Commodity Charge	6	Row 4 / Row 5	\$1.82 / CCF



Table 9.5 shows proposed rates for the Recycled Water Commodity Charges for the Study period. The Pumping Charge is increased “across the board” in subsequent years – that is, relative to the proposed rates – by the selected financial plan. The FY 17/18 COS Rate is shown for informational purposes, but will not be implemented. Beginning July 1, 2019, and each July 1 thereafter for the study period, the recycled water rates will increase to collect an additional 10% per year in additional revenue. All rates are rounded up to the nearest penny. The third row shows Recycled Water Commodity Charges as a percentage of Non-Residential Commodity Charges. In FY 18/19 Recycled Water Rates will be 68% of Non-Residential, increasing to 74% by FY 22/23.

Table 9.5: FY 17/18 Recycled Water Commodity Charges Across Study Period

Rate	Current Rate	FY 17/18 COS Rate	FY 18/19 July 1, 2018	FY 19/20 July 1, 2019	FY 20/21 July 1, 2020	FY 21/22 July 1, 2021	FY 22/23 July 1, 2022
Recycled Water Rate	\$1.74	\$1.82	\$1.82	\$2.01	\$2.22	\$2.45	\$2.70
Proposed Non-Residential Rates	\$2.48	\$2.46	\$2.66	\$2.88	\$3.12	\$3.37	\$3.64
Recycled as Percentage of Non-Residential	70%	74%	68%	70%	71%	73%	74%



Appendices

10.1 DETAILED DOMESTIC WATER O&M EXPENSES

	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23
PERSONNEL						
1010 Regular Salaries	\$1,805,900	\$1,860,077	\$1,915,879	\$1,973,356	\$2,032,556	\$2,093,533
1015 Part-Time/Seasonal Wages	\$45,900	\$47,277	\$48,695	\$50,156	\$51,661	\$53,211
1020 Overtime Salaries	\$54,900	\$56,547	\$58,243	\$59,991	\$61,790	\$63,644
1540 Fringe Benefits	\$1,623,300	\$1,736,931	\$1,858,516	\$1,988,612	\$2,127,815	\$2,276,762
TOTAL PERSONNEL	\$3,530,000	\$3,700,832	\$3,881,334	\$4,072,115	\$4,273,823	\$4,487,150
OPERATIONS & MAINTENANCE						
2010 Memberships and Certifications	\$4,800	\$4,944	\$5,092	\$5,245	\$5,402	\$5,565
2015 Conferences, Meetings, and Training	\$5,400	\$5,562	\$5,729	\$5,901	\$6,078	\$6,260
2030 Uniforms	\$19,000	\$19,570	\$20,157	\$20,762	\$21,385	\$22,026
3010 Legal Services	\$50,000	\$51,500	\$53,045	\$54,636	\$56,275	\$57,964
3020 Financial Services	\$91,200	\$93,936	\$96,754	\$99,657	\$102,646	\$105,726
3090 Professional Services	\$350,000	\$360,500	\$371,315	\$382,454	\$393,928	\$405,746
3115 Information Technology Service Charge	\$127,800	\$131,634	\$135,583	\$139,651	\$143,840	\$148,155
3190 Contractual Services	\$375,600	\$386,868	\$398,474	\$410,428	\$422,741	\$435,423
4010 Legal Advertising	\$800	\$824	\$849	\$874	\$900	\$927
4015 Advertising and Promotion	\$24,000	\$24,720	\$25,462	\$26,225	\$27,012	\$27,823
4030 Printing & Photocopying	\$32,000	\$32,960	\$33,949	\$34,967	\$36,016	\$37,097
4035 Postage & Express Delivery	\$133,800	\$137,814	\$141,948	\$146,207	\$150,593	\$155,111
4245 Traffic Signs	\$3,500	\$3,605	\$3,713	\$3,825	\$3,939	\$4,057
4410 Chemical Supplies	\$63,700	\$66,885	\$70,229	\$73,741	\$77,428	\$81,299
4430 Small Equipment and Tools	\$15,000	\$15,450	\$15,914	\$16,391	\$16,883	\$17,389
4440 Office Supplies	\$3,000	\$3,090	\$3,183	\$3,278	\$3,377	\$3,478
4445 Special Parts and Supplies	\$103,300	\$106,399	\$109,591	\$112,879	\$116,265	\$119,753
4450 Reference Materials and Services	\$1,000	\$1,030	\$1,061	\$1,093	\$1,126	\$1,159
5010 Parks and Landscape	\$2,500	\$2,575	\$2,652	\$2,732	\$2,814	\$2,898
5020 Building and Structure Maintenance	\$9,200	\$9,476	\$9,760	\$10,053	\$10,355	\$10,665
5025 Office Equip Maint	\$1,000	\$1,030	\$1,061	\$1,093	\$1,126	\$1,159
5110 Street Repair & Maint	\$200,000	\$206,000	\$212,180	\$218,545	\$225,102	\$231,855
5220 Water Lines & Main Maintenance	\$130,000	\$133,900	\$137,917	\$142,055	\$146,316	\$150,706
5225 Meter Maintenance	\$35,000	\$36,050	\$37,132	\$38,245	\$39,393	\$40,575
5235 Distribution Plant Maintenance	\$205,000	\$211,150	\$217,485	\$224,009	\$230,729	\$237,651
5490 Other Structural Repair and Maintenance	\$5,000	\$5,150	\$5,305	\$5,464	\$5,628	\$5,796

5590 Equipment Maintenance	\$236,700	\$243,801	\$251,115	\$258,648	\$266,408	\$274,400
5620 Vehicle Rental	\$477,600	\$491,928	\$506,686	\$521,886	\$537,543	\$553,669
5625 Equipment Rental	\$3,500	\$3,605	\$3,713	\$3,825	\$3,939	\$4,057
5690 Other Rental	\$0	\$0	\$0	\$0	\$0	\$0
6010 Water	\$5,765,715	\$6,392,576	\$7,077,064	\$7,784,770	\$8,563,248	\$9,419,572
6011 Water JT Venture Fix Costs	\$969,100	\$1,066,010	\$1,172,611	\$1,289,872	\$1,418,859	\$1,560,745
6012 Water Costs - Fixed	\$500,000	\$550,000	\$605,000	\$665,500	\$732,050	\$805,255
6013 Water Cost- Chino Basin Desalter	\$3,783,616	\$4,161,978	\$4,578,175	\$5,035,993	\$5,539,592	\$6,093,551
6014 Water - Recycled Purchase	\$0	\$0	\$0	\$0	\$0	\$0
6016 Water - Recharge to Basin Purchase	\$583,000	\$641,300	\$705,430	\$775,973	\$853,570	\$938,927
6025 Electricity	\$1,000,000	\$1,100,000	\$1,210,000	\$1,331,000	\$1,464,100	\$1,610,510
6030 Gas	\$800	\$884	\$976	\$1,073	\$1,180	\$1,298
6035 Telephone	\$12,400	\$12,772	\$13,155	\$13,550	\$13,956	\$14,375
7220 Administrative Overhead	\$2,599,100	\$2,677,073	\$2,757,385	\$2,840,107	\$2,925,310	\$3,013,069
7225 Departmental Overhead	\$608,000	\$638,400	\$670,320	\$703,836	\$739,028	\$775,979
7415 Special Departmental Expense	\$30,400	\$31,312	\$32,251	\$33,219	\$34,215	\$35,242
7610 Uncollectible Accounts	\$22,000	\$22,660	\$23,340	\$24,040	\$24,761	\$25,504
7710 Developer Reimburse Agreement	\$0	\$0	\$0	\$0	\$0	\$0
7810 Water Conservation Program	\$0	\$0	\$0	\$0	\$0	\$0
7985 NPDES Permit Costs	\$11,000	\$11,330	\$11,670	\$12,020	\$12,381	\$12,752
TOTAL OPERATIONS & MAINTENANCE	\$18,594,531	\$20,098,250	\$21,734,430	\$23,475,722	\$25,377,437	\$27,455,172
CAPITAL OUTLAY						
8050 Office Furniture & Equip	\$0	\$0	\$0	\$0	\$0	\$0
8060 Vehicles and Equipment	\$0	\$0	\$0	\$0	\$0	\$0
8420 Water Meters	\$206,000	\$212,180	\$218,545	\$225,102	\$231,855	\$238,810
8450 Water Supply Facilities	\$0	\$0	\$0	\$0	\$0	\$0
9041 Equity Interest Loss in WFA	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL CAPITAL OUTLAY	\$206,000	\$212,180	\$218,545	\$225,102	\$231,855	\$238,810
TOTAL	\$22,330,531	\$24,011,262	\$25,834,309	\$27,772,938	\$29,883,115	\$32,181,132

10.2 DETAILED RECYCLED WATER O&M EXPENSES

	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23
PERSONNEL						
1010 Regular Salaries	\$11,900	\$12,257	\$12,625	\$13,003	\$13,394	\$13,795
1015 Part-Time/Seasonal Wages	\$0	\$0	\$0	\$0	\$0	\$0
1020 Overtime Salaries	\$0	\$0	\$0	\$0	\$0	\$0
1540 Fringe Benefits	\$11,000	\$11,770	\$12,594	\$13,475	\$14,419	\$15,428
TOTAL PERSONNEL	\$22,900	\$24,027	\$25,219	\$26,479	\$27,812	\$29,223
OPERATIONS & MAINTENANCE						
2010 Memberships and Certifications	\$0	\$0	\$0	\$0	\$0	\$0
2015 Conferences, Meetings, and Training	\$0	\$0	\$0	\$0	\$0	\$0
2030 Uniforms	\$0	\$0	\$0	\$0	\$0	\$0
3010 Legal Services	\$0	\$0	\$0	\$0	\$0	\$0
3020 Financial Services	\$0	\$0	\$0	\$0	\$0	\$0
3090 Professional Services	\$0	\$0	\$0	\$0	\$0	\$0
3115 Information Technology Service Charge	\$0	\$0	\$0	\$0	\$0	\$0
3190 Contractual Services	\$16,500	\$16,995	\$17,505	\$18,030	\$18,571	\$19,128
4010 Legal Advertising	\$0	\$0	\$0	\$0	\$0	\$0
4015 Advertising and Promotion	\$0	\$0	\$0	\$0	\$0	\$0
4030 Printing & Photocopying	\$0	\$0	\$0	\$0	\$0	\$0
4035 Postage & Express Delivery	\$0	\$0	\$0	\$0	\$0	\$0
4245 Traffic Signs	\$0	\$0	\$0	\$0	\$0	\$0
4410 Chemical Supplies	\$0	\$0	\$0	\$0	\$0	\$0
4430 Small Equipment and Tools	\$0	\$0	\$0	\$0	\$0	\$0
4440 Office Supplies	\$0	\$0	\$0	\$0	\$0	\$0
4445 Special Parts and Supplies	\$2,500	\$2,575	\$2,652	\$2,732	\$2,814	\$2,898
4450 Reference Materials and Services	\$0	\$0	\$0	\$0	\$0	\$0
5010 Parks and Landscape	\$0	\$0	\$0	\$0	\$0	\$0
5020 Building and Structure Maintenance	\$100	\$103	\$106	\$109	\$113	\$116
5025 Office Equip Maint	\$0	\$0	\$0	\$0	\$0	\$0
5110 Street Repair & Maint	\$0	\$0	\$0	\$0	\$0	\$0
5220 Water Lines & Main Maintenance	\$10,000	\$10,300	\$10,609	\$10,927	\$11,255	\$11,593
5225 Meter Maintenance	\$3,000	\$3,090	\$3,183	\$3,278	\$3,377	\$3,478
5235 Distribution Plant Maintenance	\$10,000	\$10,300	\$10,609	\$10,927	\$11,255	\$11,593
5490 Other Structural Repair and Maintenance	\$500	\$515	\$530	\$546	\$563	\$580
5590 Equipment Maintenance	\$0	\$0	\$0	\$0	\$0	\$0
5620 Vehicle Rental	\$0	\$0	\$0	\$0	\$0	\$0
5625 Equipment Rental	\$0	\$0	\$0	\$0	\$0	\$0

5690 Other Rental	\$0	\$0	\$0	\$0	\$0	\$0
6010 Water	\$0	\$0	\$0	\$0	\$0	\$0
6011 Water JT Venture Fix Costs	\$0	\$0	\$0	\$0	\$0	\$0
6012 Water Costs - Fixed	\$0	\$0	\$0	\$0	\$0	\$0
6014 Water Recycled Purchase	\$973,814	\$1,207,530	\$1,497,337	\$1,856,698	\$2,302,305	\$2,854,858
6025 Electricity	\$100,000	\$110,473	\$121,946	\$134,140	\$147,554	\$162,310
6030 Gas	\$0	\$0	\$0	\$0	\$0	\$0
6035 Telephone	\$0	\$0	\$0	\$0	\$0	\$0
7220 Administrative Overhead	\$0	\$0	\$0	\$0	\$0	\$0
7225 Departmental Overhead	\$0	\$0	\$0	\$0	\$0	\$0
7415 Special Departmental Expense	\$1,000	\$1,030	\$1,061	\$1,093	\$1,126	\$1,159
7610 Uncollectible Accounts	\$0	\$0	\$0	\$0	\$0	\$0
7710 Developer Reimburse Agreement	\$0	\$0	\$0	\$0	\$0	\$0
7810 Water Conservation Program	\$0	\$0	\$0	\$0	\$0	\$0
7985 NPDES Permit Costs	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL OPERATIONS & MAINTENANCE	\$1,117,414	\$1,362,911	\$1,665,538	\$2,038,481	\$2,498,932	\$3,067,713
CAPITAL OUTLAY						
8050 Office Furniture & Equip	\$0	\$0	\$0	\$0	\$0	\$0
8060 Vehicles and Equipment	\$0	\$0	\$0	\$0	\$0	\$0
8420 Water Meters	\$10,000	\$10,300	\$10,609	\$10,927	\$11,255	\$11,593
8450 Water Supply Facilities	\$0	\$0	\$0	\$0	\$0	\$0
9041 Equity Interest Loss in WFA	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL CAPITAL OUTLAY	\$10,000	\$10,300	\$10,609	\$10,927	\$11,255	\$11,593
TOTAL	\$1,150,314	\$1,397,238	\$1,701,366	\$2,075,887	\$2,537,999	\$3,108,529

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