HI-DESERT WATER DISTRICT

Water and Wastewater Rate Study

FINAL REPORT / MAY 23, 2024

RAFTELIS

HI-DESERT WATER DISTRICT

RAFTELIS

May 23, 2024

Paul G. Peschel
General Manager
Hi-Desert Water District
55439 29 Palms Highway
Yucca Valley, California 92284

Subject: Water and Wastewater Financial Plan and Rate Study Report

Dear Mr. Peschel,

Raftelis is pleased to submit this Water and Wastewater Rate Study report to Hi-Desert Water District. The Study promotes the District's financial stability by recommending rates that meet proposed reserve targets by the end of the Study period. The report includes:

- A long-range financial plan to determine yearly revenue needs over the next five years;
- Proposed revenue adjustments that promote financial stability;
- A cost of service analysis that allocates costs to each customer class;
- A proposed rate structure that collects the cost to serve each class determined by the cost of service analysis.

We enjoyed working with you, your staff, and the District's Board. Please do not hesitate to call should you have any questions.

Sincerely,

Steve Gagnon, PE (AZ)
Project Manager

Katelyn Milius, PE (OH)
Senior Consultant

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1. Executive Summary

1.1. Study Overview

The Hi-Desert Water District (District) engaged Raftelis Financial Consultants (Raftelis) to conduct a comprehensive financial plan and develop cost-of-service water and wastewater rates for fiscal years (FY) 2024/2025 through 2028/2029. This report documents the study's findings, analyses, and proposed changes developed with input from District staff and the Board of Directors. This executive summary provides an overview of the study and includes findings and recommendations for water and wastewater rates.

1.2. Rate Study Process

This study was conducted using industry-standard principles outlined by the American Water Works Association's (AWWA) *Manual M1* and the Water Environment Federation's (WEF) *Financing and Charges for Wastewater Systems*. The overall process outlined below applies to both water and wastewater rates.

1. **Financial Plan:** Develop cash flow projections for the Water and Wastewater Enterprise to determine the amount of revenue required from water and wastewater rates.
2. **Cost of Service Analysis:** Allocate costs to system components and then to various customer classes based on the costs incurred and user characteristics of each.
3. **Rate Design:** Develop rates that generate sufficient revenues based on the financial plan and cost of service analyses and that communicate the policy preferences of the agency, maintaining that rates are cost-justified.
4. **Report Preparation**: Develop a Study report to document study results.
5. **Rate Adoption:** Proposed rates may be adopted by the Board only after holding a public hearing in accordance with the procedural requirements of Proposition 218.

1.3. Reserve Policy

The District established reserve policies to ensure long-term financial stability. Reserves minimize rate fluctuations due to unforeseen cash flow requirements such as recessions or droughts. The District provided beginning reserve balances for June 30, 2023 and Raftelis projected FY 23/24 ending reserve balances. Without revenue increases, Raftelis projects reserves will be below target at the end of FY 24/25. District Staff is proposing to eliminate Water Supplemental Reserves, since the aquifer is full or near full, and increase Capital Reserves from 5% to 10% to ensure adequate coverage for upcoming capital needs.

There are currently no Wastewater Reserves. The objective over the study period is to build wastewater reserves so that the Wastewater Fund can reimburse the water fund for a $7.5 million loan for the construction of the wastewater system. **Table 1-1** shows the proposed reserve targets used in this study.

Table 1-1 Proposed Reserve Targets

WATER	Recommended Target		Existing Target	
Operating Reserves	50%	of Oper. Budget	50%	of Oper. Budget
Water Supplemental Reserves	0%	of Oper. Budget	10%	of Oper. Budget
Emergency Reserves	5%	of Oper. Budget	5%	of Oper. Budget
Capital Reserves	10%	of Oper. Budget	5%	of Oper. Budget
WASTEWATER				
Operating Reserves	25%	of Oper. Budget	NA	
Capital Reserves[1]	100%	of Average 10 yr. CIP	NA	

1.4. Proposed Financial Plan

The proposed financial plan detailed in this report follows industry standards for long-term financial planning. The financial plan relies on reasonable assumptions based on industry indices, such as general inflation based on the Consumer Price Index (CPI) and input from District Staff. Raftelis reviewed inflationary assumptions with Staff to project future revenues and expenses.

Without revenue adjustments in both Water and Wastewater, revenues are not sufficient to recover expenses. The net cash flows are negative for each year during the study period in both the water and wastewater enterprise funds. The cash balances in water are projected to fall below the operating reserve target in FY 24/25, and wastewater has no reserves or reserve targets currently.

To reach reserve targets and promote a financially stable utility, Raftelis and District Staff propose the revenue adjustments shown in **Table 1-2**. The financial plan assumes that the revenue adjustments will occur on July 1 each year.

Table 1-2 Proposed Revenue Adjustments

Water Revenue Adjustment	8.00%	8.00%	8.00%	8.00%	8.00%
Wastewater Revenue Adjustment	14.00%	14.00%	9.75%	9.75%	9.75%

Key factors influencing the need for proposed revenue adjustments include:

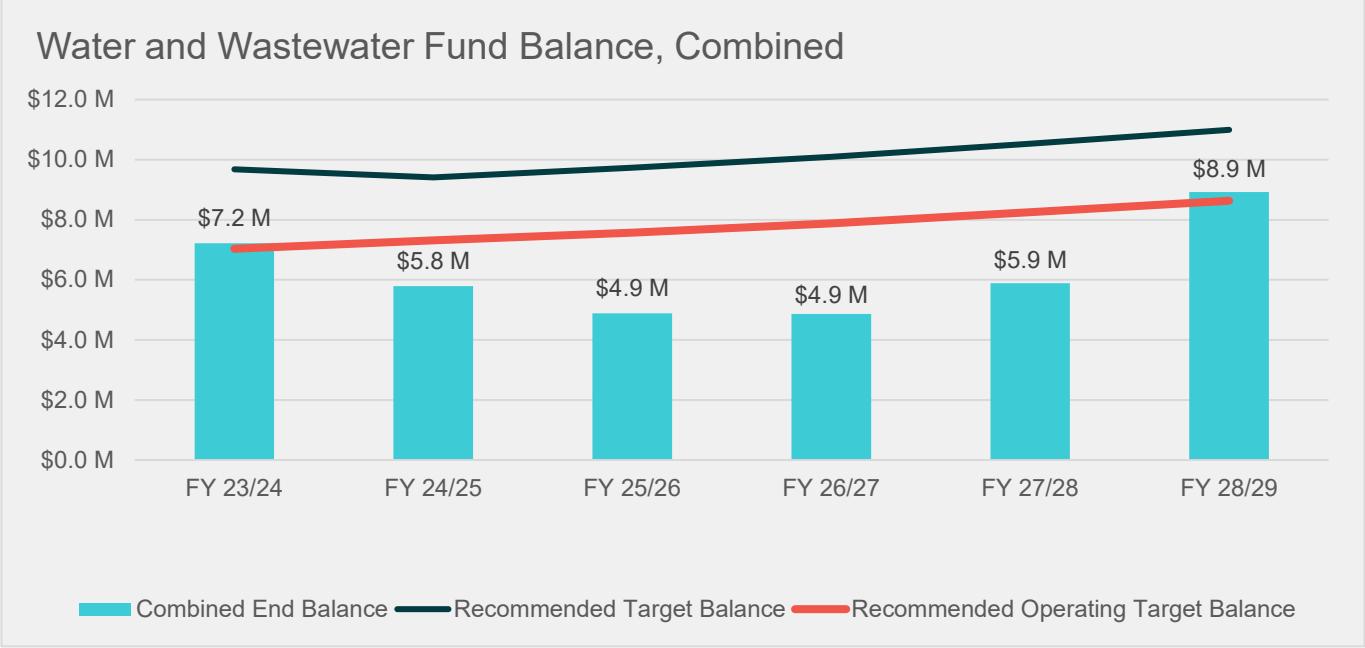
- **Cost inflation**: Operating costs continue to increase year over year due to general inflationary pressures.
- **Reduction in baseline water demand**: Following two multi-year droughts and associated mandatory conservation and messaging, the District has lower overall water consumption relative to historical demands. While conservation is necessary to ensure reliable long-term water supplies, utility costs must be recovered based on the remaining water use and reduced water demands generally mean increased rate pressure.
- **Planned capital expenditures**: The Water Enterprise plans to make $11.1 M in CIP in the next five years.

[1] The proposed wastewater capital reserves are 5% of annual operating expenses. The modeled capital reserves are as shown in Table 1-1. The two reserves goals yield comparable reserve targets with FY 2025 targets of $183k and $186k for the targets of 100% capital and 5% of annual operating expenses respectively.

- **Slower connections to the Wastewater System**: The Phase 1 wastewater projects are complete, but several customer required to connect as a result of the State's Septic to Sewer conversion mandate have not done so.
- **Building wastewater reserves**: Utilities must have sufficient cash on hand for working capital (paying routine expenses), to mitigate unexpected cost increases, and to mitigate risk, whether from recessions or natural disasters. The wastewater enterprise currently does not have reserves. Revenue adjustments will promote a self-sustaining.

Figure 1-1 shows the total combined reserves for the Water and Wastewater enterprise funds with the proposed revenue adjustments. For the purposes of this report, reserves are defined as all cash, cash equivalents and checking accounts that are not restricted. The District does not consider checking accounts to be part of reserves, however the below reserve balances includes checking accounts. The enterprise funds are combined because the wastewater fund is projected to have a deficit for the next three years and by combining the reserves, Stakeholders see the overall District financial health. The reserves for water and wastewater meet the recommended *operating* reserve target by the end of the study period.

Figure 1-1 Combined Water and Wastewater Reserves with Proposed Revenue Adjustments FY 23/24 - FY 28/29



Further details on the Water and Wastewater financial plans can be found in Section 4.1 and Section 5.1, respectively.

1.5. Cost of Service

To calculate fair and equitable rates so that users pay in proportion to the cost of providing service, Raftelis performed a cost of service analysis for both water and wastewater consistent with industry standards. The costs to serve each customer class is determined; rates are then designed to recover the costs from each class so that each class pays its fair share in line with Proposition 218 requirements.

1.6. Proposed Water Rates

The District's existing water rate structure consists of a fixed charge that includes a Water Service fee and a Capital Replacement Program (CRP) fee (based on meter size) and variable Water Rates (per hundred cubic feet [hcf] of water delivered). This study proposes revising the customer groups from two (irrigation and non-irrigation) to five (residential, irrigation, commercial, public, bulk).

Table 1-3 presents the proposed fixed charge ("basic monthly fees") for all customer classes, which is made up of the Water Service fee and the CRP fee.

Table 1-3 Proposed Basic Monthly Fee FY 24/25- FY 28/29

Meter Size	Current Fixed Charge	FY 24/25	FY 25/26	FY 26/27	FY 27/28	FY 28/29
5/8 inch	$23.35	$25.22	$27.24	$29.42	$31.78	$34.33
1 inch	$46.17	$53.39	$57.67	$62.29	$67.28	$72.67
1 1/2 inch	$84.20	$100.35	$108.38	$117.06	$126.43	$136.55
2 inch	$129.83	$156.70	$169.24	$182.78	$197.41	$213.21
3 inch	$251.49	$306.97	$331.53	$358.06	$386.71	$417.65
4 inch	$388.37	$476.02	$514.11	$555.24	$599.66	$647.64
6 inch	$768.59	$945.61	$1,021.26	$1,102.97	$1,191.21	$1,286.51

Table 1-4 presents the proposed volumetric rates per hcf of water use. The sum of the unit cost components for water supply, delivery and peaking, reduced by revenue offsets yield the proposed volumetric rate in FY 24/25.

Revenue offsets from non-water rate-derived property tax revenue were used to promote affordability. Property tax was allocated based on the District's input and reduced the residential rate for each Tier and CIMIS Tier 2 and 3 rate. The District has discretion over how to use such non-water rate-derived revenue.

Table 1-4 Proposed Volumetric Rates[2] per hcf for FY 24/25- FY 28/29

	Current Rates	FY 24/25	FY 25/26	FY 26/27	FY 27/28	FY 28/29
Residential (SFR, MFR, MHP)[3]						
Tier 1: 0-4 units	$4.11	$4.42	$4.78	$5.17	$5.59	$6.04
Tier 2: 5-11 units	$6.95	$7.53	$8.14	$8.80	$9.51	$10.28
Tier 3: 12 + units	$7.91	$8.53	$9.22	$9.96	$10.76	$11.63
Commercial (COM)						
Tier 1: 0-4 units	$6.44	$7.22	$7.80	$8.43	$9.11	$9.84
Tier 2: 5-11 units	$6.95	$7.92	$8.56	$9.25	$9.99	$10.79
Tier 3: 12 + units	$7.91	$7.92	$8.56	$9.25	$9.99	$10.79
Public (PBE)						
Tier 1: 0-4 units	$6.44	$7.22	$7.80	$8.43	$9.11	$9.84
Tier 2: 5-11 units	$6.95	$8.10	$8.75	$9.45	$10.21	$11.03
Tier 3: 12 + units	$7.91	$8.43	$9.11	$9.84	$10.63	$11.49
Irrigation (IRR)						
Tier 1: 0-4 units	$6.49	$7.47	$8.07	$8.72	$9.42	$10.18
Tier 2: 5-11 units	$6.95	$8.30	$8.97	$9.69	$10.47	$11.31
Tier 3: 12 + units	$11.15	$11.47	$12.39	$13.39	$14.47	$15.63
CIMIS (CIM)						
Tier 1: 0-4 units	$6.49	$7.47	$8.07	$8.72	$9.42	$10.18
Tier 2: 5-11 units	$6.95	$8.19	$8.85	$9.56	$10.33	$11.16
Tier 3: 12 + units	$6.95	$8.19	$8.85	$9.56	$10.33	$11.16
Bulk (BLK)						
Tier 1: 0-4 units	$6.49	$7.00	$7.56	$8.17	$8.83	$9.54
Tier 2: 5-11 units	$6.95	$7.63	$8.25	$8.91	$9.63	$10.41
Tier 3: 12 + units	$11.15	$7.92	$8.56	$9.25	$9.99	$10.79

1.7. Proposed Wastewater Rates

There are no proposed changes to the rate structure in which all residential customers pay a monthly fixed rate ("Monthly Maintenance Fee") per equivalent dwelling unit (EDU) that varies based on estimated customer wastewater discharge volumes. Commercial customers pay based on their wastewater discharge. One EDU is defined as 175 gallons per day (gpd). This rate structure was created as part of the *Hi-Desert Water District Assessment District No. 2014-1 Engineer's Report* and is consistent with the cost-of-service and allows for revenue stability. **Table 1-5** details the EDU assignment to each class. The formula used to calculate commercial EDUs is detailed in Section 4.1.2.

[2] Rates are rounded up to the nearest cent.

[3] MFR and MHP have revised tiers based on unit count. For example: An apartment with 6 dwelling units would have a Tier 1 threshold of 24 units of water (6 dwelling units x 4 units of water each)

Table 1-5 Wastewater EDU by Customer Class

Customer Class	EDU Assignment
Single Family Home (SFR)	1 EDU per Parcel
Multi-Family Residential (MFR)	0.75 EDU per Unit
Mobile Home Property (MHP)	0.60 EDU per Unit
Commercial Property (COM)	Minimum of 1 EDU per parcel or Calculated EDU from 90% water consumption

Table 1-6 shows the proposed EDU charges for FY 24/25 through FY 28/29. These rates are effective on July 1st of each fiscal year of the study, beginning on July 1, 2024.

Table 1-6 Proposed Monthly Maintenance Fees per EDU for FY 24/25- FY 28/29

	Current	FY 24/25	FY 25/26	FY 26/27	FY 27/28	FY 28/29
Charge per EDU	$46.71	$53.25	$60.71	$66.62	$73.12	$80.25

Residential properties are proposed to be charged through their property tax bill, while commercial properties will be charged based on monthly use of the system on monthly water bills.

1.8. Average Single Family Bill Impact

Figure 1-2 shows the average **water** single family bill impact with the proposed revenue adjustments. **Figure 1-3** shows the average **wastewater** single-family bill impact with the proposed revenue adjustments and **Figure 1-4** shows the **combined** water and wastewater average single family bill impacts. With the proposed revenue adjustments, the average single family customer bill impact for both water and wastewater is $10.81 per month, a 10.8% increase in FY 24/25. This includes a 6 hcf water bill going from $53.69 to $57.96 and a single family sewer bill of 1 EDU increasing from $46.71 to $53.25.

Figure 1-2: Average Single Family Water Bill Impact

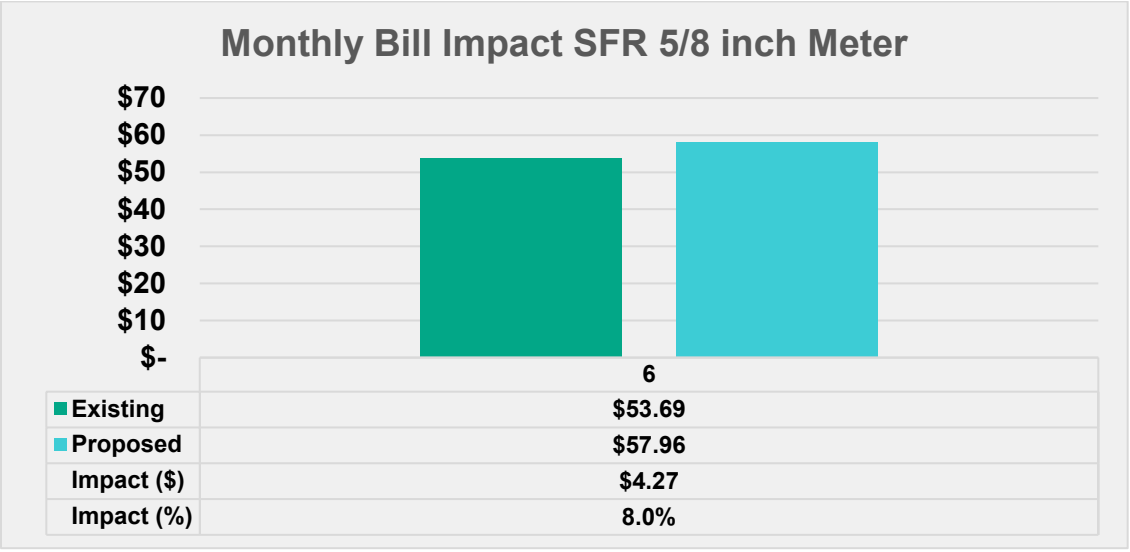


Figure 1-3: Average Single Family Wastewater Bill Impact

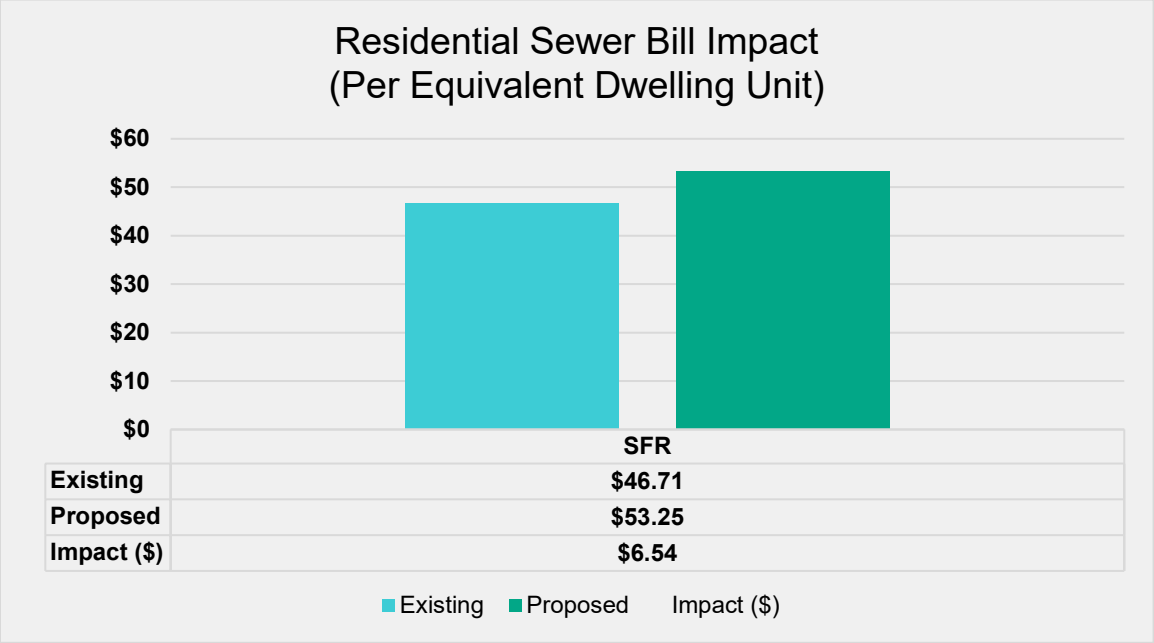
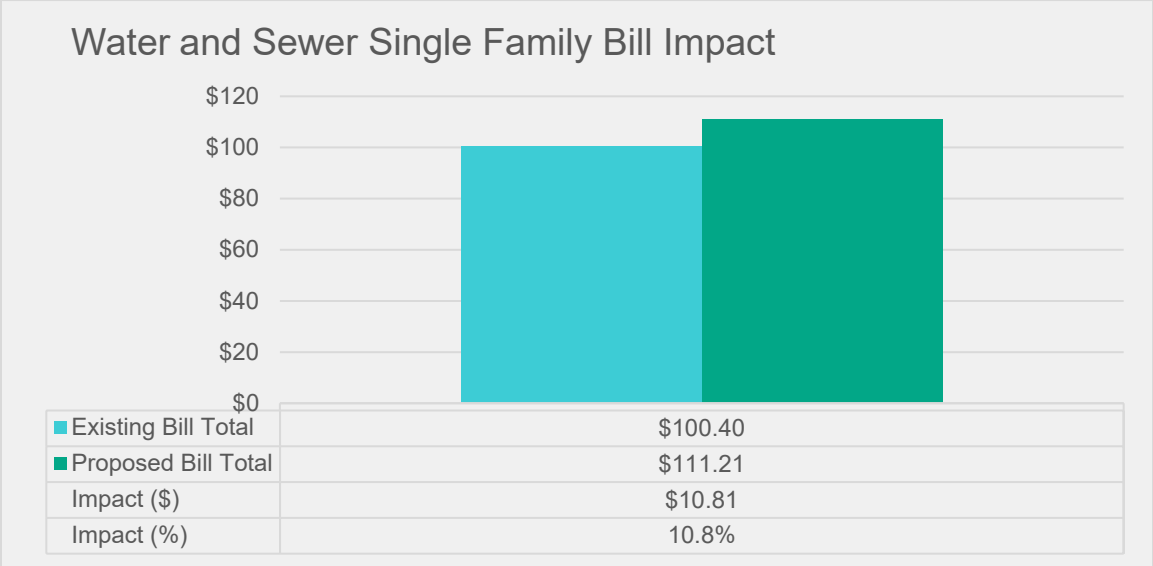


Figure 1-4 Average Single Family Water and Sewer Bill Impact



1.9. Drought Rates

Drought rates allow the District to recover fixed costs when customers curtail water use during a drought. The percent reduction in water demand during each water shortage emergency stage is defined in the District's Water Shortage Contingency Plan, approved by the Board as a part of the *2020 Urban Water Management Plan*

and Municipal Code. **Table 1-7** shows the estimated revenue losses at each stage and the percent increase required to recover the lost revenue. A more detailed calculation of these estimates is provided in Section 3.5.

Table 1-7: Estimated Revenue Losses at Each Stage/Level of Drought

Stages of Shortage	% Reduction	Description	Revenue Shortfall	Volumetric Rate Increase
Stage 1	10%	Water Alert	$413,596	**7%**
Stage 2	20%	Moderate Water Shortage	$804,916	**15%**
Stage 3	30%	Severe Water Shortage	$1,244,847	**27%**
Stage 4	40%	Critical Water Shortage	$1,673,724	**43%**
Stage 5	50%	Water Shortage Crisis	$2,081,627	**68%**
Stage 6	60%	Emergency Water Shortage	$2,382,324	**100%**

Table 1-8 shows the proposed drought rates for the first year of the study at each drought stage (10%, 20%, etc.). All rates are shown in $/hcf terms.

Table 1-8: Proposed Drought Rates FY 24/25

	FY 24/25 Proposed Rates	Stage 1 - 7% Increase	Stage 2 - 15% Increase	Stage 3 - 27% Increase	Stage 4 - 43% Increase	Stage 5 - 68% Increase	Stage 6 - 100% Increase
Residential (SFR, MFR, MHP)[4]							
Tier 1: 0-4 units	$4.42	$4.72	$5.08	$5.61	$6.35	$7.41	$8.85
Tier 2: 5-11 units	$7.53	$8.04	$8.65	$9.56	$10.81	$12.62	$15.07
Tier 3: 12 + units	$8.53	$9.10	$9.80	$10.83	$12.24	$14.29	$17.07
Commercial (COM)							
Tier 1: 0-4 units	$7.22	$7.71	$8.29	$9.17	$10.36	$12.10	$14.45
Tier 2: 5-11 units	$7.92	$8.45	$9.10	$10.06	$11.37	$13.27	$15.85
Tier 3: 12 + units	$7.92	$8.45	$9.10	$10.06	$11.37	$13.27	$15.85
Public (PBE)							
Tier 1: 0-4 units	$7.22	$7.71	$8.29	$9.17	$10.36	$12.10	$14.45
Tier 2: 5-11 units	$8.10	$8.65	$9.30	$10.28	$11.62	$13.57	$16.21
Tier 3: 12 + units	$8.43	$9.00	$9.68	$10.70	$12.10	$14.13	$16.87
Irrigation (IRR)							
Tier 1: 0-4 units	$7.47	$7.97	$8.58	$9.48	$10.72	$12.52	$14.95
Tier 2: 5-11 units	$8.30	$8.86	$9.53	$10.54	$11.91	$13.91	$16.61
Tier 3: 12 + units	$11.47	$12.24	$13.17	$14.56	$16.46	$19.22	$22.96
CIMIS (CIM)							
Tier 1: 0-4 units	$7.47	$7.97	$8.58	$9.48	$10.72	$12.52	$14.95
Tier 2: 5-11 units	$8.19	$8.74	$9.41	$10.40	$11.75	$13.72	$16.39

[4] MFR and MHP have revised tiers based on unit count. For example: An apartment with 6 dwelling units would have a Tier 1 threshold of 24 units of water (6 dwelling units x 4 units of water each)

	FY 24/25 Proposed Rates	Stage 1 - 7% Increase	Stage 2 - 15% Increase	Stage 3 - 27% Increase	Stage 4 - 43% Increase	Stage 5 - 68% Increase	Stage 6 - 100% Increase
Tier 3: 12 + units	$8.19	$8.74	$9.41	$10.40	$11.75	$13.72	$16.39
Bulk (BLK)							
Tier 1: 0-4 units	$7.00	$7.47	$8.04	$8.89	$10.05	$11.73	$14.01
Tier 2: 5-11 units	$7.63	$8.14	$8.76	$9.69	$10.95	$12.79	$15.27
Tier 3: 12 + units	$7.92	$8.45	$9.10	$10.06	$11.37	$13.27	$15.85

1.9.1. Drought Rate Adoption

The Board would adopt the drought rates separately from any other type of rate increase. For the duration of the rate proposal period (5 years), the Board would have the ability to adopt drought rates by increasing the then-current commodity rate without having to re-issue the Proposition 218 notice if it provides the percentage increases in the public notice.

2. Legal Framework and Rate Setting Methodology

2.1. Legal Framework

This report section describes the legal framework that informed the cost of service analysis and rate design, which ensures a fair and equitable cost allocation to customer classes.

2.1.1. California Constitution - Article XIII D, Section 6 (Proposition 218)

Proposition 218, reflected in the California Constitution as Article XIII D, was approved by the voters in 1996 to ensure that property-related fees and charges are reasonable and proportional to the cost of providing service. The principal substantive and procedural requirements for water and sewer service fees and charges are as follows:

1. A property-related charge (such as for water and sewer) imposed by a public agency on a parcel shall not exceed the costs required to provide the property-related service.
2. Revenues derived by the charge shall not be used for any purpose other than that for which the charge was imposed, and may not be used to fund general governmental services such as police, fire protection, or library services.
3. The amount of the charge imposed upon any parcel shall not exceed the proportional cost of service attributable to the parcel.
4. No charge may be imposed for a service unless that service is actually used or immediately available to the owner of property.
5. A written notice of the proposed charge shall be mailed to the record owner of each parcel at least 45 days prior to the public hearing. At the public hearing, the agency must consider oral and written testimony and protests, and if protests are filed on behalf of a majority of separate parcels, the agency may not adopt the proposed charges.

Water and wastewater rates and charges should be recovered from classes of customers in proportion to the cost of serving those customers. Proposition 218 requires that water and wastewater rates cannot be "arbitrary and capricious", meaning that the rate-setting methodology must be sound and that there must be a nexus between costs and the rates charged. Raftelis followed industry standard rate setting methodologies set forth by the AWWA *M1 Manual* and WEF's *Manual of Practice No. 27* to ensure this study meets Proposition 218 requirements and that it creates rates that charge customers equitably.

2.1.2. California Constitution – Article X, Section 2

Article X, section 2 of the California Constitution (adopted in 1976) states the following:

"It is hereby declared that because of the conditions prevailing in this State the general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or

unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare."

As stated above Article X, section 2 of the California Constitution requires preservation of the State's water supplies and discourages the wasteful or unreasonable use of water by encouraging conservation. As such, public agencies are constitutionally mandated to maximize the beneficial use of water, prevent waste, and encourage conservation.

In addition, section 106 of the Water Code declares that the highest priority use of water is for domestic purposes, and irrigation secondary. To meet the objectives of Article X, a water purveyor can utilize its water rate design to incentivize the efficient use of water. The District established single family tiered rates to incentivize customers to conserve water. Though they incentivize conservation, the tiered rates (as well as rates for the remaining classes) are based on the cost incurred to provide water to each tier and class as required by Proposition 218.

Tiered Rates – "inclining" block rate structures (which are synonymous with "increasing" block rate structures and tiered rates) when properly designed, allow a water utility to send consistent conservation price incentives to customers. Due to heightened interest in water conservation, tiered rates have gained widespread use, especially in relatively water-scarce regions, such as Southern California. Tiered rates meet the requirements of Proposition 218 as long as the tiered rates reflect the cost of service. In other words, to the extent an agency implements tiered rates, each tier must correspond to the costs of providing water service in each tier. These costs include water supply costs and peaking costs.

2.2. Cost Based Rate Setting Methodology

As stated in the American Water Works Association (AWWA) M1 Manual "the costs of water rates and charges should be recovered from classes in proportion to the cost of serving those customers." There are four major steps in calculating rates discussed below.

2.2.1. Calculate Revenue Requirement

The rate-making process starts by determining the test year revenue requirement; for this study, the test year is FY 24/25. The revenue requirement should sufficiently fund the utility's O&M, debt service and capital expenses as well as reserve funding.

2.2.2. Cost of Service Analysis (COS)

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

1. Functionalizing costs. Examples of functions are supply, treatment, transmission, distribution, storage, meter servicing and customer billing and collection. In this study the District's staff provided functionalized O&M expenditures.
2. Allocating functionalized costs to cost components. Cost components include base, maximum day, maximum hour, meter service, customer service and conservation costs.
3. Lastly, distributing the cost components, using unit costs, to customer classes in proportion to their demands on the water system. This is described in the M1 Manual published by AWWA.

A COS analysis considers both the average quantity of water consumed (base costs) and the peak rate at which it is consumed (peaking or capacity costs as identified by maximum day and maximum hour demands). Peaking costs are costs that are incurred during peak times of consumption. The water system is designed to handle peak demands and the additional costs associated with design, construction and the operation and maintenance of facilities to meet these peak demands need to be allocated to those imposing such costs on the utility. In other words, not all customer classes share the same responsibility for peaking-related costs.

2.2.3. 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, such as conservation, affordability for essential needs and revenue stability among other objectives. Rates should work as a public information tool in communicating these objectives to customers and may legally do so as long as they do not exceed the proportional cost of service.

2.2.4. Rate Adoption

Rate adoption is the last step of the rate-making process to comply with Proposition 218. Raftelis documented the rate study results in this Study Report to help inform the public about the proposed changes, the rationale and justifications behind the changes and their anticipated financial impacts in lay terms. At least 45 days after sending out the public notices, at a public hearing, the District shall consider all written protests against the proposed rates. If there is no majority protest, the District may adopt the new rates.

3. Water Financial Plan and Rates

This chapter presents the projections for revenues, O&M expenses, capital improvement and reserve requirements for FY 24/25 – 28/29. Projected revenues are compared to expenses to assess potential revenue shortages and the need for rate adjustments over the planning horizon. The cost of service analysis is described in detail, and the FY 24/25 rates are derived. Lastly, drought rates are discussed as a protection from revenue loss during periods of water shortage and use reduction.

3.1. Introduction

3.1.1. Water System Background

Hi-Desert Water District (District) provides potable water service to approximately 24,000 people through more than 11,000 connections in the Town of Yucca Valley and a portion of the unincorporated area of San Bernardino County. The total service area is 57 square miles and the water system includes 16 storage tanks, 12 active wells, and over 312 miles of pipeline.

3.1.2. Water Sources

The District's water sources include groundwater from two basins, the Ames Valley Basin and the Warren Valley Basin. In recent years, the Ames Valley Basin has yielded 500 AF of water per year (down from 700 AF), while purchased water from Mojave Water Agency (MWA) provides most of the District's water supply at about 2,500 AF per year, delivered through the Morongo Basin Pipeline.

According to the Urban water management plan (UWMP)[5], when available, the District buys excess State Water Project (SWP) water from MWA and stores it for future use. This activity also allows the District to take advantage of wet year supplies due to abundant storage available in District's groundwater basins.

During the last few years, the District has purchased additional water to replenish the groundwater basin. During FY 26/27- 28/29, this study assumes the District will purchase 8 percent more water than is needed to serve customers in FY 23/24 and FY 24/25 followed by 7% in FY 25/26 and 10% more for the last two years of the study and store it in the aquifer.

[5] UWMP 2020

3.1.3. Customer Classes and Number of Accounts

Table 3-1 lists all the customer classes and respective abbreviations used throughout the report. CIM customers are irrigation customers that include public baseball fields, school playgrounds, etc.

Table 3-1 Customer Classes

User Abbreviation	User Class
BLK	Bulk water users
CIM	CIMIS – irrigation customers
COM	Commercial customers
FPR	Fire protection
IRR	Irrigation customers
MHP	Mobile home parks
MTF	Multifamily dwellings
PBE	Public/Government customers
SFR	Single family residences

The number of accounts in each customer class is used to project the revenue from current fixed monthly charges. District staff provided individual water consumption for each account for FY 22/23. Raftelis used the provided data to estimate the customer count by meter size and class. The number of accounts for FY 22/23 used in the financial model is presented in **Table 3-2**.

Table 3-2 Number of Water Accounts by Customer Classes in FY 22/23

Meter Size	BLK	CIM	COM	IRR	MHP	MTF	PBE	SFR[6]	Total
5/8 inch	2	1	302	41	2	150	29	9,998	**10,525**
1 inch	3	0	95	44	4	113	13	25	**297**
1 1/2 inch	0	3	29	4	0	12	7	5	**60**
2 inch	0	8	48	9	4	13	15	1	**98**
3 inch	12	2	0	0	0	1	2	0	**17**
4 inch	0	0	1	0	0	0	0	0	**1**
6 inch	0	0	0	0	2	0	0	0	**2**
TOTAL	**17**	**14**	**475**	**98**	**12**	**289**	**66**	**10,029**	**11,000**

[6] By state building code, all new single-family residential homes now require a 1-inch meter for fire protection. Since the use would be similar to the 5/8-inch capacity, these SFR customers with 1-inch meters for fire protection are considered 5/8-inch meters.

The number of dwelling units for multifamily residences (MTF) and mobile home parks (MHP) is presented in **Table 3-3**. Currently, MTF and MHP customers have revised tier thresholds based on dwelling units. For example, a multifamily duplex would have a tier 1 threshold of 8 units rather than 4 units (2 dwelling units x 4 units = 8 units). Raftelis projects that the number of MTF and MHP units will remain constant throughout the study period based on District input.

Table 3-3 Number of Dwelling Units

Meter Size	Mobile Home Units	Multifamily Units
5/8 inch	19	381
1 inch	106	399
1 1/2 inch	0	81
2 inch	215	255
3 inch	0	33
4 inch	0	0
6 inch	274	0
TOTAL	614	1149

3.2. Water Financial Plan

This section details District's water revenues and expenses and provides a projection of revenue requirements over the five-year study period. The status quo financial plan is shared, which shows projected financial health if the District does not raise rates, and a revenue adjustment scenario is shared showing the cashflow if rates are increased as recommended.

3.2.1. Current Tiers and Rates

The District's rate structure includes volumetric rate revenues and fixed monthly charges. Below is a review of the existing rate structure used to project water rate revenues under the Status Quo financial plan scenario.

The District has a 3-tier inclining block (tiered rates) rate structure for all customers. The unit of water is one hcf. **Table 3-4** shows the current rates and tier thresholds. The tier breakpoints were set in the previous rate study. The tier 1 breakpoint was set at the average winter use, therefore it is an approximation of indoor water use. Tier 2 was set at the average summer use and therefore represents and average allocation for outdoor water use.

Table 3-4 Current Rates and Tier Thresholds

Customer class	Tier	Current Rate
Residential	Tier 1: 0-4 units	$4.11
	Tier 2: 5-11 units	$6.95
	Tier 3: 12 + units	$7.91
Commercial and Public	Tier 1: 0-4 units	$6.44
	Tier 2: 5-11 units	$6.95
	Tier 3: 12 + units	$7.91
CIMIS	Tier 1: 0-4 units	$6.49
	Tier 2: 5-11 units	$6.95
	Tier 3: 12 + units	$6.95
Irrigation and Bulk	Tier 1: 0-4 units	$6.49
	Tier 2: 5-11 units	$6.95
	Tier 3: 12 + units	$11.15

Fixed revenues (revenues that do not depend on the volume of water sold), consists of a monthly water service charge and a capital replacement charge per meter depending on its size, as displayed in **Table 3-5.**

Table 3-5 Basic Monthly Fees

Meter Size	Water Service	Capital Replacement Program (CRP)	Monthly Total
5/8 inches	$11.69	$11.66	**$23.35**
1 inch	$17.02	$29.15	**$46.17**
1 1/2 inches	$25.90	$58.30	**$84.20**
2 inches	$36.54	$93.29	**$129.83**
3 inches	$64.94	$186.55	**$251.49**
4 inches	$96.90	$291.47	**$388.37**
6 inch	$185.65	$582.94	**$768.59**

3.2.2. Financial Policy

The District has reserves to promote financial stability, improve credit ratings and minimize customer rate fluctuations due to unforeseen and expected cash flow requirements[7]. There are five reserves, each of them associated with a specific purpose or risk. The District's Administrative Code describes each reserve and its target (shown in **Table 3-6** as "Water existing reserve policy"). As part of this study, Raftelis worked with District staff to review the reserves and their targets. Modifications to the existing reserves are proposed and shown in **Table 3-6** as "Water staff recommendation."

[7] Hi-Desert Water District code, chapter 4.15

Table 3-6 Projected Reserves

WATER EXISTING RESERVE POLICY	District Target		FY 23/24 Projected Reserve Targets
Operating Reserves	50%	of Oper. Budget	$6,143,581
Water Supplemental Reserves	10%	of Oper. Budget	$1,228,716
Debt Reserves (Debt falls off in FY 24/25)	110%	annual debt service payment	$617,925
Emergency Reserves	5%	of Oper. Budget	$614,358
Capital Reserves	5%	of Oper. Budget	$614,358
Total			**$9,218,939**
WATER STAFF RECOMMENDATION			**FY 23/24 Projected Reserve Targets (Recommended)**
Operating Reserves	50%	of Oper. Budget	$6,143,581
Water Supplemental Reserves	0%	of Oper. Budget	$0
Debt Reserves (Debt falls off in FY 24/25)	110%	annual debt service payment	$617,925
Emergency Reserves	5%	of Oper. Budget	$614,358
Capital Reserves	10%	of Oper. Budget	$1,228,716
Total			**$8,604,581**
End Reserves for FY 23/24			**$7,542,432**

3.2.3. Assumptions

Various assumptions are used to project future revenues and expenses. They can be divided into two major groups: (i) assumptions related to economic factors, such as inflation, capital cost, and interest rates and (ii) core business assumptions, such as water sale projections and capital replacement costs.

3.2.3.1. Inflationary Assumptions

The inflationary assumptions are summarized in **Table 3-7**. General inflation, for FY 24/25 reflects the recent inflation reported by the Bureau of Labor Statistics Consumer Price Index. For the latter years, it reflects longer term average inflation. Utility inflation reflects information from SCE as noted in footnote 7 and capital inflation reflects recent reading of the Engineering News Record Construction Cost Index as noted in footnote 8.

Table 3-7 Inflationary Assumptions

	FY 24/25	FY 25/26	FY 26/27	FY 27/28	FY 28/29
Expense Escalators					
General/CPI	5.0%	4.0%	3.0%	3.0%	3.0%
Utilities (Electricity)[8]	10.0%	3.0%	3.0%	3.0%	3.0%
Capital[9]	6.0%	5.0%	4.0%	3.0%	3.0%
Purchased Water Cost	$628.00	$635.89	$664.84	$708.70	$755.56
Revenue Escalators					
Other Oper Rev	1.0%	1.0%	1.0%	1.0%	1.0%
Misc Rev	1.0%	1.0%	1.0%	1.0%	1.0%
Reserve Interest Rate	1.0%	1.0%	1.0%	1.0%	1.0%
Property tax	1.0%	1.0%	1.0%	1.0%	1.0%

3.2.3.2. Water Use and Account Growth Assumptions

Water use and account growth assumptions are used to predict future rate revenues. Current water use by customer class and by tier is presented in **Table 3-8**. Total water use in FY 22/23 was about 1,057,918 hcf.

Table 3-8 Metered Water Use by Tiers in FY 22/23 (hcf)

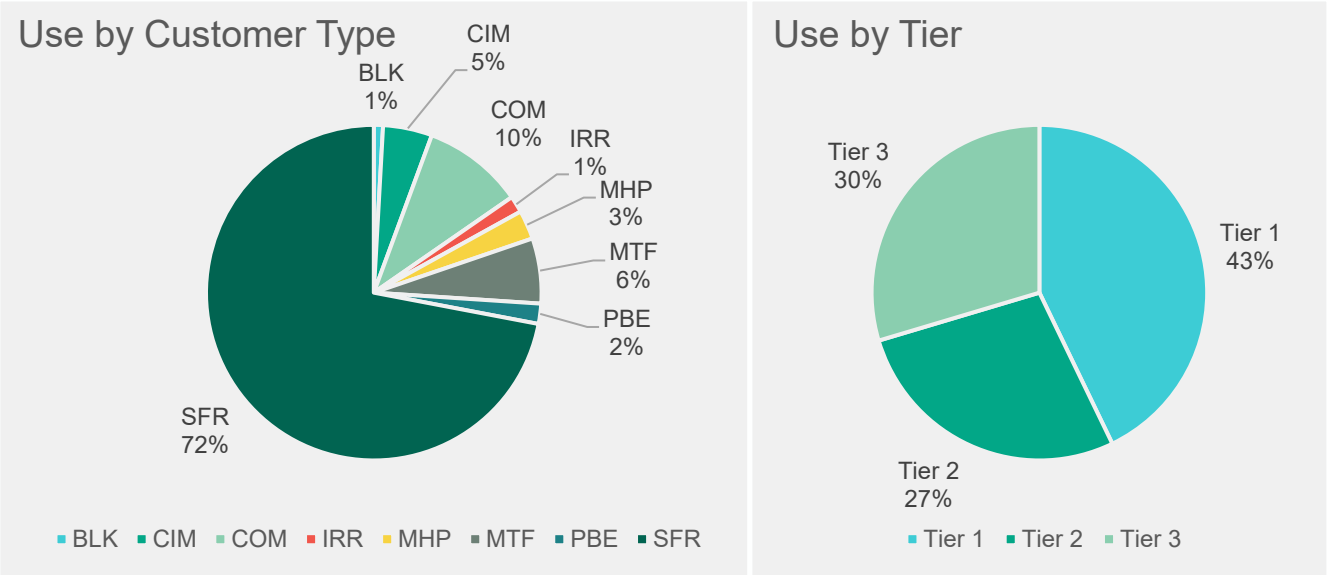
	TOTAL (hcf)	BLK	CIM	COM	IRR	MHP	MTF	PBE	SFR
Tier 1	**453,189**	435	643	13,614	2,020	25,405	45,473	2,093	363,506
Tier 2	**291,434**	643	1071	13,533	2,002	3,934	17,476	2,487	250,288
Tier 3	**313,295**	8,295	48,428	75,868	12,932	228	3,538	15,999	148,007
Total Use (hcf)	**1,057,918**	**9,373**	**50,142**	**103,015**	**16,954**	**29,567**	**66,487**	**20,579**	**761,801**

Figure 3-1 displays the water use by customer class and by tier. SFR uses 72% of the water. The tiered rates are applied to all customer classes.

[8] Per direction from the Board which reflects SCE rate increases. SOURCE: https://www.cpuc.ca.gov/events-and-meetings/a2305010-sce-pph-2024-04-10-2pm

[9] The ENR CCI for Los Angeles for FY 21/22 and 22/23 was 7.9% and 4.9%, respectively.

Figure 3-1 Water Use by Tier and Customer Class in FY 22/23



District staff projects a moderate water demand increase during the next five years (0.5% in FY 24/25 and 0.6% after that), driven by a slight increase in the number of accounts and water use and supported by the District's *2020 Urban Water Management Plan*. Raftelis used the projections presented in **Table 3-9** to escalate water use and the number of SFR accounts over the study period.

Table 3-9 Account and Water Growth Assumptions

New accounts per year	50	50	50	50	50
Annual water demand growth rate	0.5%	0.6%	0.6%	0.6%	0.6%

3.2.4. Projected Revenues

Table 3-10 shows the calculated rate revenues and projected non-operating revenues for FY 24/25 through FY 28/29 based on the District's current water rates. The projected annual rate revenue is determined by multiplying the accounts by meter size by the current fixed rates over 12 months, and the use by tier by the current volumetric rate.

Table 3-10 Water Projected Revenues

	FY 24/25	FY 25/26	FY 26/27	FY 27/28	FY 28/29
Subtotal Revenues from Rates	$9,921,518	$9,973,717	$10,025,916	$10,078,115	$10,130,314
Other Operating Revenues					
Delinquent Fees	$207,916	$209,995	$212,095	$214,216	$216,358
Returned Checks	5,917	5,976	6,036	6,096	6,157
Disconnect/Reconnect	29,684	29,981	30,281	30,583	30,889
Turn On Fee	30,569	30,874	31,183	31,495	31,810
Standby	172,119	173,840	175,579	177,335	179,108
Total Other Operating Revenues	$446,204	$450,666	$455,173	$459,724	$464,322
Non-Operating Revenues/(Expenses):					
Property taxes and assessments	$2,140,714	$2,162,121	$2,183,743	$2,205,580	$2,227,636
Interest earnings	66,440	45,025	16,584	-	-
Other non-operating revenues, net	57,608	58,184	58,766	59,354	59,948
Total non-operating revenues, net	$2,264,763	$2,265,330	$2,259,093	$2,264,934	$2,287,583
TOTAL REVENUES (excl. meter sales and grants)	**$12,632,484**	**$12,689,713**	**$12,740,181**	**$12,802,773**	**$12,882,219**

3.2.5. Projected O&M Expenses

Raftelis projects O&M expenses by dividing them into two main groups. The first group includes water supply costs. For this group, projected costs depend on the volume of purchased water and the respective cost inflation factor. The second group includes administrative, customer billing, transmission and distribution, etc., costs which do not directly depend on volumetric sales and are projected to increase with the inflationary factors shown in **Table 3-7**.

Water use projections, based on the assumptions in **Table 3-9** are shown in **Table 3-11,** line 1. The District estimates 14% water loss; the percentage is calculated by subtracting the volume of billed water from the volume of water produced. For the first two years of the study, the District supplied the total water production value of 3,038 AF in line 9. In FY 26/27- FY28/29, total water production, shown on line 9, is determined by adding water losses and additional water purchases to water use.

The District's water is obtained from the Mojave Water Agency (MWA) and the Ames Valley basin (groundwater). Raftelis assumed, based on District feedback, 500 AF from the Ames Valley Basin in FY 24/25 – FY 25/26, and 703 AF after that. Raftelis projected the amount of purchased water from MWA (line 15) to be equal to the difference between total water produced (line 9) and the groundwater extracted from the Ames Valley basin.

Based on input from District staff, Raftelis projected MWA water purchases as shown in line 15 of **Table 3-11**. Annual water supply costs are calculated using the projected volumes and the cost per acre foot (AF) shown in line 11. The projected cost per acre foot was provided by District staff.

Table 3-11 Calculated Water Costs

Line		FY 24/25	FY 25/26	FY 26/27	FY 27/28	FY 28/29
1	Total Water Use (hcf)	1,068,499	1,074,785	1,081,070	1,087,355	1,093,640
2	Total Water Use (AF)	2,453	2,467	2,482	2,496	2,511
3						
4	Water system loss (in total water production)	14%	14%	14%	14%	14%
5	Total Water Produced (includes water loss) (hcf)	1,242,008	1,249,314	1,256,620	1,263,925	1,271,231
6	Total Water Produced (includes water loss) (AF)	2,851	2,868	2,885	2,902	2,918
7	Additional Water Purchases (% of Water Use)	8%	7%	10%	10%	10%
8	Additional Water Purchases (AF)	187	170	248	250	251
9	**Total Water Produced (includes water loss & additional water purchased) (AF)**	**3,038**	**3,038**	**3,133**	**3,151**	**3,169**
10						
11	Cost per AF for Purchased Water	$628.00	$635.89	$664.84	$708.70	$755.56
12	Groundwater cost per AF	$0.00	$0.00	$0.00	$0.00	$0.00
13						
14	**Water Supply**					
15	Purchased water from Mojave (AF)	2,538	2,538	2,430	2,448	2,466
16						
17	**Groundwater Supply**					
18	Groundwater - AMES Well/Wells (AF)	500	500	703	703	703
19	Natural Recharge Groundwater (AF)	-	-	-	-	-
20	Total Groundwater	500	500	703	703	703
21						
22	**Total Water Cost**	**$1,593,864**	**$1,613,889**	**$1,615,541**	**$1,735,041**	**$1,863,515**

Total projected annual O&M expenses are presented in **Table 3-12.** There is an average 3.4% increase each year over the study period. Supply costs decrease slightly because the study assumes a lower wholesale rate from Mojave Water Agency in FY 24/25 compared to the FY 23/24 budget.

Table 3-12 Water O&M Expenses for FY 23/24 -FY 28/29

	FY 23/24 Budget	FY 24/25	FY 25/26	FY 26/27	FY 27/28	FY 28/29
Source of supply	$1,711,125	$1,593,864	$1,613,889	$1,615,541	$1,735,041	$1,863,515
Pumping and water treatment	$2,357,473	$2,593,220	$2,671,017	$2,751,147	$2,833,682	$2,918,692
Const. & Maint. / CRP (Trans & Dist)	$2,177,348	$2,286,215	$2,377,664	$2,448,994	$2,522,463	$2,598,137
Field Services (Meters)	$336,123	$352,929	$367,046	$378,058	$389,399	$401,081
Accounting/Billing/ Customer Service	$1,196,242	$1,186,054	$1,233,497	$1,270,501	$1,308,617	$1,347,875
Administrative	$4,508,851	$4,743,894	$4,933,650	$5,081,659	$5,234,109	$5,391,132
Total Operating Expenses	**$12,287,162**	**$12,756,177**	**$13,196,762**	**$13,545,900**	**$14,023,311**	**$14,520,433**

3.2.6. Capital Replacement Program

The capital replacement program (CRP) projections were provided by District staff. The District charges a capacity fee for each new account (new construction) and the revenue is used for CRP funding. Raftelis calculated the revenue from capacity fees based on the assumed number of new accounts in **Table 3-9** and the current fee per 5/8-inch meter of $5,418 for a total of $270,900 per year. The rate funded CRP is reduced by the capacity fee revenue to obtain the rate funded (i.e. "pay as you go" - PAYGO) capital costs shown in **Table 3-13**.

Table 3-13 Capital Replacement Program Projections

CRP Total	**$1,820,000**	**$2,495,000**	**$2,550,000**	**$2,525,000**	**$1,725,000**
CRP Funding					
New development (Capacity fee) funding	$270,900	$270,900	$270,900	$270,900	$270,900
PAYGO funded	$1,549,100	$2,224,100	$2,279,100	$2,254,100	$1,454,100

3.2.7. Debt

The District has one outstanding bond issue - Water Revenue Bonds Series 2013, which will be fully paid in FY 23/24. There is no other debt considered during this study period.

3.2.8. Status Quo Financial Plan

The Status Quo financial plan summarizes the District's financial position if there is no increase in rates as shown in **Figure 3-2** to **Figure 3-3**. A detailed status quo financial plan is provided in **Appendix A**.

A utility's revenue requirement is the yearly revenue needed to operate and maintain its water services and ensure fiscal solvency. The revenue requirement is determined by adding O&M expenses, rate-funded capital

expenditures, debt service payments and changes in end reserves. The status quo financial plan demonstrates that the revenue requirement exceeds existing revenues.

Figure 3-2 illustrates the Status Quo Financial Plan, which compares existing revenues with projected expenses. Expenses include O&M, CRP costs (capital expenses) and reserve funding and are shown by stacked bars, while total revenue at existing rates is represented by the black line. **Figure 3-2** compares revenue (black line) with expenses (stacked bars) and shows that current revenue from existing rates does not meet future total expenses, indicating a need for revenue adjustments. Note that under this scenario, the net cashflow (which either funds or depletes reserves) are negative each year (red stacked bars below the x-axis).

Figure 3-2 Status Quo Financial Plan Projections

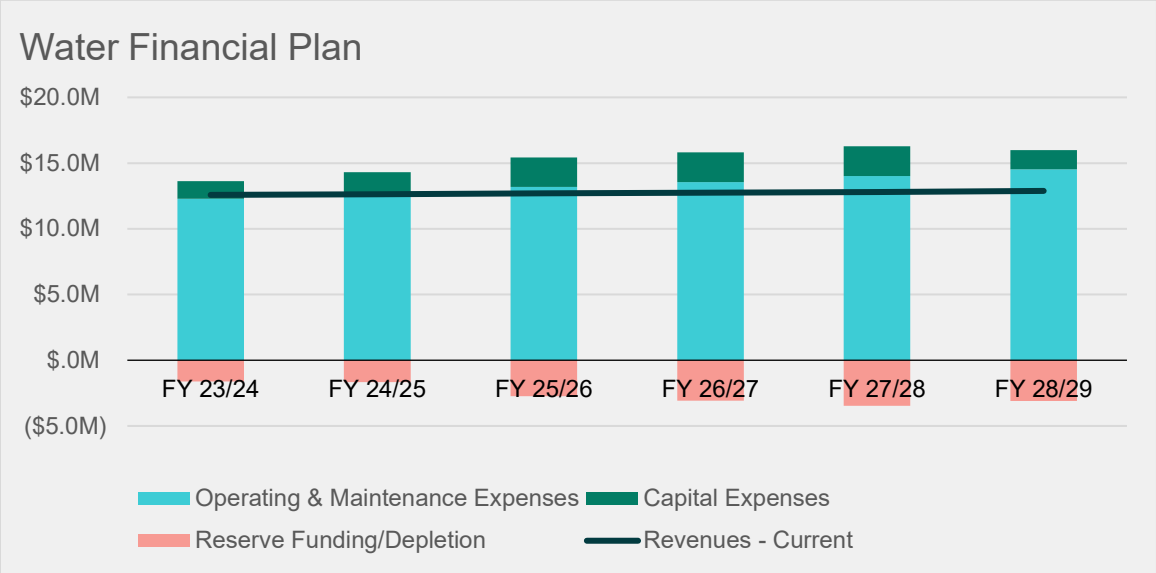
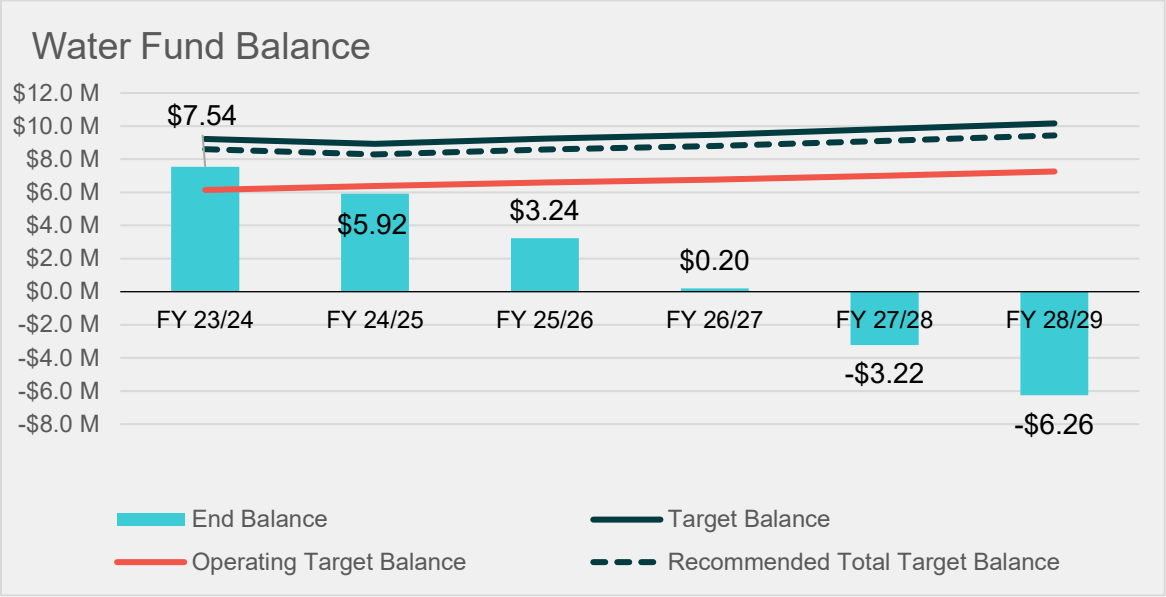


Figure 3-3 displays the District's projected ending balances. For the purposes of this study, all unrestricted cash and cash equivalents are considered reserves though the District does not consider checking accounts as part of reserves. The black line represents the projected target reserves under existing targets, the dotted black line represents projected reserves under proposed targets, and the red line shows target operating reserves (which are part of the total target reserves). The ending balances are projected to drop below the targeted Operating Reserves in FY 24/25 and be negative by FY 27/28.

Figure 3-3 Status Quo End Balances Projections



3.2.9. Proposed Revenue Adjustments and Financial Plan

An 8% revenue adjustment per year starting in FY 24/25 is proposed as shown in **Table 3-14**. The financial plan model assumes that the revenue adjustments will occur on July 1 each year.

Table 3-14 Proposed Water Revenue Adjustments

Water Revenue Adjustment	8.00%	8.00%	8.00%	8.00%	8.00%

A detailed financial plan with the proposed revenue increase is presented in **Table 3-15**. Explanations of various line items in the table are detailed below:

- To calculate the revenues from current rates in Lines 2 through 4, the following steps were taken:
  1. The number of accounts (projected using **Table 3-2**, **Table 3-3** and **Table 3-9**) were multiplied by the current monthly fixed rates and by 12 (months) to calculate the annual fixed rate revenues.
  2. The annual water consumption by customer class and by tier (projected using **Table 3-8** and **Table 3-9**) was multiplied by the current volumetric rates from **Table 3-4** to calculate the annual volumetric rate revenues.
- The additional revenue from rate adjustment is shown in line 7 and it represents the cumulative increase in revenues due to the proposed 8% annual rate increase.
- Raftelis calculated revenues in **Table 3-10**.
- Line 10, "Total Revenues", is equal to the sum of both rate and non-rate revenues.
- Annual cashflows (line 27) is calculated as the difference between total revenues (line 10) and cash outflows (the sum of O&M, annual debt payments and CRP expenditures).

For FY 24/25-FY 26/27, the District will draw on reserves to meet yearly expenses. In FY 27/28 – FY 28/29, the net cashflow turns positive and reserves reach operating targets in FY 28/29.

Table 3-15 Financial Plan Projections with Proposed Revenue Adjustment

		FY 24/25	FY 25/26	FY 26/27	FY 27/28	FY 28/29
1	**REVENUES**					
2	Water Consumption Sales	$6,492,128	$6,530,317	$6,568,506	$6,606,695	$6,644,884
3	Monthly Service Charge	$1,633,327	$1,639,999	$1,646,672	$1,653,344	$1,660,017
4	CRP Charge	$1,796,063	$1,803,400	$1,810,738	$1,818,075	$1,825,413
5	**Revenues from Current Rates**	**$9,921,518**	**$9,973,717**	**$10,025,916**	**$10,078,115**	**$10,130,314**
6						
7	**Subtotal Proposed Revenues Adjustments**	**$793,721**	**$1,659,626**	**$2,603,851**	**$3,633,049**	**$4,754,441**
8	**Subtotal Revenues from Rates**	**$10,715,239**	**$11,633,343**	**$12,629,767**	**$13,711,164**	**$14,884,755**
9						
10	**TOTAL REVENUES (excl. meter sales and grants)**	**$13,430,174**	**$14,365,615**	**$15,381,787**	**$16,489,506**	**$17,700,480**
11						
12	**Operations & Maintenance Expenses**					
13	Source of supply	$1,593,864	$1,613,889	$1,615,541	$1,735,041	$1,863,515
14	Pumping and water treatment	$2,593,220	$2,671,017	$2,751,147	$2,833,682	$2,918,692
15	Const. & Maint. / CRP (Trans & Dist)	$2,286,215	$2,377,664	$2,448,994	$2,522,463	$2,598,137
16	Field Services (Meters)	$352,929	$367,046	$378,058	$389,399	$401,081
17	Accounting/Billing/Customer Service	$1,186,054	$1,233,497	$1,270,501	$1,308,617	$1,347,875
18	Administrative	$4,743,894	$4,933,650	$5,081,659	$5,234,109	$5,391,132
19	**TOTAL O&M EXPENSES**	**$12,756,177**	**$13,196,762**	**$13,545,900**	**$14,023,311**	**$14,520,433**
20						
21	**NET REVENUE**	**$673,998**	**$1,168,853**	**$1,835,887**	**$2,466,195**	**$3,180,047**
22						
23	**CIP EXPENDITURES (excl. funded by grants and new dev't)**					
24	PAYGO funded CIP	$1,549,100	$2,224,100	$2,279,100	$2,254,100	$1,454,100
25	**TOTAL CIP EXPENDITURES**	**$1,549,100**	**$2,224,100**	**$2,279,100**	**$2,254,100**	**$1,454,100**
26						
27	**NET CASH FLOW**	**($875,102)**	**($1,055,247)**	**($443,213)**	**$212,095**	**$1,725,947**
28	Beginning Balance	$7,542,432	$6,717,330	$5,712,083	$5,318,870	$5,580,965
29	Capital Contributions - New installations	$50,000	$50,000	$50,000	$50,000	$50,000
30	**Ending Balance**	**$6,717,330**	**$5,712,083**	**$5,318,870**	**$5,580,965**	**$7,356,912**
31	Proposed Target Reserves	$8,291,515	$8,577,895	$8,804,835	$9,115,152	$9,438,281

The proposed rate increases allow the District to fully cover costs starting in FY 27/28, as illustrated in **Figure 3-4.**

Figure 3-4 Financial Plan Projections with Proposed Revenue Adjustment

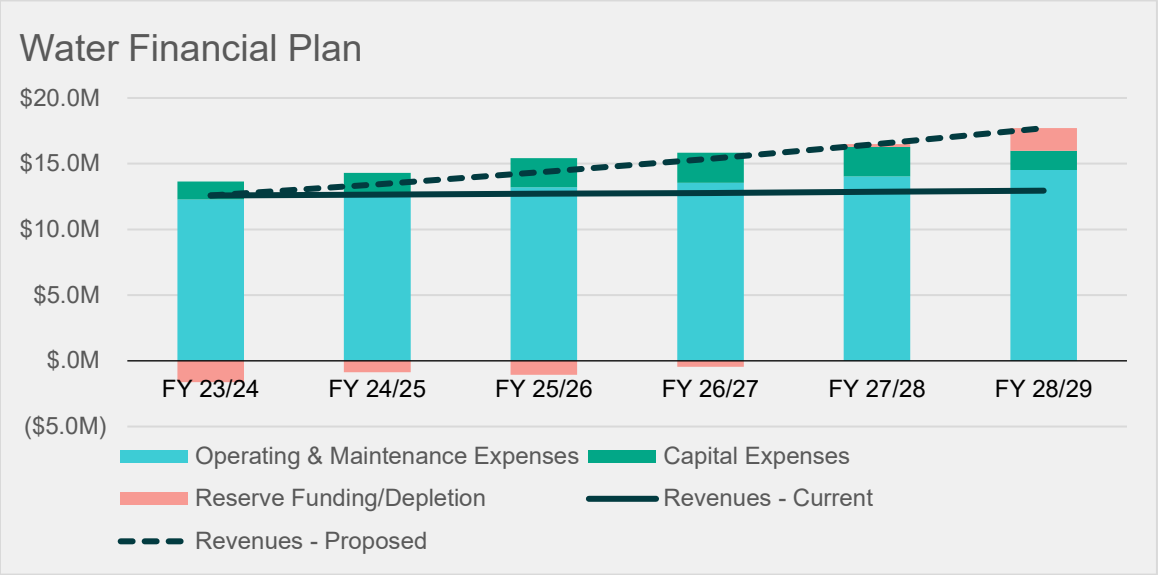
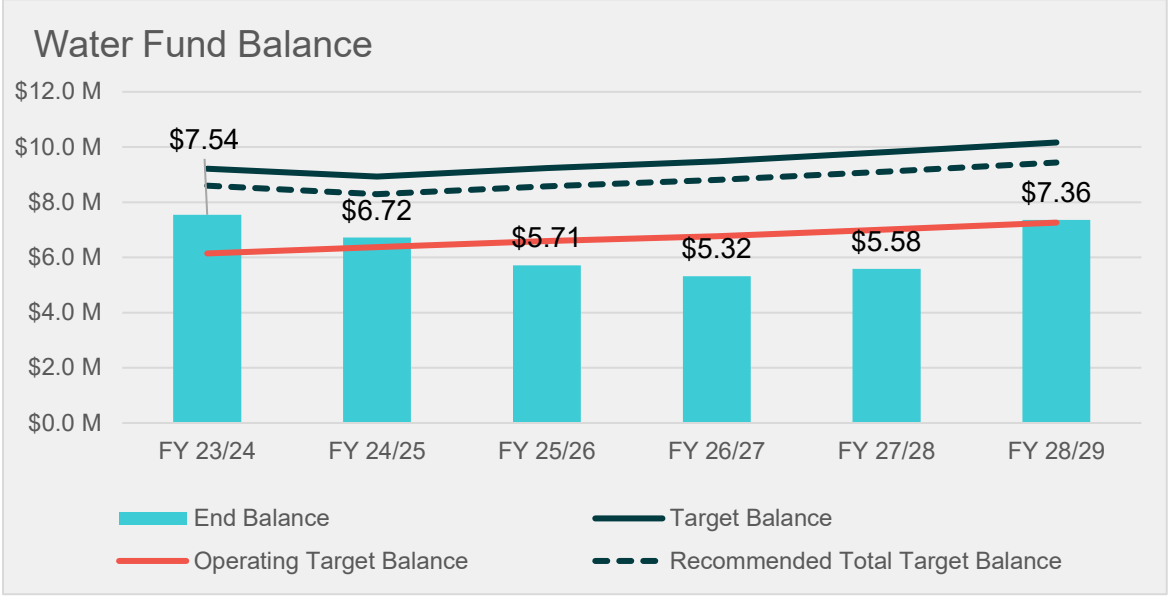


Figure 3-5 shows the resulting reserve balances as a result of the 8% per year revenue adjustments. Even with these revenue adjustments, the reserves fall below Operating Target balances in FY 25/26 and remain below this target through FY 27/28. The District will reach operating target reserves by FY 28/29. The District is minimizing customer rate increases for its customers by allowing the reserves to fall below target for a few years.

Figure 3-5 End Balance Projections with proposed Revenue Adjustment



3.3. Water Cost of Service Analysis

The principles and methodology of a cost of service analysis were described in **Section 2.2.** A cost of service analysis distributes the utilities revenue requirement (costs) to each customer class. The first step in a cost of service analysis is to functionalize a utility's O&M costs to the following functions:

1. water supply,
2. treatment,
3. pumping,
4. distribution storage,
5. distribution
6. meter maintenance,
7. customer service and meter reading
8. general and administrative costs and
9. fire protection.

The District functionalized expenses for this study. The functionalization of costs allows us to better allocate the functionalized costs to the cost causation components. Typical cost causation components include:

1. base (average) costs (sometime base costs are broken out into supply and delivery costs as is done in this study)
2. peaking costs (maximum day and maximum hour),
3. meter service,
4. billing and customer service, and
5. general and administrative costs.

Peaking costs are further divided into maximum day and maximum hour demand. The maximum day demand is the maximum amount of water used in a single day in a year. The maximum hour demand is the maximum use in an hour on the maximum use day. Different facilities, such as distribution and storage facilities, and the O&M costs associated with those facilities, are designed to meet customer peaking demands. Therefore, extra capacity costs include the O&M and capital costs associated with meeting peak customer demand. This method is consistent with the AWWA *M1 Manual* and is widely used in the water industry to perform cost of service analyses.

3.3.1. Proposed Tiers

The last study revised the tiers so that all customer classes have tiered rates. All classes remain tiered with the same tiered break points. Tier 1 is set at the average winter use and tier 2 is set at the average summer use. The tier breakpoints for multi-family residential are per apartment. The tier breakpoints are estimates for average indoor water use (tier 1) and average outdoor water use (tier 2).

3.3.2. Peaking Allocation

To allocate costs to base and peaking cost components[10], the cost of service analyses uses system peaking factors. System peaking factors are defined as follows:

[10] Peaking cost components include Max Day and Max Hour extra capacity

- The Average Day peaking factor is assigned a value of 1.0 signifying no peaking demand.
- The Maximum Day (Max Day) peaking factor of 1.49 is calculated as the ratio between the system wide max day and average day capacity provided by the District[11] and it means the system delivers 1.49 times the amount of water it does during an average day. It is calculated by dividing the Max Day demand of the system in gallons per day by the average demand in gallons per day.
- The Maximum Hour (Max Hour) peaking factor of 2.48 is calculated multiplying the Max Day peaking factor by 1.66 which is the industry standard max hour multiplier for utility of this size. The Max Hour peaking factor means that the system is designed to deliver 2.48 times the amount of water during the max hour that it does during an average day.

The derivation of the allocation bases which are used to allocate costs to the cost-causing components is shown in **Table 3-16**. Costs associated with Average Day demand is 100% allocated to the base (no peaking capacity used). Expenses allocated using the Max Day basis assume 67% (1/1.49) of costs are due to base demands with the remaining proportion 33% (100%-67%) of costs allocated to the Max Day cost component. Lastly, expenses allocated using the Max Hour basis attribute 40% (1/2.48) of the costs to the base cost component, 20% (0.49/2.48) to maximum day and 40% (100% - 40% -20%) to maximum hour. Collectively the maximum day and hour cost components are known as peaking costs. These allocation bases are used to assign the functionalized costs in **Table 3-18** to the cost components.

Table 3-16 System Wide Peaking Factors and Allocation to Cost Components

Cost component allocation basis	Peaking Factor	Base	Max Day	Max Hour	Total
Average Day[12]	1.0	100%	0%	0%	100%
Max Day[13]	1.49	67%	33%	0%	100%
Max Hour[14]	2.48	40%	20%	40%	100%

3.3.3. Customer Class Peaking Factor Derivation

Peaking factors help properly distribute extra capacity costs to each class based on their peaking tendencies (extra capacity demanded). Water consumption by tier was calculated using FY 22/23 consumption data. Next, Raftelis calculated the peaking factor for each customer class. The peaking factors are defined as the ratio between the system wide month with highest water use and the average monthly water use during the fiscal year.

$$Peaking\ Factor = \frac{Max\ month\ water\ use}{Average\ month\ water\ use}$$

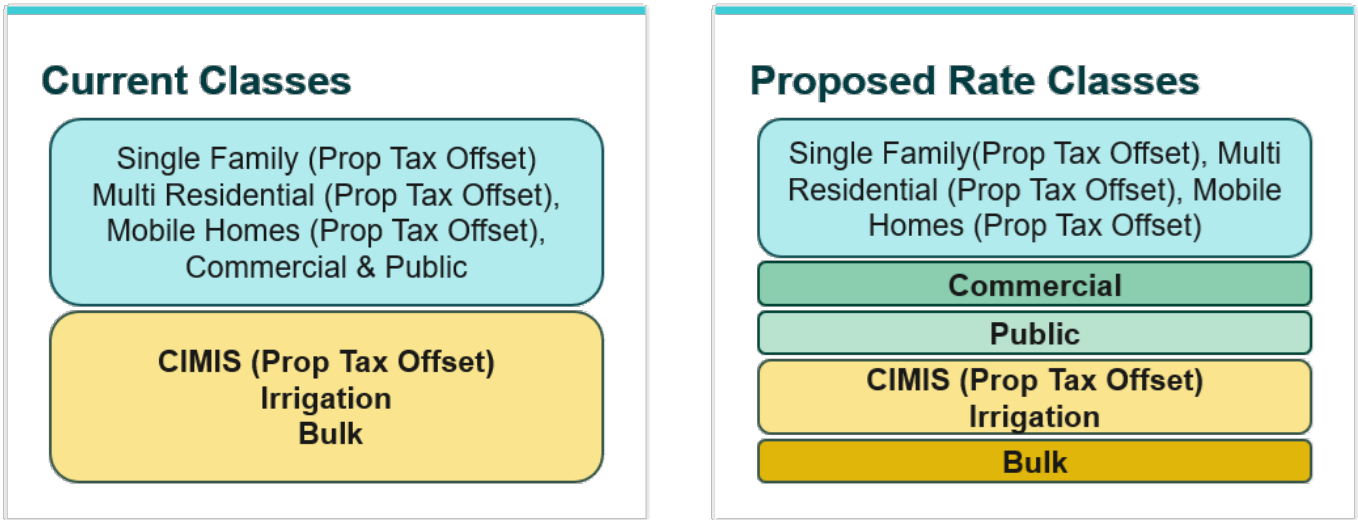
Where:

- *Max month water use* - the system wide month with highest water use during the fiscal year
- *Average month water use* - the average monthly water use calculated by dividing the annual water use by 12 (months)

[11] Maximum Day an Average Day water production provided by the District are 12.65 and 8.48 million gallons per day and are based on HDWD's water system master plan for 2016.
[12] Provided by District's staff
[13] Provided by District's staff
[14] Used calculated industry standard Max Hour peaking factor utilities of this sizes

After discussions with District staff and review of peaking factors, Raftelis proposes to increase the number of customer classes from two to five. The comparison between existing and proposed customer groups is shown in **Figure 3-6**.

Figure 3-6 Customer Group Comparison, Current vs. Proposed



The five customer groups created include: residential (SFR, MHP, MTF), commercial, public, irrigation (CIM, IRR), and bulk customers. The customers with similar peaking factors were grouped together and the peaking factors by tier for each of the five classes were determined. The peaking factor for each tier is a weighted average of the respective peaking factors by tiers for the customer classes included in the group. The water sales were used as the weight in the weighted average. Irrigation customers displayed higher peaking characteristics as shown in **Table 3-17**. The peaking factors were rounded to the second decimal.

Table 3-17 Customer Group Peaking Factors

	Residential (SFR, MHP, MTF)	Commercial	Public	Irrigation (IRR, CIM)	Bulk
Peaking Factor - Tier 1	1.06	1.06	1.06	1.13	1.00
Peaking Factor - Tier 2	1.37	1.08	1.13	1.18	1.00
Peaking Factor - Tier 3	1.89	1.08	1.22	2.06	1.08

3.3.4. Allocation of Functionalized Water Expenses to Cost Components

Raftelis performed a cost of service analysis for FY 24/25 using projected O&M costs and CRP expenditures. The projected functionalized O&M costs in **Table 3-12** were allocated to cost-causing components as explained in **Section 2.2**.

The allocations assigned to Base, Max Day and Max Hour from **Table 3-16** were used to allocate costs to the cost-causing components. Costs related solely to providing average day demand, such as supply sources, were allocated 100% to Base. Costs designed to meet Max Day peaking requirements, such as reservoirs and transmission facilities, were allocated to both Base and Max Day components. Water supply costs were

entirely allocated to the Water Supply cost component. Customer service related costs were allocated 100 percent to the customer service component. Costs related to meter maintenance were allocated to the meter service cost component. Accounting costs were allocated to the general and administrative cost components and billing costs were allocated to the customer service cost component based on District's staff inputs.

Table 3-18 shows the allocation of O&M cost to the cost components. The table consists of two parts: the upper portion shows the allocation of each function to cost component, and the lower section of the table shows the resulting allocation for FY 24/25.

For example, as shown in the second row labeled "Treatment"**,** Raftelis allocated Water Treatment costs using Max day allocation basis (e.g. 67% attributed to Base and 33% attributed to Max day cost components)**.** The second half of the table shows $347,676 of the total treatment costs are allocated to base (67%*$518,644= $347,676) and $170,968 to Maximum day component (33%*$518,644= $170,968).

Raftelis performed similar calculations for each group of O&M expenses and determined the cost by component as shown in the row labeled "Total" of **Table 3-18.** The resulting O&M cost allocation percentages by cost-causing component are determined in the last row labeled "O&M" by dividing the total cost in each column by the FY 24/25 O&M budget of $12,756,177. These percentages are used to allocate the FY 24/25 revenue requirement to the cost components.

The columns labeled as Max Day and Max Hour are collectively known as peaking costs. Peaking costs are costs associated with delivering water during times of above average flow. Water systems must be sized to deliver water at different flow rates because the flow rate changes hourly, daily and seasonally. A Water Master Plan identifies the components of a water system and how they are designed or sized. It is normally water distribution tanks and pipelines, that must be sized to meet not only max hourly and daily flows but fire flows. Capital costs and operational costs are influenced by the upsizing of tanks and pipelines. For example, the District has 16 water distribution reservoirs (tanks), that must be sized to meet daily peak flows. Larger tanks are more costly to construct and maintain compared to smaller tanks and the concept of peaking strives to allocate both capital and operational costs to customer classes that are more responsible for peak flows. Peaking costs also apply to pipeline construction and maintenance.

Table 3-18 Allocation of Functionalized O&M Expenses to Cost Causation Components

Functions	Allocation Basis	Water Supply	Base	Max Day	Max Hour	Meter Service	Customer Service	Gen & Admin	Direct Fire Protection
Supply	Source of Supply	100%	0%	0%	0%	0%	0%	0%	0%
Treatment	Max Day	0%	67%	33%	0%	0%	0%	0%	0%
Pumping	Max Day	0%	67%	33%	0%	0%	0%	0%	0%
Distribution Storage	Max Day	0%	67%	33%	0%	0%	0%	0%	0%
Distribution	Max Hour	0%	40%	19%	39%	0%	0%	0%	2%
Meter Maintenance	Meter Service	0%	0%	0%	0%	100%	0%	0%	0%
Customer Service and Meter Reading	Cust. Service	0%	0%	0%	0%	0%	66%	34%	0%
General & Admin	Gen& Admin	0%	0%	0%	0%	0%	0%	100%	0%
Direct Fire Protection	Fire	0%	0%	0%	0%	0%	0%	0%	100%
	FY 2025 Budget								
Supply	$1,593,864	$1,593,864	$0	$0	$0	$0	$0	$0	$0
Treatment	$518,644	$0	$347,676	$170,968	$0	$0	$0	$0	$0
Pumping	$2,074,576	$0	$1,390,704	$683,872	$0	$0	$0	$0	$0
Distribution Storage	$228,622	$0	$153,258	$75,364	$0	$0	$0	$0	$0
Distribution	$2,011,869	$0	$795,693	$391,278	$783,401	$0	$0	$0	$41,497
Meter Maintenance	$352,929	$0	$0	$0	$0	$352,929	$0	$0	$0
Customer Service and Meter Reading	$865,820	$0	$0	$0	$0	$0	$571,441	$294,379	$0
General & Admin	$5,064,129	$0	$0	$0	$0	$0	$0	$5,064,129	$0
Direct Fire Protection	$45,724	$0	$0	$0	$0	$0	$0	$0	$45,724
Total	**$12,756,177**	**$1,593,864**	**$2,687,331**	**$1,321,482**	**$783,401**	**$352,929**	**$571,441**	**$5,358,507**	**$87,222**
O&M		12.5%	21.1%	10.4%	6.1%	2.8%	4.5%	42.0%	0.7%

Table 3-19 Fixed Assets Allocation to Cost Causation Components

Function	Type of Asset	Allocation Basis	Water Supply	Base	Max Day	Max Hour	Meter Service	Customer Service	Gen & Admin	Direct Fire Protection
General	General	Base	0%	100%	0%	0%	0%	0%	0%	0%
Supply	Supply	Source of Supply	100%	0%	0%	0%	0%	0%	0%	0%
Supply	Treatment Plant	Base	0%	100%	0%	0%	0%	0%	0%	0%
Distribution	Pumping	Max Day	0%	67%	33%	0%	0%	0%	0%	0%
Distribution	Transmission mains	Max Hour	0%	40%	19%	39%	0%	0%	0%	2%
General	Storage	Max Hour	0%	40%	19%	39%	0%	0%	0%	2%
Meters	Meters	Meter Service	0%	0%	0%	0%	100%	0%	0%	0%
Hydrants	Hydrants	Fire	0%	0%	0%	0%	0%	0%	0%	100%
Billing & CS	Billing & CS	Gen & Admin	0%	0%	0%	0%	0%	0%	100%	0%
		Acquisition Cost								
General	General	$ 5,774,616	$0	$5,774,616	$0	$0	$0	$0	$0	$0
Supply	Supply	$7,069,534	$7,069,534	$0	$0	$0	$0	$0	$0	$0
Supply	Treatment Plant	$3,530,863	$0	$3,530,863	$0	$0	$0	$0	$0	$0
Distribution	Pumping	$7,190,546	$0	$4,820,224	$2,370,322	$0	$0	$0	$0	$0
Distribution	Transmission mains	$39,997,373	$0	$15,818,932	$7,778,885	$15,574,559	$0	$0	$0	$824,996
General	Storage	$9,445,904	$0	$3,735,848	$1,837,086	$3,678,136	$0	$0	$0	$194,834
Meters	Meters	$0	$0	$0	$0	$0	$0	$0	$0	$0
Hydrants	Hydrants	$847,105	$0	$0	$0	$0	$0	$0	$0	$847,105
Billing & CS	Billing & CS	$45,805	$0	$0	$0	$0	$0	$0	$45,805	$0
Total		**$73,901,746**	**$7,069,534**	**$33,680,483**	**$11,986,293**	**$19,252,696**	**$0**	**$0**	**$45,805**	**$1,866,934**
Capital			9.6%	45.6%	16.2%	26.1%	0.0%	0.0%	0.1%	2.5%

A similar procedure for cost allocation is applied to fixed assets costs as shown in **Table 3-19**. These percentages are used to allocate the FY 24/25 revenue requirement to the cost components.

3.3.5. Revenue Requirement Calculation

Water rates are calculated for FY 24/25, referred to as the "test year." Thus, the FY 24/25 revenue requirement is allocated to the cost components using the percentages described in **Section 3.3.4**.

The revenue requirement calculation for FY 24/25, shown in **Table 3-20**, is based upon the premise that the utility must generate annual revenues to meet O&M expenses and capital investment needs. *Total* revenue requirements are calculated in line 5 of **Table 3-20**, however some of the revenue needs are met from non-rate revenue. Revenues from sources other than water charges (e.g. revenues from miscellaneous services, earned interest or property tax and assessments) are revenue offsets and are deducted from the total revenue requirement (as shown in line 11 of **Table 3-20).** Finally, the revenue from the proposed rate increase, shown in line 15 and the cash balance, shown in line 13, are added to the revenue requirement. Line 17, **Table 3-20** shows the resulting ***rate*** revenue requirement.

Table 3-20 Revenue Requirement Determination

Line	FY 24/25	Operating	Capital	Total
1	***Revenue requirements***			
2	O&M expenses	$12,756,177		$12,756,177
3	CIP expenses (excl CRP funding)		$542,185	$542,185
4	CRP funded capital		$1,006,915	$1,006,915
5	**Total Revenue Requirements**	**$12,756,177**	**$1,549,100**	**$14,305,277**
6	***Revenue Offsets***			
7	Total Other Operating Revenues	($446,204)		($446,204)
8	Property taxes and assessments - Revenue Offset	($2,140,714)		($2,140,714)
9	Interest earnings		($70,409)	($70,409)
10	Other Non-op. revenues	($57,608)		($57,608)
11	**Total Revenue Offsets**	**($2,644,526)**	**($70,409)**	**($2,714,935)**
12	***Adjustments***			
13	Cash balance	(875,102)		($875,102)
14	Annual Rev. Adj't	$0		$0
15	**Total Adjustments**	**($875,102)**	**$0**	**($875,102)**
16				
17	**Rev. req. from rates**	**$9,236,548**	**1,478,691**	**$10,715,239**

3.3.6. Revenue Requirement Allocation to Cost Components

In table **Table 3-21,** Raftelis used the cost allocation for O&M and fixed assets allocation, derived in **Table 3-18** and **Table 3-19**, to distribute the revenue requirement, shown in **Table 3-20**, to costs components. The Operating revenue requirement is allocated to the cost components using the calculated O&M allocation percentages. The rate-funded CRP costs were entirely allocated to the CRP charge component, while the remaining capital costs were allocated using the assets allocation percentages. Property taxes were allocated 100% to revenue offsets, as detailed in Section 3.3.11.

The final part of revenue requirement allocation is the redistribution of general and administrative costs, as well as direct fire protection costs, to the remaining cost-causing components. Raftelis reallocated the general and administrative costs to the rest of the cost components using reallocation factors shown in line 33 as "Gen & Admin Realloc. Factors" in **Table 3-21**. Raftelis determined the reallocation factors in line 33 by calculating the relative share of the cost components in line 31 to the total cost, excluding general and administrative costs (as they are reallocated) and revenue adjustments. The direct fire protection costs were reallocated, which represent the costs related to public fire protection services provided by the District, to the meter service costs as those cost will be recovered by all customers (shown in line 38 of **Table 3-21**). The final revenue requirement distribution by cost-causing component is derived in the last line (39) of **Table 3-21.**

3.3.7. Fixed versus Volumetric Cost Recovery

According to the M1 Manual, the cost-of-service approach to setting water rates results is the proportionate distribution of costs to each tier or customer class based on the costs that each cause. A dual set of fees—fixed and variable—is an extension of this cost causation theory. For example, a utility incurs some costs associated with serving customers irrespective of the amount or rate of water they use, such as billing and customer service costs. These types of costs are referred to as customer-related costs and typically are costs that would be recovered through a fixed charge. These costs are usually recovered on a per-customer basis or some other non-consumptive basis. Regardless of the level of a customer's consumption, a customer will be charged this minimum amount in each bill. On the other hand, water supply costs represent costs that depend on a customer's water consumption and can be recovered by a volumetric charge.

Table 3-22 shows the distribution of the total revenue requirement between fixed and variable rates with shares of 35% and 65%, respectively. The water supply, delivery and peaking costs are recovered from commodity charges. Meter service costs and billing and customer service costs are recovered from fixed charges. The rate funded CRP costs, which are also part of the revenue requirements, are incorporated into the fixed charge.

Table 3-21 Allocation of Revenue Requirement by Cost Causation Component

Line	Allocation	Allocation Factor / Total Cost	Water Supply	Base	Max Day	Max Hour	Meter Service	Cus-tomer Service	Gen & Admin	Direct Fire Protection	Rev. Offset	CRP Surcharge
1												
2	Operating	O&M	12%	21%	10%	6%	3%	4%	42%	1%		
3	Other capital (excl. CRP charge)	Capital	10%	46%	16%	26%				3%		
4	CRP charge	CRP Surcharge										100%
5												
6	Revenue Offsets											
7	Total Other Operating Revenues	O&M	12%	21%	10%	6%	3%	4%	42%	1%		
8	Property taxes and assessments	Capital	10%	46%	16%	26%				3%		
9	Property taxes and assessments for Rev Offset	Rev. Offset									100%	
10	Interest earnings	Capital	10%	46%	16%	26%				3%		
11	Other Non-Op Revenues	O&M	12%	21%	10%	6%	3%	4%	42%	1%		
12	Adjustments											
13	Cash Balance	O&M	12%	21%	10%	6%	3%	4%	42%	1%		
14	Mid Year Revenue Adjustment	O&M	12%	21%	10%	6%	3%	4%	42%	1%		
15	**Revenue Requirement Allocation to Cost Components**											
16		**Total**										
17	Operating	$12,756,177	$1,593,864	$2,687,331	$1,321,482	$783,401	$352,929	$571,441	$5,358,507	$87,222	$0	$0
18	Other capital (excl. CRP charge)	$542,185	$51,866	$247,099	$87,938	$141,249	$0	$0	$336	$13,697	$0	$0
19	CRP charge	$1,006,915	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,006,915

Line	Allocation	Allocation Factor / Total Cost	Water Supply	Base	Max Day	Max Hour	Meter Service	Cus-tomer Service	Gen & Admin	Direct Fire Protection	Rev. Offset	CRP Surcharge
20												
21	Revenue Offsets											
22	Total Other Operating Revenues	($446,204)	($55,752)	($94,001)	($46,225)	($27,403)	($12,345)	($19,989)	($187,438)	($3,051)	$0	$0
23	Property taxes and assessments	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
24	Property taxes and assessments for Rev Offset	($2,140,714)	$0	$0	$0	$0	$0	$0	$0	$0	($2,140,714)	$0
25	Interest earnings	($70,409)	($6,735)	($32,089)	($11,420)	($18,343)	$0	$0	($44)	($1,779)	$0	$0
26	Other Non-Op Revenues	($57,608)	($7,198)	($12,136)	($5,968)	($3,538)	($1,594)	($2,581)	($24,200)	($394)	$0	$0
27	Adjustments											
28	Cash Balance	($875,102)	($109,343)	($184,357)	($90,657)	($53,743)	($24,212)	($39,202)	($367,606)	($5,984)	$0	$0
29	Mid Year Revenue Adjustment	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
30												
31	Total Rev Requirements	$10,715,239	$1,466,702	$2,611,847	$1,255,151	$821,623	$314,778	$509,669	$4,779,557	$89,711	($2,140,714)	$1,006,915
32												
33	Gen & Admin Realloc. factors		21%	37%	18%	12%	4%	7%		1.30%		
34												
35	Reallocated Gen&Admin		$991,612	$1,765,825	$848,587	$555,485	$212,816	$344,579	($4,779,557)	$60,652		
36	Adjusted COS (G&A)		$2,458,314	$4,377,672	$2,103,738	$1,377,108	$527,595	$854,248	$0	$150,364	($2,140,714)	$1,006,915
37												
38	Reallocated Public Fire Costs						$150,364			$(150,364)		
39	Adjusted COS (w/fire protection)		**$2,458,314**	**$4,377,672**	**$2,103,738**	**$1,377,108**	**$677,958**	**$854,248**	**$0**	**$0**	**($2,140,714)**	**$1,006,915**

The costs in **Table 3-21**, line 39 are assigned to their respective cost components in the "Costs" column of **Table 3-22**, where they are then allocated to the rate components. As shown, there are volumetric rate components collected through the volumetric rate and components collected through the fixed charge.

Table 3-22 Allocation of Cost Causation Components to Rate Components[15]

Cost Components	Costs	Supply	Delivery	Peaking	Rev. Offset	Meter	Billing & CS	CRP Surcharge
		VOLUMETRIC				FIXED		
Water Supply	$2,458,314	100%						
Base	$4,377,672		100%					
Max Day	$2,103,738			65%		35%		
Max Hour	$1,377,108			65%		35%		
Meter Service	$677,958					100%		
Customer Service	$854,248						100%	
Direct Fire Protection	$0					100%		
Rev. Offset	($2,140,714)				100%			
CRP Surcharge	$1,006,915							100%
Private Fire Protection	$0							
TOTAL	**$10,715,239**	**$2,458,314**	**$4,377,672**	**$2,269,634**	**($2,140,714)**	**$1,889,170**	**$854,248**	**$1,006,915**

[15] Percentages are rounded.

Table 3-23 Derivation of Cost Component Units

Customer Class	Annual consumption (proposed tiers)	Daily Consumption (proposed tiers)	Peaking Factor	Capacity Factor	Total Capacity (hcf/day)	Extra Capacity (hcf/day)	Capacity Factor	Total Capacity (hcf/day)	Extra Capacity (hcf/day)
A	*B*	*C = B/365*	*D*	*E = D*1.12*	*F = C*E*	*G = F-C*	*H = E*(2.48/1.49)*	*I = C*H*	*J = I-F*
			MAX DAY					**MAX HOUR**	
SFR	**768,864**	**2,106**	**1.31**		**3,126**	**1,020**		**5,189**	**2,063**
T1	366,876	1,005	1.06	1.19	1,195	190	1.97	1,984	789
T2	252,608	692	1.37	1.54	1,063	371	2.55	1,765	702
T3	149,379	409	1.89	2.12	868	458	3.52	1,440	573
MTF	**67,103**	**184**	**1.31**		**244**	**61**		**406**	**161**
T1	45,895	126	1.06	1.19	149	24	1.97	248	99
T2	17,638	48	1.37	1.54	74	26	2.55	123	49
T3	3,571	10	1.89	2.12	21	11	3.52	34	14
MHP	29,841	82	1.31		102	20		169	67
T1	25,641	70	1.06	1.19	84	13	1.97	139	55
T2	3,970	11	1.37	1.54	17	6	2.55	28	11
T3	230	1	1.89	2.12	1	1	3.52	2	1
COM	**103,970**	**285**	**1.08**		**344**	**59**		**571**	**227**
T1	13,740	38	1.06	1.19	45	7	1.97	74	30
T2	13,658	37	1.08	1.21	45	8	2.01	75	30
T3	76,571	210	1.08	1.21	254	44	2.01	422	168
PBE	**20,770**	**57**	**1.20**		**76**	**19**		**126**	**50**
T1	2,112	6	1.06	1.19	7	1	1.97	11	5
T2	2,510	7	1.13	1.27	9	2	2.10	14	6
T3	16,147	44	1.22	1.37	61	16	2.27	100	40
IRR	**17,111**	**47**	**1.99**		**97**	**50**		**161**	**64**
T1	2,039	6	1.13	1.27	7	1	2.10	12	5
T2	2,021	6	1.18	1.33	7	2	2.20	12	5
T3	13,052	36	2.06	2.31	83	47	3.84	137	55
CIM	**50,607**	**139**	**1.99**		**316**	**177**		**524**	**208**
T1	649	2	1.13	1.27	2	0	2.10	4	1
T2	1,081	3	1.18	1.33	4	1	2.20	7	3
T3	48,877	134	2.06	2.31	309	175	3.84	514	204

Customer Class	Annual consumption (proposed tiers)	Daily Consumption (proposed tiers)	Peaking Factor	Capacity Factor	Total Capacity (hcf/day)	Extra Capacity (hcf/day)	Capacity Factor	Total Capacity (hcf/day)	Extra Capacity (hcf/day)
A	*B*	*C = B/365*	*D*	*E = D*1.12*	*F = C*E*	*G = F-C*	*H = E*(2.48/1.49)*	*I = C*H*	*J = I-F*
			MAX DAY				**MAX HOUR**		
BLK	**9,460**	**26**	**1.06**		**31**	**5**		**52**	**21**
T1	439	1	1.00	1.12	1	0	1.86	2	1
T2	649	2	1.00	1.12	2	0	1.86	3	1
T3	8,372	23	1.08	1.21	28	5	2.01	46	18
	Water Sales	**Daily Water Sales**				**MD Extra Capacity**			**MH Extra Capacity**
TOTAL	**1,067,726**	**2,925**				**1,411**			**2,862**

3.3.8. Derivation of Cost Component Units (Service Units) and Unit Cost Calculation

The District's rate structure consists of volumetric rates and fixed charges. Volumetric rates are charges per unit of water sold, while fixed charges do not vary with water use. This section calculates the service units and the unit rate by cost component.

At the beginning of Section 3.3, we described typical cost components. The ones applicable to this study are:

1. Supply,
2. Delivery,
3. Peaking (Max Day and Max Hour),
4. Meter service,
5. Billing and customer service,
6. Capital Replacement Program (CRP). Raftelis defined the CRP costs as a separate cost component to be consistent with the existing rate structure.

The proposed volumetric rate will collect the following cost components: supply, delivery and peaking. **Table 3-23** shows the derivation of the units of service for each of these cost components in columns C, G and J respectively. The Max Day and Max Hour extra capacity requirements are in hundred cubic feet per day and are the amount of water demanded during the peak day and hour. Raftelis derived the Max Day and Max Hour requirements as detailed by the header equations in **Table 3-23**. The 1.12 shown in column E is a factor used to convert max monthly use to max day use. It is the ratio of the Max Day design factor of 1.49 divided by the observed (from District data), system wide monthly peaking factor of 1.33. This converts monthly peaking factors, in column D, to daily peaking factors in column E. The remaining calculations convert monthly peaking factors into Max Hour requirements. The total Max Day and Max Hour requirements (service units) are shown in the last line "Total" of **Table 3-23**.

3.3.8.1. Equivalent Meters

Table 3-24 shows the derivation of service units for the billing and customer service cost component and the meter service component – shown at the bottom of the table. The number of bills is equal to the number of meters times 12 (months). Billing and customer service costs are distributed among customers based on the total number of bills in a test year; these costs are the same for each customer and usually do not depend on the size of the meter.

Table 3-24 Number of Bills and Equivalent Meters in FY 24/25

	AWWA Safe Operating Flow	AWWA Ratio	Total Meters[16]	Annual Bills	TOTAL Equivalent Meters	Annual Equivalent Meters
5/8 inches	20	1.00	10,634	127,608	10,634	127,608
1 inch	50	2.50	298	3,576	745	8,940
1 1/2 inches	100	5.00	61	732	305	3,660
2 inches	160	8.00	98	1,176	784	9,408
3 inches	320	16.00	17	204	272	3,264
4 inches	500	25.00	1	12	25	300
6 inches	1000	50.00	2	24	100	1,200
Total			**11,111**	**133,332**	**12,865**	**154,380**

The concept of equivalent meters is used to allocate meter-related costs appropriately. By using equivalent meters instead of a total meter count, the analysis accounts for the fact that larger meters impose greater demands on the system and are more expensive to install, maintain, and replace than smaller meters. Equivalent meters are used in calculating a portion of customer bills known as meter service.

Equivalent meters are based on meter hydraulic capacity. Equivalent meters represent the potential demand on the water system in terms of the base meter size. A ratio of hydraulic capacity is calculated by dividing large meter capacities by the base meter capacity. The capacity ratio is calculated using the meter capacity in gallons per minute (gpm) provided in the AWWA *M1 Manual Principles of Water Rates, Fees, and Charges* (7th Edition) for meters reflecting those used by the District.

The District's most common meter is a 5/8" meter. The ratio at which the meter charge increases is a function of the meter's safe operating capacity. For example, based on the AWWA meter capacity ratios, a customer that has a 2-inch meter has the capacity equivalency of eight 5/8" meters. A 2-inch meter has a safe operating capacity of 160 gpm compared to a 5/8" meter which has a safe operating capacity of 20 gpm as listed in Table B-1 in the M1 Manual. The distribution of meter service and capacity costs using equivalent meters recognizes that meter service and capacity costs are proportional to the service connection size (meter size).

3.3.8.2. Unit Cost Derivation

Table 3-25 derives the cost component unit costs shown at the bottom of the table, by dividing the revenue requirement by cost component, calculated in **Table 3-22** and restated at the top of **Table 3-25**, by the units of service (calculated in **Table 3-23** and **Table 3-24**).

[16] By state building code, all new single-family residential homes now require a 1-inch meter for fire protection. Since the use would be similar to the 5/8-inch capacity, these SFR customers with 1-inch meters for fire protection are considered 5/8-inch meters.

Table 3-25 Unit Cost Derivation

	Supply	Delivery	Max day	Max Hour	Rev. Offset	Meter	Billing & CS	CRP Surcharge
			Peaking Component					
Total revenue requirements	$2,458,314	$4,377,672	$1,371,711	$897,923	($2,140,714)	$1,889,170	$854,248	$1,006,915
Units used	Water Sales	Water Sales	Max day extra capacity	Max hour extra capacity	Eligible water sales	Equivalent Meters (annually)	Bills per year	Equivalent Meters (annually)
Units of Service	1,067,726	1,067,726	1,411	2,862		154,182	133,200	154,182
Unit cost	**$2.30**	**$4.10**	**$972.21**	**$313.75**		**$12.25**	**$6.41**	**$6.53**

The delivery and billing and customer service unit costs are applied uniformly among customers/tiers. The proposed meter service costs and CRP surcharge unit costs are for a 5/8-inch meter and will increase with meter size based on AWWA safety capacity meter ratios. The fixed charge, which includes billing, customer service and meter service will be charged to all customers with meters.

The supply costs and volumetric peaking unit costs (Max Day and Max Hour) are allocated as described in **Section 3.3.9** and **Section 3.3.10**, respectively. Revenue offset-eligible sales are discussed in **Section 3.3.11**.

3.3.9. Water Supply Cost Distribution

The water supply costs are further allocated by tier based on the difference between groundwater (GW) costs and MWA (Mojave) purchased water costs. The total water production in **Table 3-26** is from **Table 3-11**. Of the total water produced 16% is GW and 84% is purchased from Mojave. The cost for groundwater ($163,201) is calculated by multiplying 16% (GW's portion of total water) by $991,612 (the general and administrative cost allocation to supply shown in line 35 of **Table 3-21**). This is the administrative costs of obtaining GW. The rest of the supply costs are attributed to Mojave water. A unit cost for GW and Mojave water is calculated in **Table 3-26**, in the bottom line, by dividing the total water cost for each by the water produced in hcf.

Table 3-26 Water Supply Unit Cost by Source

FY 2025	GW	Mojave	TOTAL
Total Water Production (AF)	500 AF	2,538 AF	3,038 AF
Water production by source (%)	16%	84%	100%
Total Water Cost	$163,201	$2,295,112	$2,458,314
Water Produced (hcf)	175,728	891,998	1,067,726
Unit Cost to customers	**$0.93**	**$2.57**	$2.30

The unit costs for groundwater and Mojave purchased water are then multiplied by the volume sold in each tier. Groundwater is "supplied" to tier 1 until it is exhausted and the remaining water used in tier 1 is supplied by Mojave water. The total cost of groundwater and Mojave water is added together and then divided by total consumption at each tier, yielding the unit cost by tier as shown in **Table 3-27**.

Table 3-27 Water Supply Unit Cost by Tier

Customer Class	Consumption	GW Consumption	Mojave Consumption	GW Cost	Mojave Cost	Total Cost	Supply Unit Costs
	A	*B*	*C*	*D = B*$0.93*	*E = C*$2.57*	*F = D+E*	*G = F/A*
All Classes		175,728	891,998	$163,427	$2,292,435	$2,455,862	$2.30
T1	457,391	175,728	281,662	$163,427	$723,871	$887,298	$1.94
T2	294,136	-	294,136	$0	$755,930	$755,930	$2.57
T3	316,200	-	316,200	$0	$812,634	$812,634	$2.57

3.3.10. Distribution of Peaking Costs to Customer Classes

The distribution of peaking costs to customer classes is derived in **Table 3-28**. The numbers in columns A and B are based on Max Day and Max Hour extra capacity by tier and customer classes from **Table 3-23**. The extra capacity (peaking) costs in column C are the sum of the of Max Day and Max Hour extra capacity costs.

- Max Day extra capacity costs for each tier are calculated by multiplying the Max Day extra capacity in hcf per day from **Table 3-23** and the Max Day extra capacity unit cost from **Table 3-25**.
- Max Hour extra capacity costs are calculated by multiplying the Max Hour extra capacity in hcf per day from **Table 3-23** by Max Hour extra capacity unit cost from **Table 3-25.**

Next, the extra capacity costs (column C) is divided by the total sales, in column D, to yield the proposed peaking rates in column E.

Table 3-28 Peaking Rates Derivation

Customer Class	Max Day A	Max Hour B	Peaking cost C = A+B	Water Use D	Peaking Unit costs E = C/D
SFR	**$991,228**	**$647,328**	**$1,638,556**	**768,864**	
Tier 1: 0-4 units	$184,604	$247,460	$432,064	366,876	$1.18
Tier 2: 5-11 units	$361,055	$220,216	$581,270	252,608	$2.30
Tier 3: 12 + units	$445,570	$179,652	$625,222	149,379	$4.19
MTF	**$58,954**	**$50,627**	**$109,581**	**67,103**	
Tier 1: 0-4 units	$23,093	$30,956	$54,049	45,895	$1.18
Tier 2: 5-11 units	$25,210	$15,376	$40,586	17,638	$2.30
Tier 3: 12 + units	$10,651	$4,294	$14,945	3,571	$4.19
MHP	**$19,263**	**$21,033**	**$40,296**	**29,841**	
Tier 1: 0-4 units	$12,902	$17,295	$30,196	25,641	$1.18
Tier 2: 5-11 units	$5,675	$3,461	$9,136	3,970	$2.30
Tier 3: 12 + units	$686	$277	$963	230	$4.19
COM	**$57,707**	**$71,277**	**$128,983**	**103,970**	
Tier 1: 0-4 units	$6,914	$9,268	$16,182	13,740	$1.18
Tier 2: 5-11 units	$7,689	$9,387	$17,075	13,658	$1.25
Tier 3: 12 + units	$43,104	$52,622	$95,726	76,571	$1.25
PBE	**$18,694**	**$15,765**	**$34,459**	**20,770**	
Tier 1: 0-4 units	$1,063	$1,425	$2,488	2,112	$1.18
Tier 2: 5-11 units	$1,788	$1,805	$3,593	2,510	$1.43
Tier 3: 12 + units	$15,843	$12,535	$28,379	16,147	$1.76
IRR	**$48,777**	**$20,097**	**$68,873**	**17,111**	
Tier 1: 0-4 units	$1,449	$1,465	$2,914	2,039	$1.43
Tier 2: 5-11 units	$1,767	$1,523	$3,290	2,021	$1.63
Tier 3: 12 + units	$45,561	$17,109	$62,670	13,052	$4.80
CIM	**$172,023**	**$65,351**	**$237,374**	**50,607**	
Tier 1: 0-4 units	$461	$466	$928	649	$1.43
Tier 2: 5-11 units	$945	$815	$1,760	1,081	$1.63
Tier 3: 12 + units	$170,616	$64,070	$234,686	48,877	$4.80
BLK	**$5,065**	**$6,446**	**$11,511**	**9,460**	
Tier 1: 0-4 units	$142	$279	$422	439	$0.96
Tier 2: 5-11 units	$210	$413	$623	649	$0.96
Tier 3: 12 + units	$4,713	$5,753	$10,466	8,372	$1.25

3.3.11. Revenue Offset Allocation

Non-rate revenue, such as property tax, can often be used to provide revenue offsets – meaning non-rate revenue is applied to the revenue requirement for certain customer classes to promote affordability (lower the

rate). The District provided guidance as to how to best use property tax that reflects community values - which is affordability for SFR and for irrigation of ball fields (CIM). Tax revenue is projected to be $2.14 million in FY 24/25. The District decided to allocate 100 percent of property tax as a revenue offset for residential customers (SFR, MTF and MHP) and for school and other public field irrigation customers (CIM). **Table 3-29** details the distribution of property tax to both customer classes and the resulting offset to rates shown in the right most column.

Table 3-29 Revenue Offset by Eligible Class

Customer Class	Eligible Water Sales	Property Tax Revenue Offset %	Property Tax Revenue Offset	Offset Rate
RESIDENTIAL (SFR, MTF, MHP)				
T1	438,411 hcf	57.35%	($1,227,700)	($2.80)
T2	274,217 hcf	18.50%	($396,032)	($1.44)
T3	153,180 hcf	16.65%	($356,429)	($2.33)
CIM				
T2	1,081 hcf	0.01%	($117)	($0.11)
T3	48,877 hcf	7.49%	($160,436)	($3.28)
TOTAL	**915,766 hcf**		**($2,140,714)**	

3.4. Proposed Water Rates

The proposed fixed and variable rates resulting from the cost of service analysis and revenue adjustments are discussed in the following sections.

3.4.1. Fixed Monthly Charge Derivation

Table 3-30 shows the derivation of the monthly charge components. The proposed fixed charge is the summation of the Billing & Customer Service (CS), Meter and CRP Charge components, which were derived for a 5/8-inch meter in **Table 3-25**. The meter and CRP charges for the larger meters are derived by escalating the 5/8-inch meter charge using the AWWA capacity ratios shown in **Table 3-24**. The Water Service fee is derived by adding the Billing & CS costs to the Meter costs for each meter size. The proposed fixed charge will apply to all customers with a meter.

Table 3-30 Proposed Monthly Fixed Charge ("Basic Monthly Fee")[17]

Meter Size	Billing & CS	Meter	CRP Charge	Proposed Total Fixed Charge	Current Total Fixed Charge	Dollar Change	% change
5/8 inch	$6.42	$12.26	$6.54	**$25.22**	*$23.35*	*$1.87*	*8%*
1 inch	$6.42	$30.64	$16.33	**$53.39**	*$46.17*	*$7.22*	*16%*
1 1/2 inch	$6.42	$61.27	$32.66	**$100.35**	*$84.20*	*$16.15*	*19%*
2 inch	$6.42	$98.03	$52.25	**$156.70**	*$129.83*	*$26.87*	*21%*
4 inch	$6.42	$306.33	$163.27	**$476.02**	*$388.37*	*$87.65*	*23%*
6 inch	$6.42	$612.65	$326.54	**$945.61**	*$768.59*	*$177.02*	*23%*

Applying the proposed revenue adjustments from **Table 3-14** to the proposed monthly fixed charges in **Table 3-30** and rounding up to the nearest cent, yields the monthly fixed charges for the study period as presented in **Table 3-31.**

Table 3-31 Proposed Basic Monthly Fee FY 24/25- FY 28/29[18]

Meter Size	Current Fixed Charge	FY 24/25	FY 25/26	FY 26/27	FY 27/28	FY 28/29
5/8 inch	$23.35	$25.22	$27.24	$29.42	$31.78	$34.33
1 inch	$46.17	$53.39	$57.67	$62.29	$67.28	$72.67
1 1/2 inch	$84.20	$100.35	$108.38	$117.06	$126.43	$136.55
2 inch	$129.83	$156.70	$169.24	$182.78	$197.41	$213.21
3 inch	$251.49	$306.97	$331.53	$358.06	$386.71	$417.65
4 inch	$388.37	$476.02	$514.11	$555.24	$599.66	$647.64
6 inch	$768.59	$945.61	$1,021.26	$1,102.97	$1,191.21	$1,286.51

3.4.2. Volumetric Rate Derivation

Table 3-32 derives the volumetric rates for FY 24/25 by customer class and provides a comparison with the existing rates.

[17] Rates are rounded up to the nearest cent.
[18] Rates are rounded up to the nearest cent.

The proposed volumetric rate is the sum of the water supply, delivery and peaking, and revenue offset costs as shown in **Table 3-32**. The water delivery costs are equally distributed among all customers. Variations in volumetric rates originate from the different peaking rates as shown in **Table 3-17** and **Table 3-28**, and from the variation in Tier 1 supply costs described in Section 3.3.9 and shown in **Table 3-27**.

In addition, the revenue offsets further differentiate residential Tier 1, 2, and 3 and CIMIS' Tier 2 and 3 volumetric rate. The revenue offsets were detailed in **Table 3-29**.

Table 3-32 Breakdown of Proposed Volumetric Rates[19] per hcf for FY 24/25

Customer Class	Supply	Delivery	Peaking	Rev. Offset	Proposed Vol. Rate	Current Vol. Rate	Dollar Change	% change
Residential (SFR, MFR, MHP)[20]								
Tier 1: 0-4 units	$1.94	$4.10	$1.18	($2.80)	**$4.42**	$4.11	$0.31	*7.5%*
Tier 2: 5-11 units	$2.57	$4.10	$2.30	($1.44)	**$7.53**	$6.95	$0.58	*8.3%*
Tier 3: 12 + units	$2.57	$4.10	$4.19	($2.33)	**$8.53**	$7.91	$0.62	*7.8%*
Commercial (COM)								
Tier 1: 0-4 units	$1.94	$4.10	$1.18	$0.00	**$7.22**	$6.44	$0.78	*12.1%*
Tier 2: 5-11 units	$2.57	$4.10	$1.25	$0.00	**$7.92**	$6.95	$0.97	*14.0%*
Tier 3: 12 + units	$2.57	$4.10	$1.25	$0.00	**$7.92**	$7.91	$0.01	*0.1%*
Public (PBE)								
Tier 1: 0-4 units	$1.94	$4.10	$1.18	$0.00	**$7.22**	$6.44	$0.78	*12.1%*
Tier 2: 5-11 units	$2.57	$4.10	$1.43	$0.00	**$8.10**	$6.95	$1.15	*16.5%*
Tier 3: 12 + units	$2.57	$4.10	$1.76	$0.00	**$8.43**	$7.91	$0.52	*6.6%*
Irrigation (IRR)								
Tier 1: 0-4 units	$1.94	$4.10	$1.43	$0.00	**$7.47**	$6.49	$0.98	*15.1%*
Tier 2: 5-11 units	$2.57	$4.10	$1.63	$0.00	**$8.30**	$6.95	$1.35	*19.4%*
Tier 3: 12 + units	$2.57	$4.10	$4.80	$0.00	**$11.47**	$11.15	$0.32	*2.9%*
CIMIS (CIM)								
Tier 1: 0-4 units	$1.94	$4.10	$1.43	$0.00	**$7.47**	$6.49	$0.98	*15.1%*
Tier 2: 5-11 units	$2.57	$4.10	$1.63	($0.11)	**$8.19**	$6.95	$1.24	*17.8%*
Tier 3: 12 + units	$2.57	$4.10	$4.80	($3.28)	**$8.19**	$6.95	$1.24	*17.8%*
Bulk (BLK)								
Tier 1: 0-4 units	$1.94	$4.10	$0.96	$0.00	**$7.00**	$6.49	$0.51	*8%*
Tier 2: 5-11 units	$2.57	$4.10	$0.96	$0.00	**$7.63**	$6.95	$0.68	*10%*
Tier 3: 12 + units	$2.57	$4.10	$1.25	$0.00	**$7.92**	$11.15	-$3.23	*-29%*

Similar to the fixed charge calculation, the volumetric rates for FY 24/25 to 28/29 are escalated with the proposed revenue adjustment in **Table 3-14,** as derived in **Table 3-33.**

[19] Rates are rounded up to the nearest cent.

[20] MFR and MHP have revised tiers based on unit count. For example: An apartment with 6 dwelling units would have a Tier 1 threshold of 24 units of water (6 dwelling units x 4 units of water each)

Table 3-33 Proposed Volumetric Rates per hcf for FY 24/25 - FY 28/29

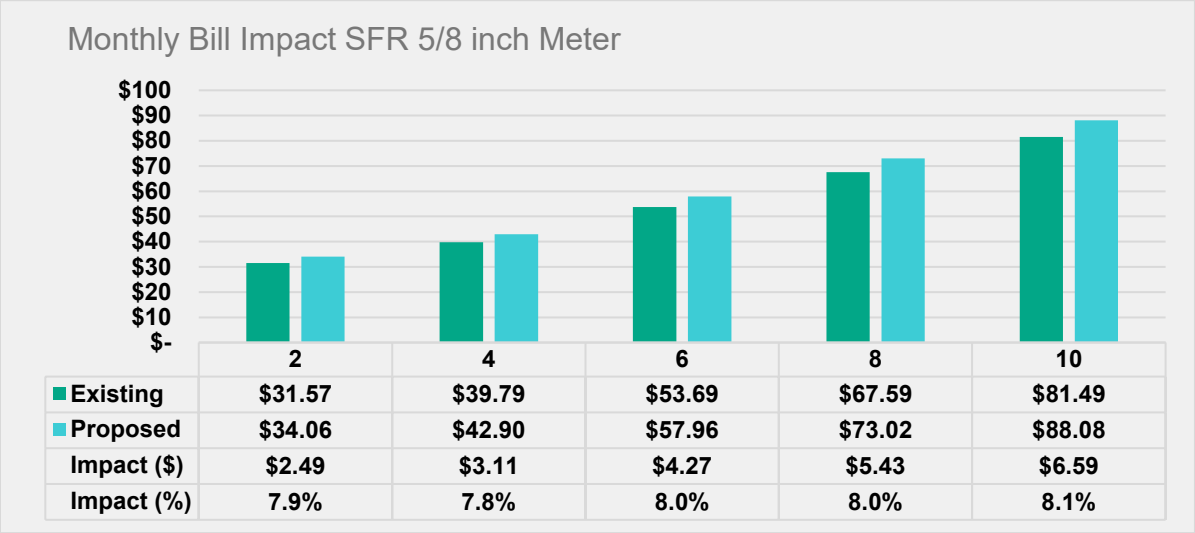
	Current Rates	FY 24/25	FY 25/26	FY 26/27	FY 27/28	FY 28/29
Residential (SFR, MFR, MHP)[21]						
Tier 1: 0-4 units	$4.11	$4.42	$4.78	$5.17	$5.59	$6.04
Tier 2: 5-11 units	$6.95	$7.53	$8.14	$8.80	$9.51	$10.28
Tier 3: 12 + units	$7.91	$8.53	$9.22	$9.96	$10.76	$11.63
Commercial (COM)						
Tier 1: 0-4 units	$6.44	$7.22	$7.80	$8.43	$9.11	$9.84
Tier 2: 5-11 units	$6.95	$7.92	$8.56	$9.25	$9.99	$10.79
Tier 3: 12 + units	$7.91	$7.92	$8.56	$9.25	$9.99	$10.79
Public (PBE)						
Tier 1: 0-4 units	$6.44	$7.22	$7.80	$8.43	$9.11	$9.84
Tier 2: 5-11 units	$6.95	$8.10	$8.75	$9.45	$10.21	$11.03
Tier 3: 12 + units	$7.91	$8.43	$9.11	$9.84	$10.63	$11.49
Irrigation (IRR)						
Tier 1: 0-4 units	$6.49	$7.47	$8.07	$8.72	$9.42	$10.18
Tier 2: 5-11 units	$6.95	$8.30	$8.97	$9.69	$10.47	$11.31
Tier 3: 12 + units	$11.15	$11.47	$12.39	$13.39	$14.47	$15.63
CIMIS (CIM)						
Tier 1: 0-4 units	$6.49	$7.47	$8.07	$8.72	$9.42	$10.18
Tier 2: 5-11 units	$6.95	$8.19	$8.85	$9.56	$10.33	$11.16
Tier 3: 12 + units	$6.95	$8.19	$8.85	$9.56	$10.33	$11.16
Bulk (BLK)						
Tier 1: 0-4 units	$6.49	$7.00	$7.56	$8.17	$8.83	$9.54
Tier 2: 5-11 units	$6.95	$7.63	$8.25	$8.91	$9.63	$10.41
Tier 3: 12 + units	$11.15	$7.92	$8.56	$9.25	$9.99	$10.79

3.4.3. Bill Impacts

Figure 3-7 presents sample monthly bills for single-family residential customers in FY 24/25. A single-family residential account with a 5/8-inch meter which uses 6 hcf will see a 8% increase in the proposed monthly water bill, which is equal to the overall revenue increase.

[21] MFR and MHP have revised tiers based on unit count. For example: An apartment with 6 dwelling units would have a Tier 1 threshold of 24 units of water (6 dwelling units x 4 units of water each)

Figure 3-7 Sample Residential Customer Water Bill Impact



	2	4	6	8	10
Existing	$31.57	$39.79	$53.69	$67.59	$81.49
Proposed	$34.06	$42.90	$57.96	$73.02	$88.08
Impact ($)	$2.49	$3.11	$4.27	$5.43	$6.59
Impact (%)	7.9%	7.8%	8.0%	8.0%	8.1%

Bill impacts for other customer classes vary by class with most changing 8 to 9% for the average bill, close to the 8% revenue increase. IRR and CIM customers are more likely to see a significant increase in their bills due to the water supply and peaking factor changes that added more cost to the Tier 3 rates. During the 2019 rate study, the water supply costs were distributed uniformly across all three tiers rather than applying the lower groundwater costs to tier 1, as was done in this study. **Table 3-34** presents the estimated bill impacts for the most common meter size and average water use by customer class.

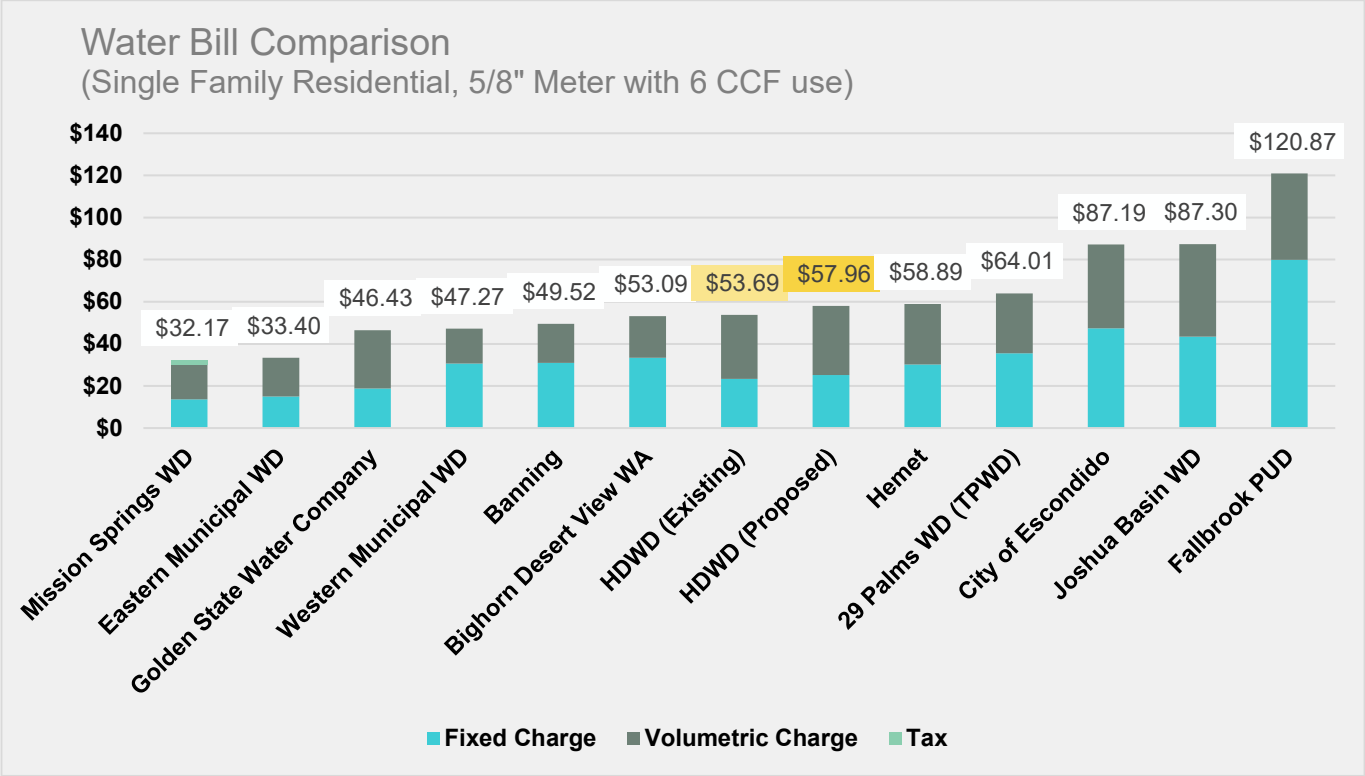
Table 3-34 Estimated Bill Impact by Customer Class

	SFR	MTF	MHP	COM	IRR	PBE	BLK	CIM
Average water use	6	9	205	20	20	29	46	298
Meter size	5/8 inch	5/8 inch	1 inch	5/8 inch	1 inch	5/8 inch	3 inch	2 inch
Number of Units		2	35					
Total Current Bill	$53.69	$63.18	$1,073.32	$153.13	$221.13	$240.14	$716.35	$2,199.09
Total Proposed Bill	$57.96	$68.11	$1,161.64	$164.98	$244.60	$262.54	$665.58	$2,594.44
Dollar impact	$4.27	$4.93	$88.32	$11.85	$23.47	$22.40	-$50.77	$395.35
Percent impact	8.0%	7.8%	8.2%	7.7%	10.6%	9.3%	-7.1%	18.0%

3.4.4. Water Rate Survey

A comparison to other utilities' water bills is shown in **Figure 3-8**. These are current water rates as published on the various utility or city websites and would not include any rate studies that are currently underway.

Figure 3-8 Water Rate Survey



3.5. Drought Rates

Southern California goes through periods of dry weather with very minimal rainfall which necessitates water conservation because of reduced water supplies. As experienced during previous drought conditions, State water regulators and wholesale water agencies may cut back the amount of water available from both surface water and local groundwater and declare mandatory conservation measures. In response, retail agencies declare drought stages to enforce water conservation. The District wants to be prepared to address these conditions when it becomes necessary to mandate conservation so that it can readily provide customers with an incentive to save water and implement drought rates (conservation rates) to mitigate the impact of reduced revenues from lower water sales.

A drought rate may be imposed during times of a declared drought when a certain level of reduction from normal use has been mandated. The District's *Water Shortage Contingency Plan* (the Plan) has six shortage levels as shown in **Table 3-35**. Water use efficiency practices and water conservation measures are outlined in the Plan to alter behavior and achieve reductions at each stage. A drought rate is charged on each unit of water and is calculated to recover costs resulting from loss of revenue due to reduced water use. The amount of the drought rate at different stages is based upon the District's Plan stages and projected revenue shortfall adjusted for changes in costs.

Table 3-35 District Water Shortage Levels

Stages of Shortage	% Reduction	Description
Stage 1	10%	**Water Alert**
Stage 2	20%	**Moderate Water Shortage**
Stage 3	30%	**Severe Water Shortage**
Stage 4	40%	**Critical Water Shortage**
Stage 5	50%	**Water Shortage Crisis**
Stage 6	60%	**Emergency Water Shortage**

Raftelis calculated the drought rate to recover the revenue shortfall that occurs as a result of demand reduction during the four water supply emergency stages.

To determine the drought rate, the first step is to project the water use reduction for each customer class under different drought stages. **Table 3-36** shows the projected water demand for each customer class and tier at different stages. Raftelis projects that single family customers and irrigation customers using more discretionary water are expected to reduce more under the different drought stages. Typically, multi-family customers typically have less irrigation use and will not be able to conserve much. Commercial customers that need water for their businesses will also conserve less. The analysis shows the increase in commodity rates for each drought stage. Note that the actual reduction achieved under each drought stage may vary slightly from the target, as seen in stage 6.

Table 3-36 Projected Water Demand by Percent Usage Reduction

Customer Class	Usage	10% Reduction	10% Usage	20% Reduction	20% Usage	30% Reduction	30% Usage	40% Reduction	40% Usage	50% Reduction	50% Usage	60% Reduction	60% Usage
SFR	768,864												
T1	366,876	5%	348,532	12%	322,851	17%	304,507	20%	293,501	25%	275,157	40%	220,126
T2	252,608	12%	222,295	25%	189,456	38%	156,617	50%	126,304	60%	101,043	70%	75,783
T3	149,379	20%	119,503	40%	89,628	60%	59,752	80%	29,876	92%	11,950	95%	7,469
MTF	67,103												
T1	45,895	5%	43,600	7%	42,682	10%	41,305	15%	39,010	25%	34,421	40%	27,537
T2	17,638	10%	15,874	20%	14,110	35%	11,465	45%	9,701	60%	7,055	70%	5,291
T3	3,571	15%	3,035	35%	2,321	55%	1,607	75%	893	90%	357	95%	179
MHP	29,841												
T1	25,641	5%	24,359	7%	23,846	10%	23,076	15%	21,794	25%	19,230	40%	15,384
T2	3,970	10%	3,573	20%	3,176	35%	2,581	45%	2,184	60%	1,588	70%	1,191
T3	230	15%	196	35%	150	55%	104	75%	58	90%	23	95%	12
COM	103,970												
T1	13,740	0%	13,740	3%	13,328	5%	13,053	10%	12,366	15%	11,679	20%	10,992
T2	13,658	3%	13,249	5%	12,976	10%	12,293	20%	10,927	35%	8,878	45%	7,512
T3	76,571	10%	68,914	15%	65,086	30%	53,600	35%	49,771	45%	42,114	60%	30,629
PBE	20,770												
T1	2,112	0%	2,112	3%	2,049	5%	2,007	10%	1,901	15%	1,796	20%	1,690
T2	2,510	3%	2,435	5%	2,385	10%	2,259	20%	2,008	35%	1,632	45%	1,381
T3	16,147	10%	14,533	15%	13,725	30%	11,303	35%	10,496	45%	8,881	60%	6,459

Customer Class	Usage	10% Reduction	10% Usage	20% Reduction	20% Usage	30% Reduction	30% Usage	40% Reduction	40% Usage	50% Reduction	50% Usage	60% Reduction	60% Usage
IRR	17,111												
T1	2,039	5%	1,937	10%	1,835	20%	1,631	30%	1,427	45%	1,121	60%	815
T2	2,021	7%	1,879	15%	1,717	25%	1,515	45%	1,111	55%	909	65%	707
T3	13,052	15%	11,094	25%	9,789	35%	8,484	60%	5,221	90%	1,305	95%	653
CIM	50,607												
T1	649	5%	617	10%	584	20%	519	30%	454	45%	357	60%	260
T2	1,081	7%	1,005	15%	919	25%	811	45%	595	55%	486	65%	378
T3	48,877	15%	41,545	25%	36,658	35%	31,770	60%	19,551	90%	4,888	95%	2,444
BLK	9,460												
T1	439	0%	439	3%	426	5%	417	10%	395	15%	373	20%	351
T2	649	3%	629	5%	617	10%	584	25%	487	35%	422	45%	357
T3	8,372	10%	7,535	15%	7,116	35%	5,442	40%	5,023	60%	3,349	65%	2,930
	1,067,726	**10%**	**962,631**	**20%**	**857,428**	**30%**	**746,701**	**40%**	**645,054**	**50%**	**539,016**	**61%**	**420,528**

Table 3-37 Estimated Cost Savings by Percent Usage Reduction

Cost Savings	FY 2025	10%	20%	30%	40%	50%	60%
Amount Purchased Water Reduction		10%	20%	30%	40%	50%	61%
Total Water Usage (AF)	2,453	2,211	1,970	1,715	1,482	1,238	966
Reduction in Water Usage (AF)		(241)	(483)	(738)	(971)	(1,215)	(1,487)
Water Supply							
Purchased water from Mojave	2,538 AF	2,297 AF	2,055 AF	1,800 AF	1,567 AF	1,323 AF	1,051 AF
Total Groundwater	500 AF	500 AF	500 AF	500 AF	500 AF	500 AF	500 AF
Total Supply	3,038 AF	2,797 AF	2,555 AF	2,300 AF	2,067 AF	1,823 AF	1,551 AF
Total Water Cost	$1,593,864	$1,442,240	$1,290,460	$1,130,711	$984,060	$831,076	$660,130
Water Supply Cost Savings		**$151,624**	**$303,404**	**$463,153**	**$609,804**	**$762,788**	**$933,734**
Total Pumping and Water Treatment	$2,593,220	$2,387,129	$2,180,826	$1,963,690	$1,764,359	$1,556,418	$1,324,064
Pumping and Water Treatment Unit Cost ($/AF)	$853.59						
Pumping and Water Treatment Cost Savings		**$206,091**	**$412,395**	**$629,530**	**$828,861**	**$1,036,802**	**$1,269,156**
Total Cost Savings		**$357,715**	**$715,798**	**$1,092,684**	**$1,438,665**	**$1,799,590**	**$2,202,890**

The next step is to estimate the water supply cost savings, from lower water purchases, that result when there is a reduction in demand. The variable costs associated with each supply source are used to determine the cost savings. Almost all other costs are fixed and will not vary based on water demand. **Table 3-37** shows the estimated cost savings in water supply costs for each stage. The first cost savings is the reduction in Mojave water purchases. The other cost savings comes from reductions in pumping and water treatment. The pumping and water treatment cost at each stage is estimated by dividing FY 24/25 pumping and water treatment costs ($2,593,220) by the total water produced in FY 24/25 (3,038 AF) to come up with a unit cost of $853.59/AF. This unit cost is then multiplied by each stage's total supply in AF to come up with a new pumping and water treatment cost at each stage.

The final step is to calculate the drought surcharge, shown in **Table 3-38**. First, the projected potable water revenue is calculated by multiplying the demand projections from **Table 3-36** for each level of reduction in use or scenario and the proposed water rates in FY 24/25. The revenue shortfall is determined by comparing this revenue for each scenario with the FY 24/25 revenues. Next, we add the estimated cost savings from **Table 3-37** for each scenario. The total shortfall is divided by the projected demand in each scenario to arrive at a uniform percent increase per unit of water for each scenario. **Table 3-38** shows the proposed percentage increase that would be charged for each drought stage. Surcharges for subsequent years would increase by the same percentages of 7%, 15%, 27%, 43%, 67%, or 100%. Rates for intermediate conservation goals may be determined by linearly prorating the increases per unit.

Table 3-38 Drought Surcharge by Percent Usage Reduction

	FY 24/25	10%	20%	30%	40%	50%	50%
Projected Potable Volumetric Revenue	$6,969,386	$6,193,515	$5,444,112	$4,627,296	$3,852,437	$3,083,609	$2,379,613
Revenue Shortfall		($771,311)	($1,520,714)	($2,337,530)	($3,112,389)	($3,881,217)	($4,585,213)
Cost Savings		$357,715	$715,798	$1,092,684	$1,438,665	$1,799,590	$2,202,890
Net Revenue Shortfall to be Recovered		($413,596)	($804,916)	($1,244,847)	($1,673,724)	($2,081,627)	($2,382,324)
% Revenue Shortfall		**7%**	**15%**	**27%**	**43%**	**68%**	**100%**

The proposed surcharge rates for FY 24/25 are shown in **Table 3-39** with the total projected revenue at each stage shown in **Table 3-40**. The drought rates for the out years of the study are calculated by increasing the rates in effect at the time by the percentages shown in **Table 3-38**. The specific drought rates for each year of the study are shown in **Appendix B**.

Table 3-39 Drought Rates by Percent Usage Reduction FY 24/25

	FY 24/25 Proposed Rates	Stage 1 - 7% Increase	Stage 2 - 15% Increase	Stage 3 - 27% Increase	Stage 4 - 43% Increase	Stage 5 - 68% Increase	Stage 6 - 100% Increase
Residential (SFR, MFR, MHP)[22]							
Tier 1: 0-4 units	$4.42	$4.72	$5.08	$5.61	$6.35	$7.41	$8.85
Tier 2: 5-11 units	$7.53	$8.04	$8.65	$9.56	$10.81	$12.62	$15.07
Tier 3: 12 + units	$8.53	$9.10	$9.80	$10.83	$12.24	$14.29	$17.07
Commercial (COM)							
Tier 1: 0-4 units	$7.22	$7.71	$8.29	$9.17	$10.36	$12.10	$14.45
Tier 2: 5-11 units	$7.92	$8.45	$9.10	$10.06	$11.37	$13.27	$15.85
Tier 3: 12 + units	$7.92	$8.45	$9.10	$10.06	$11.37	$13.27	$15.85
Public (PBE)							
Tier 1: 0-4 units	$7.22	$7.71	$8.29	$9.17	$10.36	$12.10	$14.45
Tier 2: 5-11 units	$8.10	$8.65	$9.30	$10.28	$11.62	$13.57	$16.21
Tier 3: 12 + units	$8.43	$9.00	$9.68	$10.70	$12.10	$14.13	$16.87
Irrigation (IRR)							
Tier 1: 0-4 units	$7.47	$7.97	$8.58	$9.48	$10.72	$12.52	$14.95
Tier 2: 5-11 units	$8.30	$8.86	$9.53	$10.54	$11.91	$13.91	$16.61
Tier 3: 12 + units	$11.47	$12.24	$13.17	$14.56	$16.46	$19.22	$22.96
CIMIS (CIM)							
Tier 1: 0-4 units	$7.47	$7.97	$8.58	$9.48	$10.72	$12.52	$14.95
Tier 2: 5-11 units	$8.19	$8.74	$9.41	$10.40	$11.75	$13.72	$16.39
Tier 3: 12 + units	$8.19	$8.74	$9.41	$10.40	$11.75	$13.72	$16.39
Bulk (BLK)							
Tier 1: 0-4 units	$7.00	$7.47	$8.04	$8.89	$10.05	$11.73	$14.01
Tier 2: 5-11 units	$7.63	$8.14	$8.76	$9.69	$10.95	$12.79	$15.27
Tier 3: 12 + units	$7.92	$8.45	$9.10	$10.06	$11.37	$13.27	$15.85

Table 3-40 Revenue Generated at each Stage

	Stage 1 - 7% Increase	Stage 2 - 15% Increase	Stage 3 - 27% Increase	Stage 4 - 43% Increase	Stage 5 - 68% Increase	Stage 6 - 100% Increase
Revenue Generated	**$6,611,442**	**$6,255,021**	**$5,874,613**	**$5,531,714**	**$5,168,444**	**$4,763,437**

[22] MFR and MHP have revised tiers based on unit count. For example: An apartment with 6 dwelling units would have a Tier 1 threshold of 24 units of water (6 dwelling units x 4 units of water each)

4. Wastewater Financial Plan and Rates

This chapter details the wastewater rate study methodology and presents the projections for revenues, O&M expenses, capital improvement and reserve requirements for the period FY 24/25 – 28/29. Projected revenues are compared to expenses to assess potential revenue shortages and the need for rates adjustments over the planning horizon. The cost of service analysis, simplified since the District charges per Equivalent Dwelling Unit (EDU), is described in detail, showing how the proposed FY 24/25 wastewater charges are derived.

4.1. Introduction

4.1.1. Wastewater System Background

The Hi-Desert Water District has constructed and now operates a Wastewater Treatment Plant and a wastewater collection system to comply with the Regional Water Quality Control Board resolution (Resolution R7-2011-004) identifying the Town of Yucca Valley as a top priority for eliminating the use of septic systems. The resolution led to an amendment to the Regional Board's Water Quality Control Basin Plan which imposed a three-phased septic tank prohibition on new and existing septic systems within the Town. Phase I of the Wastewater Treatment and Reclamation Project is complete. This included building the Treatment Plant and collection system in the downtown area of Yucca Valley. The first phase was paid for through an assessment district. Properties in the Phase I area are connecting to the system and the District is working on securing funding for Phase 2.

4.1.2. Customer Classes and Number of EDUs

The District's Wastewater rate structure was established in the *Hi-Desert Water District Assessment District No. 2014-1 Engineer's Report*. There are no recommended changes to the structure. The District will continue to charge customers based on Equivalent Dwelling Units (EDUs). One EDU is defined as 175 gallons per day, which is a typical use for a single family customer. The average use in MFR and MHP dwelling units is less than a single family home, so the EDU for these customers is adjusted as shown in **Table 4-1**. Commercial properties' use varies widely based on the type and size of commercial customer, therefore the EDU is calculated monthly based on calculating the EDUs from 90% of water consumption (formula below) or 1 EDU, whichever is greater.

To calculate commercial EDUs the following formula is used:

$$((Water\ Consumption\ (HCF) * 90\%) * \left(\frac{748\ gal/HCF}{Days\ in\ Billing\ Cycle}\right)) / 175 \frac{gpd}{EDU} = Commercial\ EDUs$$

Table 4-1 Wastewater Customer Classes

Customer Class	EDU Assignment
Single Family Home (SFR)	1 EDU per Parcel
Multi-Family Residential (MFR)	0.75 EDU per Unit
Mobile Home Property (MHP)	0.60 EDU per Unit
Commercial Property (COM/PBE)	Minimum of 1 EDU per parcel or Calculated EDU from 90% water consumption

The number of EDUs in each customer class is used to project the revenue from current charges. The number of EDUs for FY 22/23 used in the financial model is presented in **Table 4-2**.

Table 4-2 Wastewater EDUs FY 22/23

Customer Class		FY 22/23
SFR		3,140
MFR		842
MHP		426
COM/PBE	*(EDU/Month - Average)*	1,113
Total		**5,520**

4.2. Wastewater Financial Plan

This section details the District's wastewater revenues and expenses and projects revenue requirements over the five-year study period. The status quo financial plan is provided in this section, which shows projected financial health if the District does not raise rates, and a revenue adjustment scenario is shared showing the cashflow if rates are increased as recommended.

4.2.1. Current Rates

The current charge per EDU is $46.71 as shown in **Table 4-3**, this is applied to the customer classes as shown in **Table 4-1** in Section 4.1.2.

Table 4-3 Current Rate per EDU

	FY 22/23
Cost per EDU	$46.71

4.2.2. Financial Policy

The District has not established a reserves policy for the wastewater enterprise. This study proposes to establish wastewater reserves based on typical reserves . Proposed reserve targets are shown in **Table 4-4**.

Table 4-4 Wastewater Reserve Targets

WASTEWATER PROPOSED	Target	
Operating Reserves	25%	of Oper. Budget
Capital Reserves	100%	of Average 10 yr. CIP[23]

4.2.3. Inflationary and Other Assumptions

To ensure that future costs are reasonably projected, it is necessary to make informed assumptions about inflationary factors. **Table 4-5** shows the inflationary assumptions incorporated in the five-year financial plan. O&M projections are based on the District's FY 23/24 budget using inflationary factors to project O&M expenditures related to general expenses and salaries. The reserve interest rate percentage is used to calculate interest income on reserves (cash balances).

Table 4-5 Inflationary Assumptions

	FY 24/25	FY 25/26	FY 27/28	FY 27/28	FY 28/29
Expense Escalators					
General/CPI	5.00%	4.00%	3.00%	3.00%	3.00%
Capital	6.00%	5.00%	4.00%	3.00%	3.00%
Reserve Interest Rate	1.00%	1.00%	1.00%	1.00%	1.00%

4.2.4. Account Growth Assumptions

Table 4-6 shows the Wastewater account growth assumptions during the study period. The model assumes an account growth of 25 EDUs per year in FY 24/25 and FY 25/26. Connection to the Phase 1 sewer project has been slower than anticipated. Starting in FY 26/27 it is assumed 500 EDUs are added per year as part of the Phase II (and Phase III) septic to sewer conversion project being completed.

Table 4-6 Wastewater Account Growth Assumptions

	FY 24/25	FY 25/26	FY 26/27	FY 27/28	FY 28/29
New accounts per year	25	25	500	500	500

4.2.5. Projected Revenues

Table 4-7 shows the calculated rate revenues and projected non-operating revenues for FY 24/25 through FY 28/29 based on the District's current wastewater rates. The projected annual rate revenue is determined by multiplying the number of EDUs by the corresponding monthly charge per EDU for 12 months. As shown, the study assumes no growth in MFR, MHP and Commercial accounts as this growth is expected to be minimal.

[23] The proposed wastewater capital reserves are 5% of annual operating expenses. The modeled capital reserves are as shown in Table 1-1. The two reserves goals yield comparable reserve targets with FY 2025 targets of $183k and $186k for the targets of 100% capital and 5% of annual operating expenses respectively.

Table 4-7 Wastewater Revenues

Revenue Source	FY 23/24[24]	FY 24/25	FY 25/26	FY 26/27	FY 27/28	FY 28/29
SFR	$1,820,961	$1,773,906	$1,787,919	$2,068,179	$2,348,439	$2,628,699
MFR	$515,011	$471,678	$471,678	$471,678	$471,678	$471,678
MHP	$240,941	$238,782	$238,782	$238,782	$238,782	$238,782
COM	$648,882	$623,971	$623,971	$623,971	$623,971	$623,971
Total Sewer Revenue	**$3,225,795**	**$3,108,336**	**$3,122,349**	**$3,402,609**	**$3,682,869**	**$3,963,129**

4.2.6. Projected O&M Expenses

O&M expenses include the costs to operate and maintain the collection system and the wastewater treatment plant, as well as the costs of providing technical services such as engineering services and other administrative and operating costs. The District's FY 23/24 O&M budget and projected O&M expenses are shown in **Table 4-8**. The O&M budget incorporates the inflationary factors shown in **Table 4-4**. The Collection Budget is inflated by the capital inflation factors, and the other budget items are inflated by CPI. The Operations budget includes an additional $400,000 in FY26/27-FY28/29 to account for additional costs associated with the Phase II septic to sewer project to bring on 1,500 more customers over those three years.

Table 4-8 Wastewater O&M Expenses for FY 23/24 -FY 28/29

	FY 23/24 Budget	FY 24/25	FY 25/26	FY 26/27	FY 27/28	FY 28/29
O&M - Payroll & Benefits	$1,141,890	$1,198,985	$1,246,944	$1,284,352	$1,322,883	$1,362,569
O&M - Operations	1,065,090	$1,118,345	$1,163,078	$1,597,971	$2,045,910	$2,507,287
O&M - Collection	55,638	$58,976	$61,925	$64,402	$66,334	$68,324
O&M - Administration	1,294,801	$1,359,541	$1,413,923	$1,456,340	$1,500,031	$1,545,032
	$3,557,419	**$3,735,846**	**$3,885,870**	**$4,403,065**	**$4,935,157**	**$5,483,212**

4.2.7. Capital Improvement Plan (CIP)

Since the wastewater system is fairly new, there are few planned capital improvement projects to include in the 5- year plan. **Table 4-9** shows the assumed CIP costs as provided by District staff. In FY 24/25, the District plans to purchase a camera truck, thus the higher expense. Subsequent years have $82,500 included to account for any repair or replacement needs.

Table 4-9 Wastewater 5-Year CIP

	FY 24/25	FY 25/26	FY 26/27	FY 27/28	FY 28/29
CIP Costs	$420,000	$82,500	$82,500	$82,500	$82,500

4.2.8. Debt

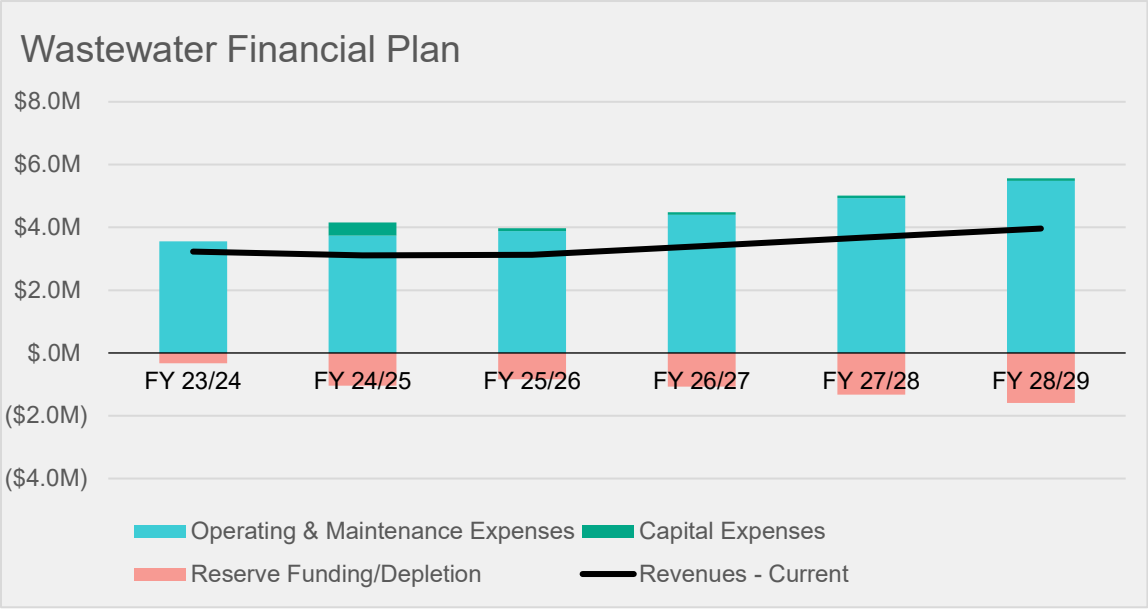
The Wastewater Enterprise currently has a $7.5 million loan from the Water enterprise that must be repaid. No other debt is planned during this study.

[24] From District budget

4.2.9. Status Quo Financial Plan

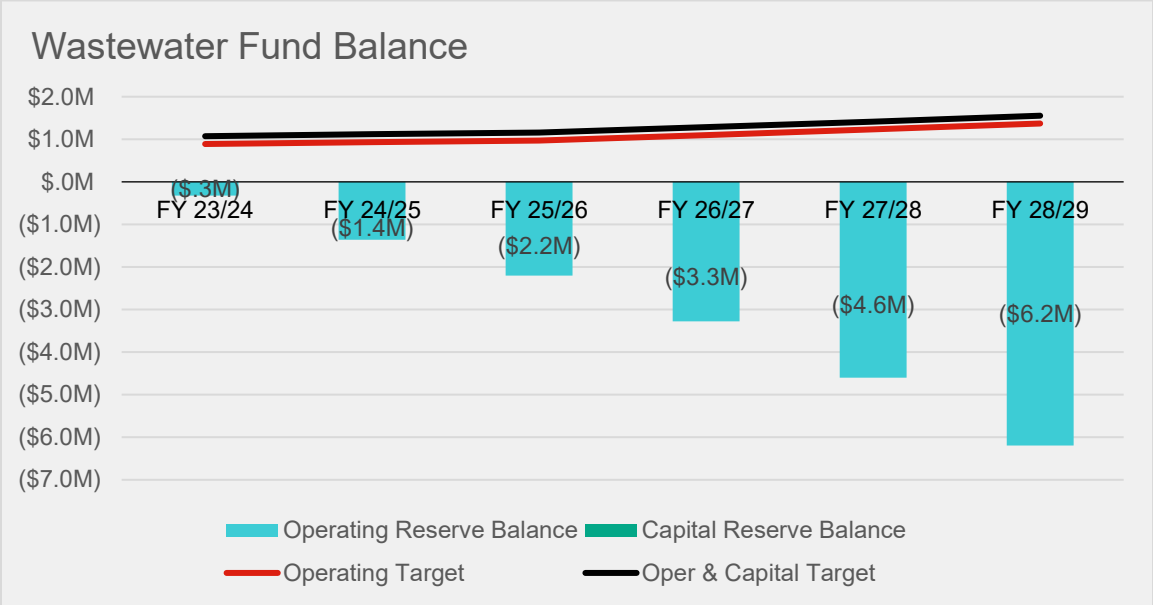
The projected financial plan is based on revenues at existing rates with no adjustments, known as status quo and is attached in **Appendix A**. **Figure 4-1**.shows the projected status quo financial plan in graphical format. The bars represent the wastewater utility's cash needs. The black line represents the current revenues, which is below the stacked bars for each year, signifying that the District's wastewater revenues are insufficient to fund its costs. The Revenues are derived from **Table 4-7**, O&M expenses are from **Table 4-8** and Capital expenses are from **Table 4-9**.

Figure 4-1 Status Quo Wastewater Financial Plan



Net cash flow equals total revenues less O&M expenses. Since there are no reserves, the starting balance was set at zero for FY 23/24. Ending balances are calculated by adding beginning balances to net cash flow. The reserve target is derived from the reserve policies summarized in **Table 4-3**. Since the wastewater enterprise is starting with no reserves, the wastewater fund is already at a deficit in FY 23/24 as shown in **Figure 4-2**.

Figure 4-2 Status Quo Wastewater Fund Balance



4.2.10. Proposed Revenue Adjustments and Financial Plan

Table 4-10 shows the proposed revenue adjustments for the wastewater enterprise.

Table 4-10 Wastewater Revenue Adjustments

Wastewater Revenue Adjustment	14.00%	14.00%	9.75%	9.75%	9.75%

A detailed financial plan with the proposed revenue increase is presented in **Table 4-11**. Explanations of various line items in the table are detailed below:

- The revenues from existing rates (FY 24/25- 28/29 in line 2) are calculated in **Table 4-7.** FY 23/24 revenue is taken from the District's budget. Raftelis calculations, based on EDU counts, are slightly lower than budgeted revenue for FY 23/24.
- The additional revenue from rate adjustment is shown in line 3 and it represents the cumulative increase in revenues due to the proposed rate increases shown in **Table 4-10**.
- Raftelis projected other operating and non-operating revenues by multiplying the actual other revenues (as reported by the District's budget for FY 23/24) by the assumed inflation factors from **Table 4-4**. The only exception is "Interest income" (line 7) which was calculated using the reserve interest rate assumption from **Table 4-4** and the estimated average annual reserves of the District.
- Line 9, "Total Revenues", is equal to the sum of both rate and non-rate revenues.
- Annual cashflows (line 19) is calculated as the difference between total revenues (line 9) and cash outflows (the sum of O&M and CIP expenditures).

With the revenue adjustments, the wastewater enterprise builds its operating reserve close to the target in FY 28/29 (as shown by comparing line 23 to line 27).

Table 4-11 Wastewater Proposed Financial Plan

		FY 23/24	FY 24/25	FY 25/26	FY 26/27	FY 27/28	FY 28/29
1	**REVENUES**						
2	Revenues from Current Rates	$3,225,795	$3,108,336	$3,122,349	$3,402,609	$3,682,869	$3,963,129
3	Subtotal Proposed Revenue Adjustments	$0	$435,167	$935,456	$1,450,569	$2,082,207	$2,845,528
4	**Subtotal Revenues from Rates**	**$3,225,795**	**$3,543,503**	**$4,057,804**	**$4,853,178**	**$5,765,075**	**$6,808,657**
5							
6	**Other Operating Revenues**						
7	Interest Income	$0	$0	$0	$0	$0	$9,218
8	Miscellaneous Revenue (FOG)	$7,960	$7,960	$7,960	$7,960	$7,960	$7,960
9	**Total Revenue**	**$3,233,755**	**$3,551,463**	**$4,065,764**	**$4,861,138**	**$5,773,035**	**$6,825,835**
10							
11	**Total O&M**	**$3,557,419**	**$3,735,846**	**$3,885,870**	**$4,403,065**	**$4,935,157**	**$5,483,212**
12							
13	Net Cashflow before Capital	($323,664)	($184,384)	$179,894	$458,073	$837,878	$1,342,623
14							
15	**CIP EXPENDITURES (excl. funded by grants and new dev't)**						
16	Rate Funded Capital Projects	$0	$420,000	$82,500	$82,500	$82,500	$82,500
17	**Total**	**$0**	**$420,000**	**$82,500**	**$82,500**	**$82,500**	**$82,500**
18							
19	**Net Cashflow**	**($323,664)**	**($604,384)**	**$97,394**	**$375,573**	**$755,378**	**$1,260,123**
20							
21	Combined Beginning Balance	$0	($323,664)	($928,048)	($830,653)	($455,081)	$300,298
22							
23	Combined Ending Balance	**($323,664)**	**($928,048)**	**($830,653)**	**($455,081)**	**$300,298**	**$1,560,420**
24	Operating Reserve Ending Balance	($323,664)	($928,048)	($830,653)	($455,081)	$300,298	$1,560,420
25	Capital Reserve Ending Balance	$0	$0	$0	$0	$0	$0
26							
27	**Target Reserves**	**$1,072,688**	**$1,117,295**	**$1,154,801**	**$1,284,100**	**$1,417,123**	**$1,554,136**
28	Operating Reserves	$889,355	$933,962	$971,467	$1,100,766	$1,233,789	$1,370,803
29	Capital Reserves	$183,333	$183,333	$183,333	$183,333	$183,333	$183,333

The financial plan is shown graphically in **Figure 4-3**. The red bars indicate a deficit the first year of rate adjustments, but sufficient revenue is collected FY 25/26 through 28/29 to build reserves over the course of this study, as shown in **Figure 4-4**.

Figure 4-3 Wastewater Financial Plan

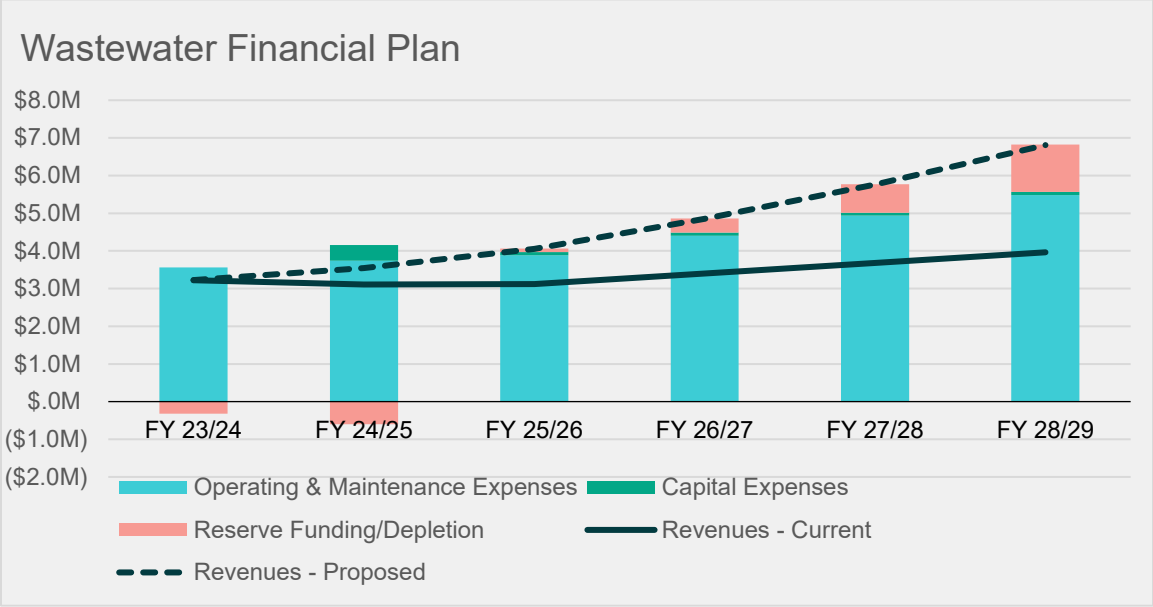
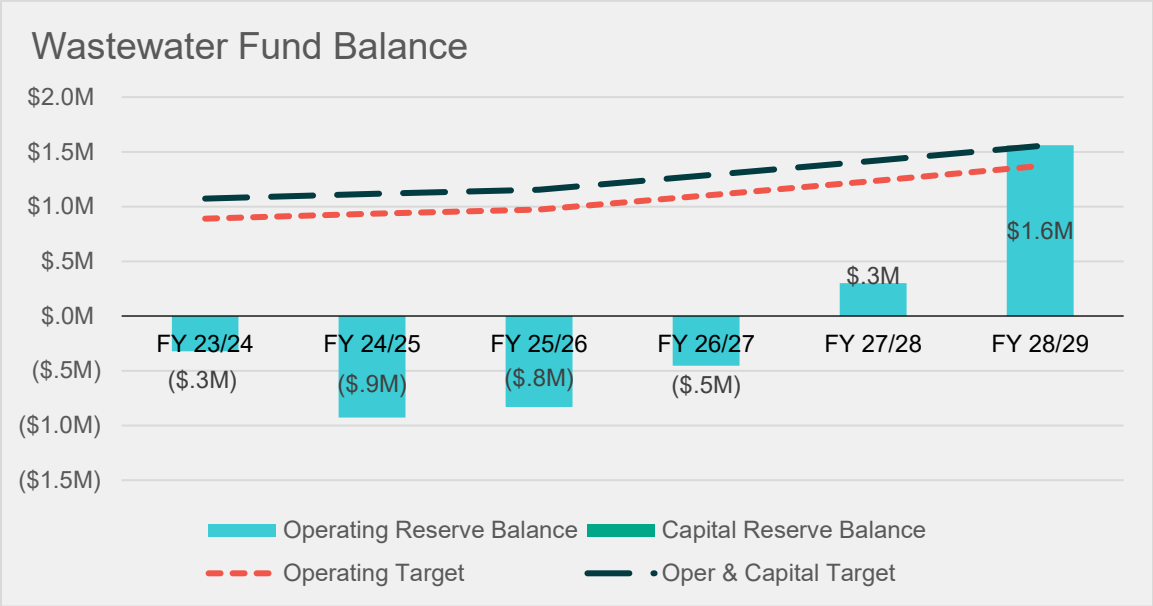


Figure 4-4 Wastewater Fund Balance



4.3. Wastewater Cost of Service Analysis

The Cost of Service (COS) analysis allocates the overall rate revenue requirement to customer classes based on their cost burden to the wastewater system. The COS provides the basis for the proposed wastewater rates through FY 28/29.

The methodology used to develop the COS analysis is informed by the WEF's *Manual of Practice (MOP) No. 27 Financing and Charges for Wastewater Systems*. COS analyses are specific to each wastewater system. The District's COS is simplified because it charges customers based on Equivalent Dwelling Units (EDUs). Therefore, the COS calculates the cost to serve one equivalent dwelling unit.

4.3.1. Wastewater Rate Revenue Requirement Determination

The first step in a COS analysis is to determine the revenue required from wastewater rates. The total revenue requirement results from the wastewater financial plan outlined in Section 4.2, and is shown in **Table 4-12**, below. The revenue requirement is split into operating and capital, which are later allocated based on O&M expenses and capital assets. The revenue requirements (Lines 1-4) include projected FY 24/25 O&M expenses, debt service, and rate-funded CIP expenditures. The non-rate revenue offsets (line 10) include all non-rate revenues. These revenues reduce the final rate revenue requirement. The adjustment for cash balance (line 15) is equal to FY 24/25 negative net operating cash flow under the proposed financial plan, and accounts for the drawdown of operating reserves in FY 24/25.

Table 4-12 Wastewater Rate Revenue Requirement

Line		FY 24/25 Operating	FY 24/25 Capital	FY 24/25 Total
1	**Revenue Requirements**			
2	O&M Expenses	$3,735,846		$3,735,846
3	Debt Service		$0	$0
4	Rate Funded CIP		$420,000	$420,000
5	**Subtotal**	**$3,735,846**	**$420,000**	**$4,155,846**
6				
7	**Less Revenue Offsets**			
8	Interest Income		$0	$0
9	Miscellaneous Revenue	$7,960		$7,960
10	**Subtotal**	**$7,960**	**$0**	**$7,960**
11				
12	**Less Adjustments**			
13	Cash Balance	$604,384		$604,384
14	Annual Rev Adjustment	**$0**		**$0**
15	**Subtotal**	**$604,384**	**$0**	**$604,384**
16				
17	**Rate Revenue Requirement**	**$3,123,503**	**$420,000**	**$3,543,503**

4.3.2. Calculation of Unit Cost

The total operating cost and capital cost shown in **Table 4-13**, are from the total rate revenue requirement shown in line 17, **Table 4-12**. The number of EDUs are projected from **Table 4-2**, increasing FY 22/23 EDUs by the growth in **Table 4-6**. The "Charge per EDU" row shows the total charge per sewer equivalent dwelling unit. In the last row, the monthly charge per EDU is shown by dividing the row above by 12.

Table 4-13 Derivation of Cost for one EDU by Cost Component

	Total
Operating Cost	$3,123,503
Capital Cost	$420,000
Total Cost of Service	**$3,543,503**
Total System EDUs	5,545
Charge per EDU	**$639.04**
Monthly Charge per EDU	**$53.25**

4.4. Wastewater Proposed Rates

The proposed wastewater rates are calculated based on the COS analysis and the revenue adjustment determined in the proposed financial plan. The proposed rates and the bill impacts based on customer class are presented in this section.

4.4.1. Proposed Rate Schedule

Table 4-14 shows the proposed wastewater rate schedule for the next five years. There is no change to the rate structure or customer classes.

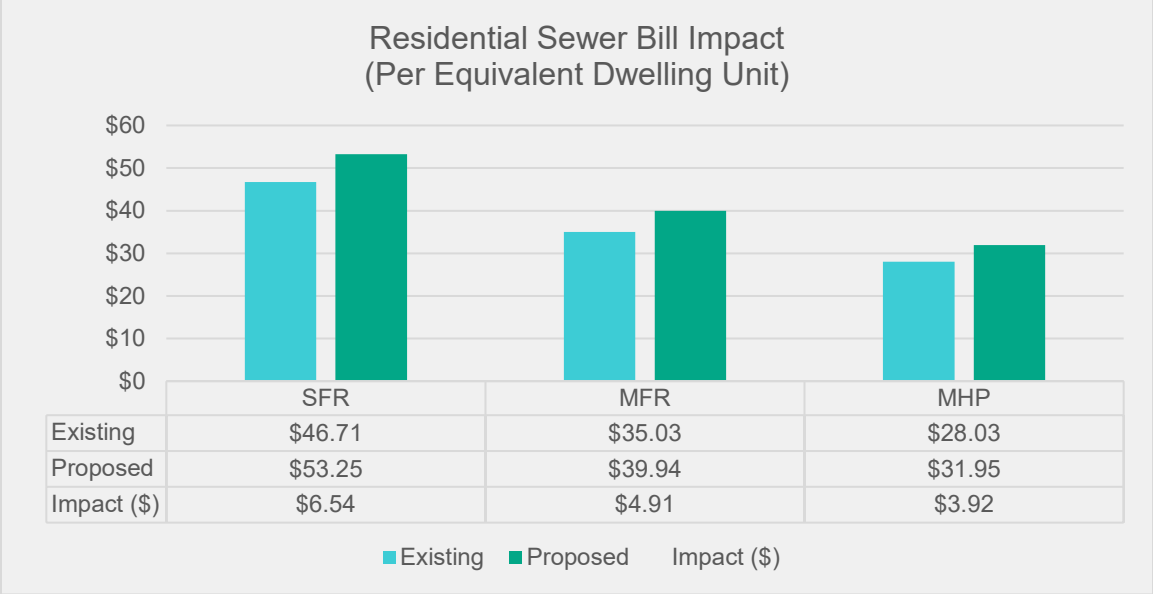
Table 4-14 Proposed Rate Schedule FY 24/25 – FY 28/29

	Current	FY 24/25	FY 25/26	FY 26/27	FY 27/28	FY 28/29
Charge per EDU	$46.71	$53.25	$60.71	$66.62	$73.12	$80.25

4.4.2. Wastewater Bill Impacts

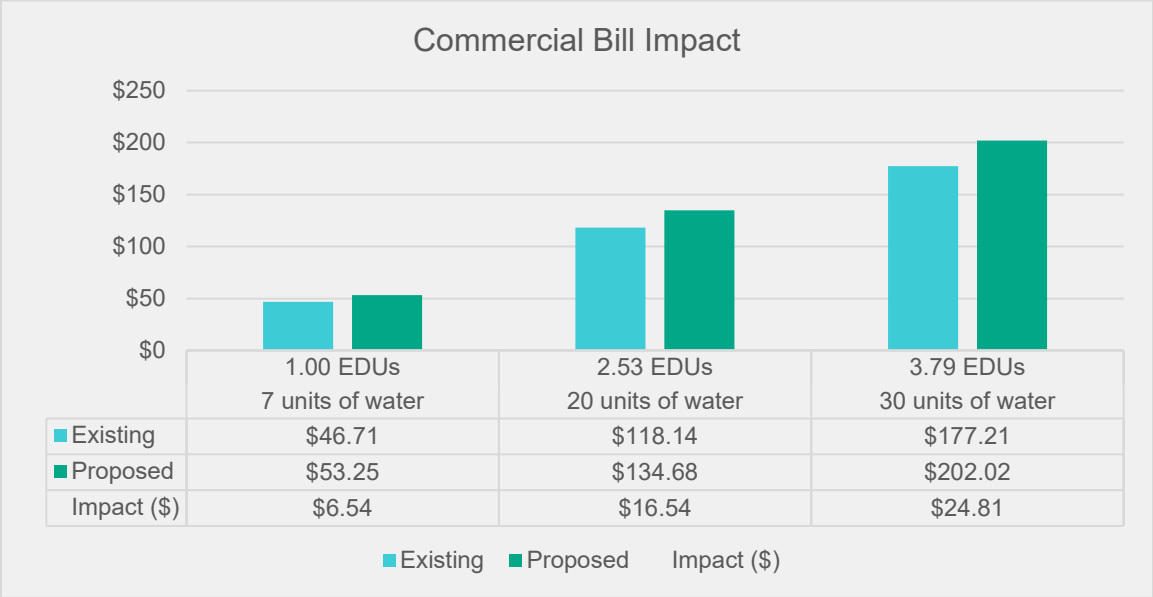
Figure 4-5 presents sample monthly bills for residential customers in FY 24/25. A SFR, MFR, and MHP accounts would see a 14% increase in their proposed monthly water bill, which is equal to the overall revenue increase.

Figure 4-5 Sample Residential Bill Impacts



Sample commercial bills are provided in **Figure 4-6** based on various levels of sewer discharge (water use). Each bill impact is 14%, again equal to the revenue adjustment.

Figure 4-6 Sample Commercial Bill Impact

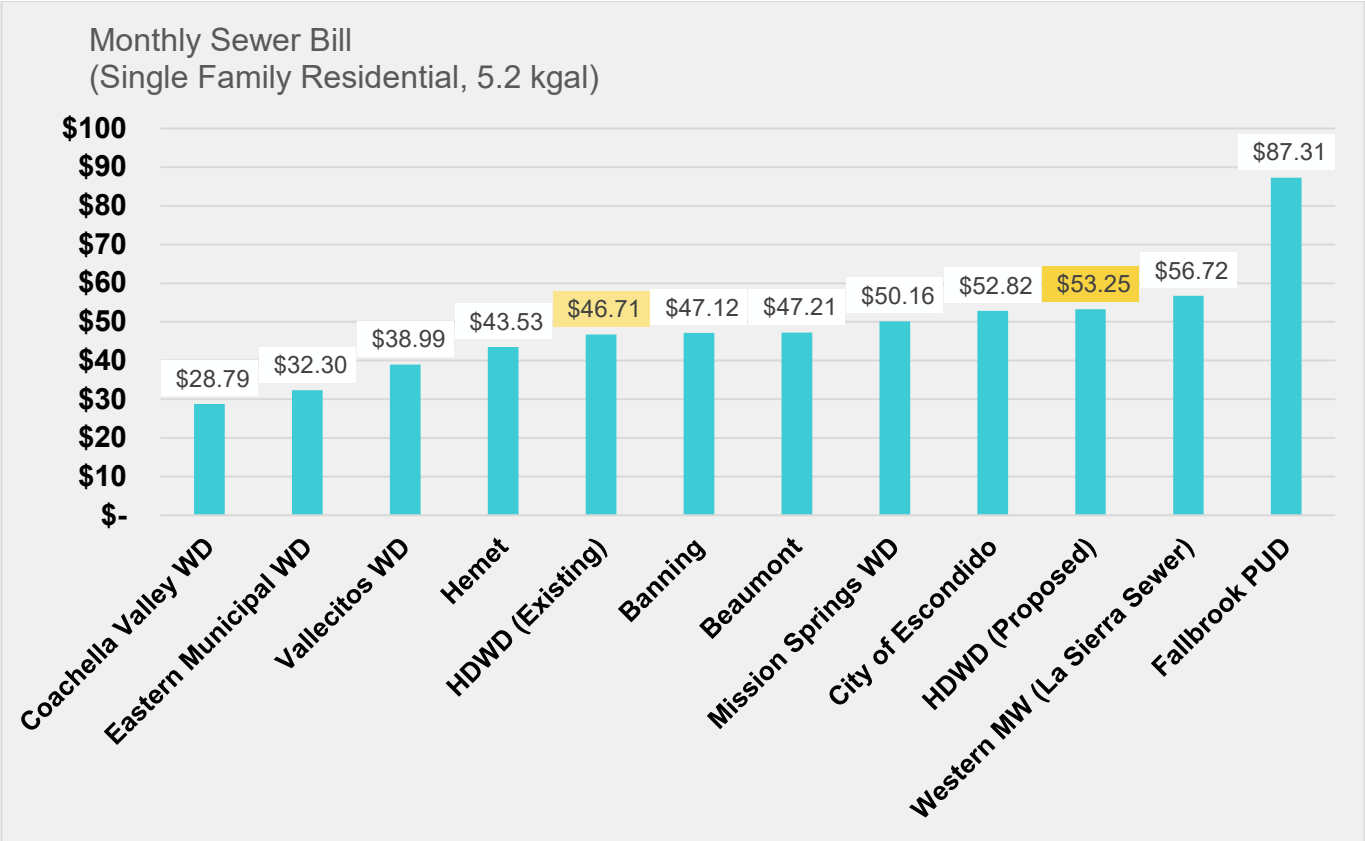


	1.00 EDUs 7 units of water	2.53 EDUs 20 units of water	3.79 EDUs 30 units of water
Existing	$46.71	$118.14	$177.21
Proposed	$53.25	$134.68	$202.02
Impact ($)	$6.54	$16.54	$24.81

4.4.3. Wastewater Rate Survey

A comparison to other utilities' wastewater bills is included in **Figure 4-7**. These are current wastewater rates as published on the various utility or city websites and would not include any rate studies that are currently underway.

Figure 4-7 Wastewater Rate Survey



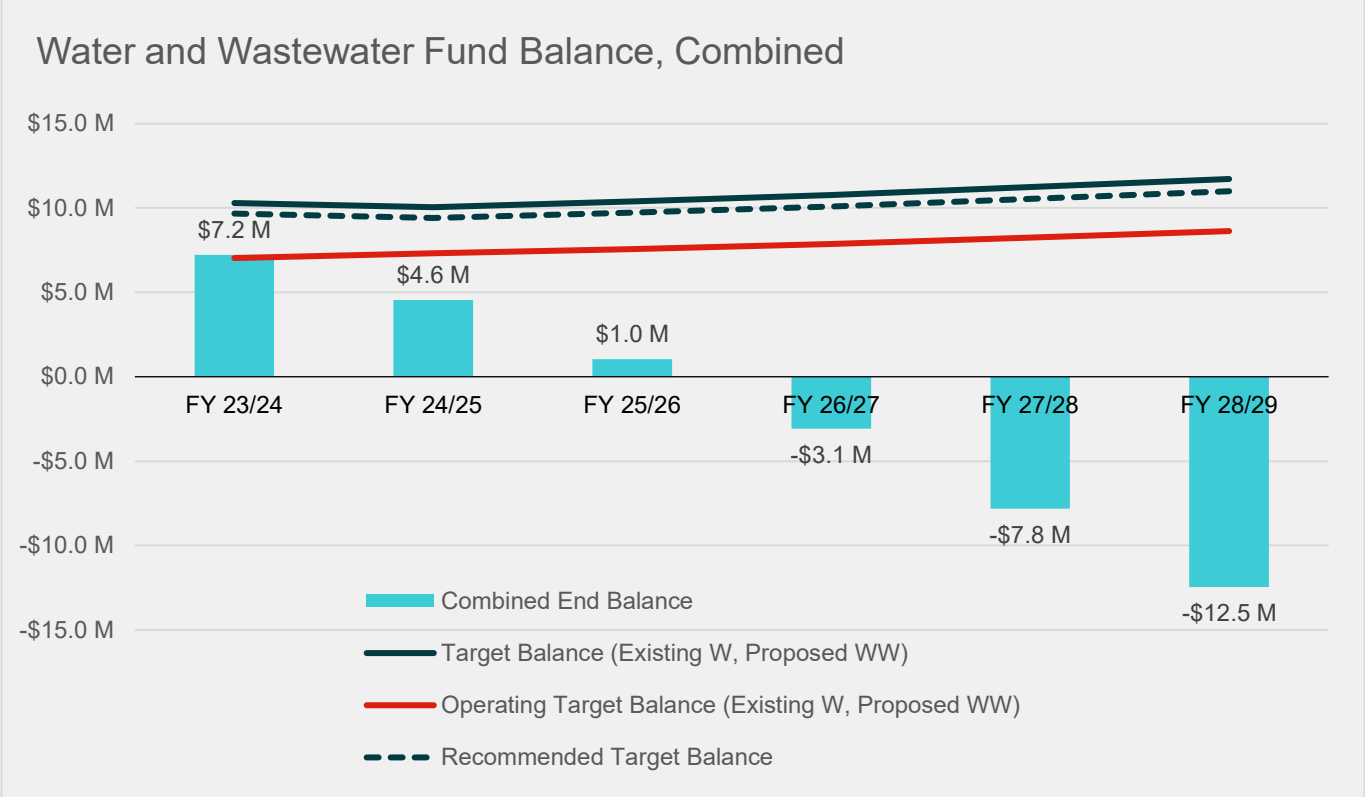
5. Water and Wastewater Combined Reserves and Bill Impacts

Since the District manages both the water and wastewater enterprises and often makes decisions based on its combined (water and wastewater) financial health, the reserves for water and wastewater were combined to account for wastewater fund deficits that would need to be funded by the water enterprise (shown in **Table 5-1**). Under the status quo scenario, without water or wastewater rate adjustments, the combined reserves would fall below proposed operating targets starting in FY 24/25 (shown in **Figure 5-1**).

Table 5-1 Status Quo Combined Reserves FY 24/25 – FY 28/29

	FY 23/24	FY 24/25	FY 25/26	FY 26/27	FY 27/28	FY 28/29
Water Reserves	$7,542,432	$5,919,640	$3,238,491	$203,672	($3,220,966)	($6,263,280)
Wastewater Reserves	($323,664)	($1,363,215)	($2,201,276)	($3,276,273)	($4,603,101)	($6,197,725)
W/WW Reserves Total	**$7,218,768**	**$4,556,425**	**$1,037,215**	**($3,072,600)**	**($7,824,067)**	**($12,461,005)**

Figure 5-1 Water and Wastewater Fund Balance – Status Quo Scenario



The financial planning sections (3.2.9 and 4.2.10) detail the proposed revenue adjustments for water and wastewater. These adjustments increase the combined reserves to meet the water and wastewater operating targets by the end of the study period (FY 28/29) as shown in **Figure 5-2** . In the interim, the water fund would need to fund wastewater's operating deficit detailed in **Table 5-2**.

Figure 5-2 Water and Wastewater Fund Balance – Proposed Scenario

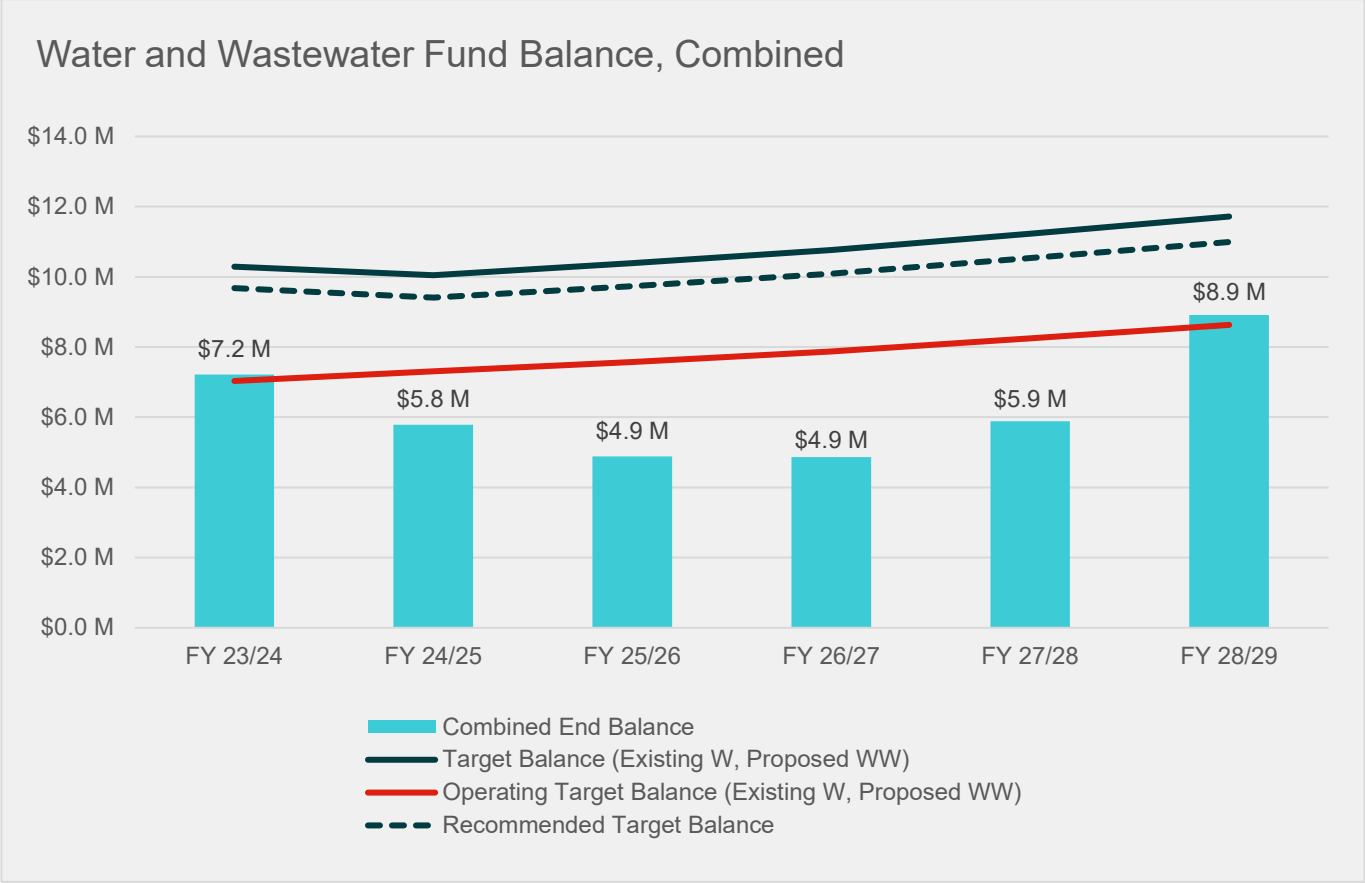
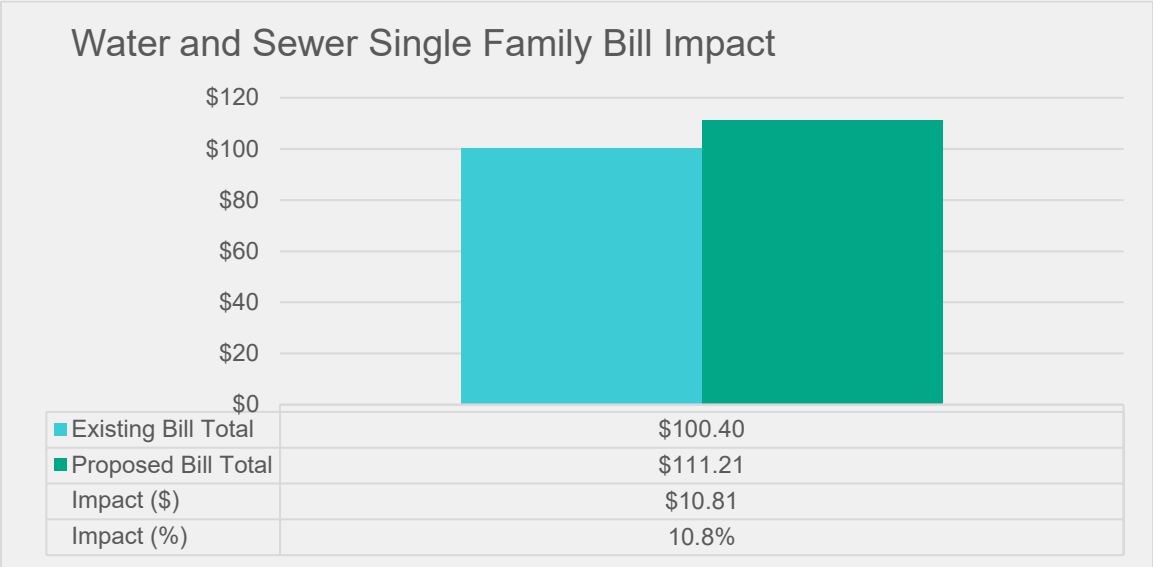


Table 5-2 Proposed Combined Reserves FY 24/25 – FY 28/29

	FY 23/24	FY 24/25	FY 25/26	FY 26/27	FY 27/28	FY 28/29
Water Reserves	$7,542,432	$6,717,330	$5,712,083	$5,318,870	$5,580,965	$7,356,912
Wastewater Reserves	($323,664)	($928,048)	($830,653)	($455,081)	$300,298	$1,560,420
W/WW Reserves Total	**$7,218,768**	**$5,789,282**	**$4,881,429**	**$4,863,789**	**$5,881,262**	**$8,917,332**

The combined bill impact of the proposed revenue adjustments for an average single family customer is provided in **Figure 5-3.**

Figure 5-3 Average Single Family Water and Sewer Bill Impact



APPENDIX A:

Status Quo Financial Plan Tables

WATER FINANCIAL PLAN	FY 24/25	FY 25/26	FY 26/27	FY 27/28	FY 28/29
REVENUES					
Water Consumption Sales	$6,492,128	$6,530,317	$6,568,506	$6,606,695	$6,644,884
Monthly Service Charge	$1,633,327	$1,639,999	$1,646,672	$1,653,344	$1,660,017
CRP Charge	$1,796,063	$1,803,400	$1,810,738	$1,818,075	$1,825,413
Revenues from Current Rates	**$9,921,518**	**$9,973,717**	**$10,025,916**	**$10,078,115**	**$10,130,314**
Other Operating Revenues					
Delinquent Fees	$207,916	$209,995	$212,095	$214,216	$216,358
Returned Checks	$5,917	$5,976	$6,036	$6,096	$6,157
Disconnect/Reconnect	$29,684	$29,981	$30,281	$30,583	$30,889
Turn On Fee	$30,569	$30,874	$31,183	$31,495	$31,810
Standby	$172,119	$173,840	$175,579	$177,335	$179,108
Total Other Operating Revenues	**$446,204**	**$450,666**	**$455,173**	**$459,724**	**$464,322**
Non-Operating Revenues/(Expenses):					
Property taxes and assessments	$2,140,714	$2,162,121	$2,183,743	$2,205,580	$2,227,636
Interest earnings	$66,440	$45,025	$16,584	$0	$0
Interest expense	$0	$0	$0	$0	$0
Other non-operating revenues, net	$57,608	$58,184	$58,766	$59,354	$59,948
Total non-operating revenues, net	**$2,264,763**	**$2,265,330**	**$2,259,093**	**$2,264,934**	**$2,287,583**
TOTAL REVENUES (excl. meter sales and grants)	**$12,632,484**	**$12,689,713**	**$12,740,181**	**$12,802,773**	**$12,882,219**
Operations & Maintenance Expenses					
Source of supply	$1,593,864	$1,613,889	$1,615,541	$1,735,041	$1,863,515
Pumping and water treatment	$2,593,220	$2,671,017	$2,751,147	$2,833,682	$2,918,692
Const. & Maint. / CRP (Trans & Dist)	$2,286,215	$2,377,664	$2,448,994	$2,522,463	$2,598,137
Field Services (Meters)	$352,929	$367,046	$378,058	$389,399	$401,081
Accounting/Billing/Customer Service	$1,186,054	$1,233,497	$1,270,501	$1,308,617	$1,347,875
Administrative	$4,743,894	$4,933,650	$5,081,659	$5,234,109	$5,391,132
TOTAL O&M EXPENSES	**$12,756,177**	**$13,196,762**	**$13,545,900**	**$14,023,311**	**$14,520,433**
NET REVENUE	**-$123,692**	**-$507,049**	**-$805,719**	**-$1,220,538**	**-$1,638,214**
TOTAL DEBT SERVICE	**$0**	**$0**	**$0**	**$0**	**$0**

WATER FINANCIAL PLAN	FY 24/25	FY 25/26	FY 26/27	FY 27/28	FY 28/29
CIP EXPENDITURES (excl. funded by grants and new dev't)					
PAYGO funded CIP	$1,549,100	$2,224,100	$2,279,100	$2,254,100	$1,454,100
TOTAL CIP EXPENDITURES	**$1,549,100**	**$2,224,100**	**$2,279,100**	**$2,254,100**	**$1,454,100**
NET CASH FLOW	**-$1,672,792**	**-$2,731,149**	**-$3,084,819**	**-$3,474,638**	**-$3,092,314**
Beginning Balance	$7,542,432	$5,919,640	$3,238,491	$203,672	-$3,220,966
Capital Contributions, New installations	$50,000	$50,000	$50,000	$50,000	$50,000
Ending Balance	**$5,919,640**	**$3,238,491**	**$203,672**	**-$3,220,966**	**-$6,263,280**
Proposed Target Reserves	**$8,291,515**	**$8,577,895**	**$8,804,835**	**$9,115,152**	**$9,438,281**

WASTEWATER FINANCIAL PLAN	FY 23/24	FY 24/25	FY 25/26	FY 26/27	FY 27/28	FY 28/29
REVENUES						
Sewer Consumption Revenue	$3,225,795	$3,108,336	$3,122,349	$3,402,609	$3,682,869	$3,963,129
Revenues from Current Rates	**$3,225,795**	**$3,108,336**	**$3,122,349**	**$3,402,609**	**$3,682,869**	**$3,963,129**
Other Operating Revenues						
Miscellaneous Revenue (FOG)	$7,960	$7,960	$7,960	$7,960	$7,960	$7,960
Total Revenue	**$3,233,755**	**$3,116,296**	**$3,130,309**	**$3,410,569**	**$3,690,829**	**$3,971,089**
O&M						
O&M - Payroll & Benefits	$1,141,890	$1,198,985	$1,246,944	$1,284,352	$1,322,883	$1,362,569
O&M - Operations	$1,065,090	$1,118,345	$1,163,078	$1,597,971	$2,045,910	$2,507,287
O&M - Collection	$55,638	$58,976	$61,925	$64,402	$66,334	$68,324
O&M - Administration	$1,294,801	$1,359,541	$1,413,923	$1,456,340	$1,500,031	$1,545,032
Total	**$3,557,419**	**$3,735,846**	**$3,885,870**	**$4,403,065**	**$4,935,157**	**$5,483,212**
Net Cashflow before Capital	($323,664)	($619,551)	($755,561)	($992,497)	($1,244,329)	($1,512,123)
CIP EXPENDITURES (excl. funded by grants and new dev't)						
Rate Funded Capital Projects	$0	$420,000	$82,500	$82,500	$82,500	$82,500
Total	$0	$420,000	$82,500	$82,500	$82,500	$82,500
Net Cashflow	($323,664)	($1,039,551)	($838,061)	($1,074,997)	($1,326,829)	($1,594,623)
Combined Beginning Balance	$ -	($323,664)	($1,363,215)	($2,201,276)	($3,276,273)	($4,603,101)
Combined Ending Balance	**($323,664)**	**($1,363,215)**	**($2,201,276)**	**($3,276,273)**	**($4,603,101)**	**($6,197,725)**
Target Reserves	**$1,072,688**	**$1,117,295**	**$1,154,801**	**$1,284,100**	**$1,417,123**	**$1,554,136**
Operating Reserves	$889,355	$933,962	$971,467	$1,100,766	$1,233,789	$1,370,803
Capital Reserves	$183,333	$183,333	$183,333	$183,333	$183,333	$183,333

APPENDIX B:

Drought Rates

Table B-1 Drought Rates by Percent Usage Reduction FY 24/25

	FY 24/25 Proposed Rates	Stage 1 - 7% Increase	Stage 2 - 15% Increase	Stage 3 - 27% Increase	Stage 4 - 43% Increase	Stage 5 - 68% Increase	Stage 6 - 100% Increase
Residential (SFR, MFR, MHP)							
Tier 1: 0-4 units	$4.42	$4.72	$5.08	$5.61	$6.35	$7.41	$8.85
Tier 2: 5-11 units	$7.53	$8.04	$8.65	$9.56	$10.81	$12.62	$15.07
Tier 3: 12 + units	$8.53	$9.10	$9.80	$10.83	$12.24	$14.29	$17.07
Commercial (COM)							
Tier 1: 0-4 units	$7.22	$7.71	$8.29	$9.17	$10.36	$12.10	$14.45
Tier 2: 5-11 units	$7.92	$8.45	$9.10	$10.06	$11.37	$13.27	$15.85
Tier 3: 12 + units	$7.92	$8.45	$9.10	$10.06	$11.37	$13.27	$15.85
Public (PBE)							
Tier 1: 0-4 units	$7.22	$7.71	$8.29	$9.17	$10.36	$12.10	$14.45
Tier 2: 5-11 units	$8.10	$8.65	$9.30	$10.28	$11.62	$13.57	$16.21
Tier 3: 12 + units	$8.43	$9.00	$9.68	$10.70	$12.10	$14.13	$16.87
Irrigation (IRR)							
Tier 1: 0-4 units	$7.47	$7.97	$8.58	$9.48	$10.72	$12.52	$14.95
Tier 2: 5-11 units	$8.30	$8.86	$9.53	$10.54	$11.91	$13.91	$16.61
Tier 3: 12 + units	$11.47	$12.24	$13.17	$14.56	$16.46	$19.22	$22.96
CIMIS (CIM)							
Tier 1: 0-4 units	$7.47	$7.97	$8.58	$9.48	$10.72	$12.52	$14.95
Tier 2: 5-11 units	$8.19	$8.74	$9.41	$10.40	$11.75	$13.72	$16.39
Tier 3: 12 + units	$8.19	$8.74	$9.41	$10.40	$11.75	$13.72	$16.39
Bulk (BLK)							
Tier 1: 0-4 units	$7.00	$7.47	$8.04	$8.89	$10.05	$11.73	$14.01
Tier 2: 5-11 units	$7.63	$8.14	$8.76	$9.69	$10.95	$12.79	$15.27
Tier 3: 12 + units	$7.92	$8.45	$9.10	$10.06	$11.37	$13.27	$15.85

Table B-2 Drought Rates by Percent Usage Reduction FY 25/26

Customer Class	FY 25/26	Stage 1 - 7% Increase	Stage 2 - 15% Increase	Stage 3 - 27% Increase	Stage 4 - 44% Increase	Stage 5 - 68% Increase	Stage 6 - 100% Increase
SFR							
Tier 1: 0-4 units	$4.78	$5.10	$5.49	$6.07	$6.86	$8.01	$9.57
Tier 2: 5-11 units	$8.14	$8.69	$9.35	$10.33	$11.68	$13.64	$16.29
Tier 3: 12 + units	$9.22	$9.84	$10.59	$11.71	$13.23	$15.45	$18.46
MTF							
Tier 1: 0-4 units	$4.78	$5.10	$5.49	$6.07	$6.86	$8.01	$9.57
Tier 2: 5-11 units	$8.14	$8.69	$9.35	$10.33	$11.68	$13.64	$16.29
Tier 3: 12 + units	$9.22	$9.84	$10.59	$11.71	$13.23	$15.45	$18.46
MHP							
Tier 1: 0-4 units	$4.78	$5.10	$5.49	$6.07	$6.86	$8.01	$9.57
Tier 2: 5-11 units	$8.14	$8.69	$9.35	$10.33	$11.68	$13.64	$16.29
Tier 3: 12 + units	$9.22	$9.84	$10.59	$11.71	$13.23	$15.45	$18.46
COM							
Tier 1: 0-4 units	$7.80	$8.33	$8.96	$9.90	$11.19	$13.07	$15.61
Tier 2: 5-11 units	$8.56	$9.14	$9.83	$10.87	$12.28	$14.34	$17.13
Tier 3: 12 + units	$8.56	$9.14	$9.83	$10.87	$12.28	$14.34	$17.13
PBE							
Tier 1: 0-4 units	$7.80	$8.33	$8.96	$9.90	$11.19	$13.07	$15.61
Tier 2: 5-11 units	$8.75	$9.34	$10.05	$11.11	$12.56	$14.66	$17.51
Tier 3: 12 + units	$9.11	$9.72	$10.46	$11.57	$13.07	$15.26	$18.24
IRR							
Tier 1: 0-4 units	$8.07	$8.61	$9.27	$10.25	$11.58	$13.52	$16.15
Tier 2: 5-11 units	$8.97	$9.57	$10.30	$11.39	$12.87	$15.03	$17.96
Tier 3: 12 + units	$12.39	$13.22	$14.23	$15.73	$17.78	$20.76	$24.80
CIM							
Tier 1: 0-4 units	$8.07	$8.61	$9.27	$10.25	$11.58	$13.52	$16.15
Tier 2: 5-11 units	$8.85	$9.45	$10.16	$11.24	$12.70	$14.83	$17.72
Tier 3: 12 + units	$8.85	$9.45	$10.16	$11.24	$12.70	$14.83	$17.72
BLK							
Tier 1: 0-4 units	$7.56	$8.07	$8.68	$9.60	$10.85	$12.67	$15.13
Tier 2: 5-11 units	$8.25	$8.81	$9.47	$10.47	$11.84	$13.82	$16.51
Tier 3: 12 + units	$8.56	$9.14	$9.83	$10.87	$12.28	$14.34	$17.13

Table B-3 Drought Rates by Percent Usage Reduction FY 26/27

Customer Class	FY 26/27	Stage 1 - 7% Increase	Stage 2 - 15% Increase	Stage 3 - 27% Increase	Stage 4 - 44% Increase	Stage 5 - 68% Increase	Stage 6 - 100% Increase
SFR							
Tier 1: 0-4 units	$5.17	$5.52	$5.94	$6.57	$7.42	$8.67	$10.35
Tier 2: 5-11 units	$8.80	$9.39	$10.11	$11.17	$12.63	$14.75	$17.62
Tier 3: 12 + units	$9.96	$10.63	$11.44	$12.64	$14.29	$16.69	$19.94
MTF							
Tier 1: 0-4 units	$5.17	$5.52	$5.94	$6.57	$7.42	$8.67	$10.35
Tier 2: 5-11 units	$8.80	$9.39	$10.11	$11.17	$12.63	$14.75	$17.62
Tier 3: 12 + units	$9.96	$10.63	$11.44	$12.64	$14.29	$16.69	$19.94
MHP							
Tier 1: 0-4 units	$5.17	$5.52	$5.94	$6.57	$7.42	$8.67	$10.35
Tier 2: 5-11 units	$8.80	$9.39	$10.11	$11.17	$12.63	$14.75	$17.62
Tier 3: 12 + units	$9.96	$10.63	$11.44	$12.64	$14.29	$16.69	$19.94
COM							
Tier 1: 0-4 units	$8.43	$9.00	$9.68	$10.70	$12.10	$14.13	$16.87
Tier 2: 5-11 units	$9.25	$9.87	$10.62	$11.74	$13.27	$15.50	$18.52
Tier 3: 12 + units	$9.25	$9.87	$10.62	$11.74	$13.27	$15.50	$18.52
PBE							
Tier 1: 0-4 units	$8.43	$9.00	$9.68	$10.70	$12.10	$14.13	$16.87
Tier 2: 5-11 units	$9.45	$10.09	$10.85	$12.00	$13.56	$15.83	$18.92
Tier 3: 12 + units	$9.84	$10.50	$11.30	$12.49	$14.12	$16.49	$19.70
IRR							
Tier 1: 0-4 units	$8.72	$9.31	$10.01	$11.07	$12.51	$14.61	$17.45
Tier 2: 5-11 units	$9.69	$10.34	$11.13	$12.30	$13.90	$16.24	$19.40
Tier 3: 12 + units	$13.39	$14.29	$15.37	$17.00	$19.21	$22.43	$26.80
CIM							
Tier 1: 0-4 units	$8.72	$9.31	$10.01	$11.07	$12.51	$14.61	$17.45
Tier 2: 5-11 units	$9.56	$10.20	$10.98	$12.14	$13.72	$16.02	$19.14
Tier 3: 12 + units	$9.56	$10.20	$10.98	$12.14	$13.72	$16.02	$19.14
BLK							
Tier 1: 0-4 units	$8.17	$8.72	$9.38	$10.37	$11.72	$13.69	$16.35
Tier 2: 5-11 units	$8.91	$9.51	$10.23	$11.31	$12.79	$14.93	$17.84
Tier 3: 12 + units	$9.25	$9.87	$10.62	$11.74	$13.27	$15.50	$18.52

Table B-4 Drought Rates by Percent Usage Reduction FY 27/28

Customer Class	FY 27/28	Stage 1 - 7% Increase	Stage 2 - 15% Increase	Stage 3 - 27% Increase	Stage 4 - 44% Increase	Stage 5 - 68% Increase	Stage 6 - 100% Increase
SFR							
Tier 1: 0-4 units	$5.59	$5.97	$6.42	$7.10	$8.02	$9.37	$11.19
Tier 2: 5-11 units	$9.51	$10.15	$10.92	$12.07	$13.65	$15.93	$19.04
Tier 3: 12 + units	$10.76	$11.48	$12.36	$13.66	$15.44	$18.03	$21.54
MTF							
Tier 1: 0-4 units	$5.59	$5.97	$6.42	$7.10	$8.02	$9.37	$11.19
Tier 2: 5-11 units	$9.51	$10.15	$10.92	$12.07	$13.65	$15.93	$19.04
Tier 3: 12 + units	$10.76	$11.48	$12.36	$13.66	$15.44	$18.03	$21.54
MHP							
Tier 1: 0-4 units	$5.59	$5.97	$6.42	$7.10	$8.02	$9.37	$11.19
Tier 2: 5-11 units	$9.51	$10.15	$10.92	$12.07	$13.65	$15.93	$19.04
Tier 3: 12 + units	$10.76	$11.48	$12.36	$13.66	$15.44	$18.03	$21.54
COM							
Tier 1: 0-4 units	$9.11	$9.72	$10.46	$11.57	$13.07	$15.26	$18.24
Tier 2: 5-11 units	$9.99	$10.66	$11.47	$12.68	$14.34	$16.74	$20.00
Tier 3: 12 + units	$9.99	$10.66	$11.47	$12.68	$14.34	$16.74	$20.00
PBE							
Tier 1: 0-4 units	$9.11	$9.72	$10.46	$11.57	$13.07	$15.26	$18.24
Tier 2: 5-11 units	$10.21	$10.90	$11.72	$12.96	$14.65	$17.11	$20.44
Tier 3: 12 + units	$10.63	$11.34	$12.21	$13.49	$15.25	$17.81	$21.28
IRR							
Tier 1: 0-4 units	$9.42	$10.05	$10.82	$11.96	$13.52	$15.78	$18.86
Tier 2: 5-11 units	$10.47	$11.17	$12.02	$13.29	$15.02	$17.54	$20.96
Tier 3: 12 + units	$14.47	$15.44	$16.61	$18.37	$20.76	$24.24	$28.96
CIM							
Tier 1: 0-4 units	$9.42	$10.05	$10.82	$11.96	$13.52	$15.78	$18.86
Tier 2: 5-11 units	$10.33	$11.02	$11.86	$13.11	$14.82	$17.31	$20.68
Tier 3: 12 + units	$10.33	$11.02	$11.86	$13.11	$14.82	$17.31	$20.68
BLK							
Tier 1: 0-4 units	$8.83	$9.42	$10.14	$11.21	$12.67	$14.80	$17.68
Tier 2: 5-11 units	$9.63	$10.28	$11.06	$12.23	$13.82	$16.14	$19.28
Tier 3: 12 + units	$9.99	$10.66	$11.47	$12.68	$14.34	$16.74	$20.00

Table B-5 Drought Rates by Percent Usage Reduction FY 28/29

Customer Class	FY 28/29	Stage 1 - 7% Increase	Stage 2 - 15% Increase	Stage 3 - 27% Increase	Stage 4 - 44% Increase	Stage 5 - 68% Increase	Stage 6 - 100% Increase
SFR							
Tier 1: 0-4 units	$6.04	$6.45	$6.94	$7.67	$8.67	$10.12	$12.09
Tier 2: 5-11 units	$10.28	$10.97	$11.80	$13.05	$14.75	$17.22	$20.58
Tier 3: 12 + units	$11.63	$12.41	$13.35	$14.76	$16.69	$19.49	$23.28
MTF							
Tier 1: 0-4 units	$6.04	$6.45	$6.94	$7.67	$8.67	$10.12	$12.09
Tier 2: 5-11 units	$10.28	$10.97	$11.80	$13.05	$14.75	$17.22	$20.58
Tier 3: 12 + units	$11.63	$12.41	$13.35	$14.76	$16.69	$19.49	$23.28
MHP							
Tier 1: 0-4 units	$6.04	$6.45	$6.94	$7.67	$8.67	$10.12	$12.09
Tier 2: 5-11 units	$10.28	$10.97	$11.80	$13.05	$14.75	$17.22	$20.58
Tier 3: 12 + units	$11.63	$12.41	$13.35	$14.76	$16.69	$19.49	$23.28
COM							
Tier 1: 0-4 units	$9.84	$10.50	$11.30	$12.49	$14.12	$16.49	$19.70
Tier 2: 5-11 units	$10.79	$11.52	$12.39	$13.70	$15.48	$18.08	$21.60
Tier 3: 12 + units	$10.79	$11.52	$12.39	$13.70	$15.48	$18.08	$21.60
PBE							
Tier 1: 0-4 units	$9.84	$10.50	$11.30	$12.49	$14.12	$16.49	$19.70
Tier 2: 5-11 units	$11.03	$11.77	$12.67	$14.00	$15.83	$18.48	$22.08
Tier 3: 12 + units	$11.49	$12.26	$13.19	$14.59	$16.49	$19.25	$23.00
IRR							
Tier 1: 0-4 units	$10.18	$10.86	$11.69	$12.92	$14.61	$17.06	$20.38
Tier 2: 5-11 units	$11.31	$12.07	$12.99	$14.36	$16.23	$18.95	$22.64
Tier 3: 12 + units	$15.63	$16.68	$17.95	$19.84	$22.43	$26.19	$31.28
CIM							
Tier 1: 0-4 units	$10.18	$10.86	$11.69	$12.92	$14.61	$17.06	$20.38
Tier 2: 5-11 units	$11.16	$11.91	$12.82	$14.17	$16.01	$18.70	$22.34
Tier 3: 12 + units	$11.16	$11.91	$12.82	$14.17	$16.01	$18.70	$22.34
BLK							
Tier 1: 0-4 units	$9.54	$10.18	$10.96	$12.11	$13.69	$15.99	$19.10
Tier 2: 5-11 units	$10.41	$11.11	$11.95	$13.22	$14.94	$17.44	$20.84
Tier 3: 12 + units	$10.79	$11.52	$12.39	$13.70	$15.48	$18.08	$21.60